

## **Frank Gallagher Ph.D. – Personal Statement**

### **Background:**

For over forty years I have explored the connection between people and landscape through both land management and academic research. Serving as Chief of Interpretive Services, Administrator and Assistant Director of the New Jersey Division of Parks and Forestry offered practical experience in an array of land management issues. After teaching courses in biology, evolution and environmental science for ten years at Upsala College, I joined the faculty at Rutgers The State University part time in 1994, and full time in 2012. My current appointment as Assistant Professor of Professional Practice and the Director of the Environmental Planning program within the Department of Landscape Architecture consists of working with academic administrators, academic advising, administrative staff and faculty to ensure the continued development and delivery of a cutting edge program. It also allows for teaching, research collaboration and mentoring of graduate students. Serving as a member of the graduate faculty for the Department of Landscape Architecture, the Ecology and Evolution program and the Federated Department of Biological Sciences at Rutgers Newark has provided a broad range of academic experience. I have also served as a research associate for Montclair State University. It is this combination of thirty years of experience within the profession of land management and several decades of teaching experience that yield unique qualifications.

With over 45 publications in both scientific journals and venues of general interests', on topics ranging from phytostabilization of contaminated soils to the ethics of ecosystem function monetization, I strongly believe in the value of written communication. In addition, I have presented hundreds of lectures at conferences and meetings both nationally and internationally. Topics have generally included current natural resource based environmental issues, demographic transition and most recently brownfield redevelopment. In 2001, I was invited by Princess Abdulla of Jordan to lecture on forest development in Amman, Jordan.

### **Philosophy:**

Sometime in 2008 an unprecedented global demographic transition occurred, the majority of us now live in cities<sup>1</sup>. This fundamental change in where we live will undoubtedly change who we are and how we come to understand natural systems. There are now over 20 urban centers that house at least 10 million people; in 1950 there were only two. While they are generally considered the home of the most creative and artistic talent, the pioneers of ground breaking public policy and considerable economic drivers they are often simultaneously the

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<sup>1</sup> Flavin C., in 2007. State of the World, Our Urban Future, A World Watch Institute Report on Progress Toward a Sustainable Society. W. W. Norton & Company, New York, pg.3.

sites of abject poverty and extreme environmental degradation. If sustainability is truly a human goal then the development of a functional land ethic must be possible within the paradoxical context of the urban environment. Increasingly then, urban green-space, will provide the experiential framework required for the development of an ecological identity, the pre-requisite for a land ethic and the practice of sustainability. This understanding provides a foundation for both the course work and graduate mentorships I have been and will continue to be involved in, “teach how to think not what to think”.

*"A billion hours ago, human life appeared on earth. A billion minutes ago, Christianity emerged. A billion seconds ago, the Beatles changed music forever. A billion Coca-Colas ago, it was yesterday morning"<sup>2</sup>.*

### **Teaching:**

As past president of New Jersey's Alliance for Environmental Education, past chair of the Governor's Commission on Environmental Education, and past co-chair of the American Forest Foundation Board of Trustee's Project Learning Tree Operating Committee, I have developed a deep commitment to the tenants of the Belgrade Charter. Developed in 1972 by United Nations Educational, Scientific, and Cultural Organization Committee, the charter states the goal of environmental education “is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones”. If this goal is to be achieved, it will happen by investing in one student at a time.

This is the perspective I take into my work as the Undergraduate Program Director for the Environmental Planning program. In short the EP program strives to consider our dependence upon natural resources and the legacy of our use of the land, in an effort to foster ethical planning solutions to current critical issues. The program is rooted in the science and consistency of the four principles of ecology. The program carves out a unique identity, one that promotes sustainability regardless of location, strives for equity and envisions a post-industrial landscape with functional ecology. Most importantly the program provides the scientific foundation and the critical thinking skills required to make informed decision, for both current and future critical issues.

In addition, learning is a lifelong process that begins with awareness and culminates in responsible action and is most effective when it utilizes an experiential learning framework. This process originally defined in the Tbilisi Declaration (1977)<sup>3</sup> and modified over the decades provides the foundation for the coursework I have developed over the years. In general there are five phases to this model which are sequential, cumulative and somewhat

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<sup>2</sup> Newsweek, April 21, 2002 (Coca Cola add)

<sup>3</sup> United Nations Education, Scientific, and Cultural Organization (UNESCO) in cooperation with the U.N. Environment Programme (UNEP) and was convened in Tbilisi, Georgia (USSR) from October 14-26, 1977

elastic. The process is a continuum that builds according to the following sequential steps, awareness/appreciation, knowledge/understanding, attitudes/values, problem solving skills, and finally personal responsibility and action<sup>4</sup>. Through the application of this process ecological literacy and environmental responsibility can be fostered.

This teaching philosophy has provided the foundation for the eight courses I have developed over the past several decades including, Praxis Studios in Ecological, the Ecological History of North America, Environmental Issues in the United States, Field Biology and Evolution. In all of these courses responsible behavior is built from a contextualized understanding of content. It also provides the foundation for the 33 Graduate Students I have mentored since joining the department in 2012 and for the 5 I have for this year.


### **Research:**

While numerous studies over the past several decades have described the impairment of ecological integrity associated with urbanization, few attempts have been made to clearly define and quantify the ecological functions and services of urban green-space. Those studies that attempt to define urban ecology generally use biodiversity, as the primary metric. They take the traditional approach of comparing an index of measured urban diversity to a hypothetical historic reference. Couched in terms of ecological resilience they generally prescribe to the theory that species richness can be positively correlated with ecosystem stability and to lesser degree function. Our lab (Urban Forestry) seeks to further define ecological function as a product of assembly theory, focused on urban novel communities which may or may not be connected to species richness. We attempt to establish new references, associated with the urban environment that focus on the ecological function such as, carbon and nitrogen cycling, hydrology and the mitigation of those contaminants typically associated with the urban soils of novel urban assemblages. Novel assemblages often referred to as “urban wildlands “appear to function in spite of the environmental stressors of the urban environment. They developed unique patterns of species diversity/distribution; models of primary productivity and carbon sequestration that are driven by threshold tolerances, and develop along nontraditional guild trajectories. In addition, the ecological risk associated with uptake and transfer of various contaminants appears not to follow traditional biomagnification scenarios. Within these domains our research seeks address current knowledge gaps and develop correlations between ecological function and the socio-economic character of the urban environment.

More specifically, many post-industrial landscapes present opportunities to convert urban brownfields into future open green space. However, before such restoration initiatives can be undertaken, and reasonable objectives

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<sup>4</sup> [http://www.jsedimensions.org/wordpress/content/awareness-to-action-the-journey-toward-a-deeper-ecological-literacy\\_2013\\_05/](http://www.jsedimensions.org/wordpress/content/awareness-to-action-the-journey-toward-a-deeper-ecological-literacy_2013_05/)



established, a clear understanding of these ecologies must be developed. In addition to the competitive and facilitative biotic interactions that drive typical vegetative assemblage development, strong abiotic filters often play critical roles on degraded sites. Our work has focused on the sublethal impacts of soil metal contamination. Towards this end we have documented the relationship between soil metal load and plant species distribution, primary productivity, diversity and assemblage trajectory. In addition, in order to define the ecological risk associated with the site, we have examined the uptake and transfer of various metals at several trophic levels. These data suggest that models for assembly rules, at least those associated with the degraded environments of the urban context, must account for abiotic filters, resulting feedback loops and the potential for development of alternate stable steady states. Understanding these systems will enable the true understanding of novel ecologies in the urban context.

Most of this research has been conducted at an isolated brownfield, within Liberty State Park in Jersey City NJ. Having grown up in the area, I knew the site as a rail yard. Its transformation into an urban park and wildland has been inspirational. Beginning with a vegetative inventory in the mid-nineties, through my doctoral thesis and continuing today with ongoing resiliency studies, the site never ceases to amaze me. It is important that the transformation of post-industrial sites such as Liberty State Park are understood and appreciated for both the scientific as well as social benefits and services they provide. Such opportunities have been brought and will continue to bring graduate studies and outreach connections to the University. At least half of the thesis students I have mentored have focused on brownfield restoration. It also provides the applied science connection for undergraduate course work.

## **Outreach**

Building on research, I have spearheaded an informal group of over twenty researchers who have worked at the site since 2005. We have built a collective understanding that is helping to define the true value of urban ecological systems. The group felt so strongly about the scientific, ecological and recreation potential of the site that we collectively signed an open letter to the Governor of the State of New Jersey when the site was threatened with ill-conceived development plans. The letter was a small part of a public outcry that derailed the development plans. Sound science fostered informed decisions that lead to positive actions. A model that is being repeated in the several NGO and Advocacy organizations in which I participate. I have participated in over a dozen NGO and professional organizations as well as University Centers both locally and nationally whose missions focus on sound and ethical land use. In the four current initiatives my role is to bring an understanding of urban ecological services and land ethics to the discussions.

**Summary:**

In short I will continue to develop and implement programs at Rutgers that consider the ontology of our relationship with the land in an effort to foster ethical solutions to current environmental issues.

Developing programs that are rooted in the science and seek sustainability regardless of location, strive for equity and envisions post-industrial landscapes with functional ecologies. We have developed a



unique Environmental Planning Program with the School of Environmental and Biological Sciences, the challenge for this coming decade will be to keep that program in front of the many advancements in technology and shifts in demographics that will occur as we race towards equitable mitigation strategies that will be required during the era of Climate Change.