

B.3 Successful Rain Gardens: Inspired by Wild Plant Communities

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Rain gardens are a popular and widespread strategy for reducing stormwater. However, common designs for rain gardens have too many functional and maintenance problems to be effective stormwater confinement BMPs. Below are the main problems associated with the popularly installed rain garden and strategies to follow to make rain gardens functional and attractive community structural BMPs.

Problems of Common Rain Gardens

Claudia outlines three main functional problems with rain gardens:

1. Naked Gardens (bare gardens that are planted not densely enough)
2. Under drains work too quickly and fully, not allowing water to sit for long enough in the garden
3. Rain gardens turn into ponds (no filtration)

As a result of these functional problems, weedy gardens lead to maintenance problems. Weedy gardens are not aesthetically pleasing and cause rain gardens as a whole to gradually fall out of favor with the public.

Past rain garden plant selection has been strictly 'icing on the cake' species (ie tall, emergent, clumping plants). This usually yields in a lot of open space which leads to weeds and lost opportunities for plant mass to uptake stormwater. The ground cover component is almost always forgotten in designs.

Plants for Rain Gardens

Successful plantings are biodiverse, kept, functional and densely planted. The solution to problematic rain gardens is to incorporate the beauty and structure of wild plant communities. Claudia suggests a **Layer Structure**.

A Layered structure of wild plant communities consists of short, ground covering species with tall species planted on top (not next to). The goal is to combine native plant communities and horticultural practices and ideas to result in 'designed plant communities'. Other components include clonal and self-sowing species and resilient ground covers.

Plants with deep root systems do the majority of the treatment of stormwater. Perennial plant roots die back each year. This results in open soil channels and de-compacts the soil.

How Do Plants in A Layered Structure Fit Together?

The first step is to look at wild plant communities. Plants grow in these communities with varying degrees of sociability. Claudia explains that five levels are distinguished, varying from 1 (plants growing singly) to 5 (ground cover plants growing in crowds) (Braun-Blanquet 1932). She suggests starting a design by using Level 1 & 2 plants as the backbone/structural aspect of the garden (consists of 5-10% of species in the garden). This is followed up by Level 3 & 4 plants as 'seasonal themes' (50% of plant species) to get a great mass effect. Lastly, Level 4 & 5 plants are used as a ground cover throughout the entire garden. Importantly, Claudia says to use plants with evergreen basal leaves to ensure ground cover throughout the entire year.

Resources

Phyto: Principles and Resources for Site Remediation and Landscape Design (Kennen & Kirkwood, 2015)

https://play.google.com/store/books/details?id=rL_ICAAAQBAJ

Plant sociology; the study of plant communities (Braun-Blanquet, et al., 1932)

<https://archive.org/details/plantsociologyst00brau>

Planting in a Post-wild World: Designed Plant Communities for Resilient Landscapes (Rainer & West, 2015)

https://books.google.com/books/about/Planting_in_a_Post_wild_World.html?id=8in5rQEACAAJ

The Iota of North America Program: North American Vascular Flora

<http://bonap.org/>