

The Benefits of Leaf Litter

by Anne Schneider



Fall is upon us, which means the sidewalks will soon be covered with piles of those beautiful red, orange, and brown leaves. It also means that soon the leaf blowers will be in use clearing the walks of the colorful tree litter. While getting rid of the leaves might provide aesthetic benefits, the Grounds Department would like to consider the benefits of leaving those leaves right where they are.

Leaf Litter is an important and functional aspect of ecosystem dynamics. In ecosystems as in all of nature, everything has a function. All “dead” plant material that falls to the ground continues to provide for the surrounding environment. Consider the giant Oak tree that stands in front of the Administration building. Anyone who has walked the upper mall has seen the large leaves that pile up beneath the tree, but probably few of us have considered the ecological activity that is taking place within those piles. The leaves that fall provide a shelter and for insects and organisms like spiders, ticks, mites and detritivores and saprobionts—organisms that obtain their nutrients from consuming the dead plant material. While you might not personally love spiders and ticks, these litter invertebrates have a function in the ecosystem. The organisms that benefit from the shelter also help in the energy cycle because when they consume the decomposing leaf fall it results in the breakdown of carbon compounds. This produces carbon dioxide and water, and nitrogen and phosphorus ions, which get released into the surrounding top layer of soil to be reabsorbed by the living plant. In other words, at the end of a leaf’s life, it returns from where it came and puts the last of its energy back into the roots of the tree. To think, this incredible life cycle is all happening right outside your Admin Classroom!

You can take my word on the importance of leaf litter, or you can go to the real experts. Recent Seattle U Graduate Michael Van Nuland, B.S. has dedicated two years to studying urban ecological processes. His research looks at how urbanization affects ecological patterns by investigating patterns of forest floor litter invertebrates—the organisms found in samples of leaf litter. In his newly completed manuscript Mr. Van Nuland claims,

“Forest floor litter invertebrates provide an ideal system in which to investigate the effects of urbanization and disturbance because of their abundance and diversity (Erwin 1982; Seastedt and Crossley 1984)... Via their multiple roles on the forest floor, litter invertebrates ultimately affect



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ecosystem functions, such as net carbon flux based on how they influence both soil respiration rates and understory plant photosynthetic rates (McDonnell et al. 1997)."¹

For other nonscientists, this means that leaf litter and the organisms that inhabit it play a vital role in preserving soil health. Studying the patterns of their abundance is a valuable indicator of the health and resilience of an ecosystem. In an urban setting like our campus, this type of information helps analyze how species are affected by human behavior.

The value of leaf litter in our campus ecosystem represents the larger issue of biodiversity. Biodiversity recognizes *the fact* that ecosystems are interconnected webs made up of many species each with a specific job. By letting the leaves fall where they may, we are respecting the natural order and allowing them to fulfill their function. Though tree litter might be “dead,” it still has an important job to do. It may look dormant, but there is much life and activity taking place in the piles. When we blow and scoop the leaves out of sight, we are interfering with the web and disrupting the balance of the ecosystem. As Van Nuland’s found in his research, “[Litter] invertebrate richness increased with greater dry litter mass, which may support dry mass as a resource to support greater diversity (Faeth et al. 2005).”² The more leaves on the ground, the more rich and diverse the ecosystem is. In our desire to make the sidewalks look like a scene from a movie, we are creating an artificial aesthetic that is neither natural nor sustainable.

If we are serious about being responsible for our environment and accountable for our actions towards it, one thing we can all do is consider the connection between biodiversity and sustainability. If we want to sustain our environment, we have to preserve the fine natural balance of interconnected webs of life. Seattle University is dedicated to sustainability in many respects. Projects like sustainably designed buildings, Bon Appetit’s socially responsible food practices, our campus compost facility, and last year’s successful banning of the bottle are just a few of the great ways our university engages in sustainable responsibility. In Seattle U’s 2010 Climate Action Plan the definition of sustainability is threefold: it is meeting our needs without compromising the ability of future generations to meet their needs, it is attempting to replace nonrenewable resources with renewable ones, and it is a mindset that treats society, the economy, and the environment as one tightly interconnected system.³ Keeping these definitions in mind, a focus on biodiversity should be an important aspect of Seattle U’s sustainability practices. When it comes to caring for the landscape, the grounds department consistently tries to consider how our methods will impact the future and affect the

¹ Van Nuland, Michael, and Lindsay Whitlow. *Investigation of Pacific Northwest Forest Litter Invertebrate Communities and Resilience*. 2011. MS. Seattle University, Seattle, 2.

² Ibid, 8.

³ 2011. *Deepening and Advancing: The Commitment to Sustainability Seattle University’s Climate Action Plan 2010 – 2035*. Seattle, WA: Seattle University. ((PDF version of document downloaded 17 October 2011).



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various pieces of ecological webs. We are committed to making the campus beautiful, while incorporating sustainable practices that will uphold the rich and abundant ecological diversity.

As members of an ecosystem with a role and responsibility within the system, we must remember that because of our interconnectedness, *everything* we do has a powerful effect on our environment. In a city it is easy to think that nature is “out there,” but in reality our nature is right here. If we sterilize and urbanize the landscape, then we *do* push nature further away. However that is a choice we are making—whether consciously or unconsciously. We live in a paradoxical position where we are yearning to connect with nature yet we are blind to the fact that we are already immersed *in* nature. We are a part of nature. What is even more ironic, painful even, is that every time we interfere with the natural way of things, we not only hurt the specific ecosystem we disturb, but as beneficiaries of biodiversity we are harming ourselves. So this is a call to action. It begins with reconsidering the urge to “clean up” the leaf “litter,” and continues with the realization that an important aspect of sustainability is working to maintain the natural order and balance of the world of which we are a part.