Rain Gardens: Towards a Native Hydrology

by Gerhard Epke
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On the surface, a rain garden might not look like much, especially during the long dry months of our year. However, during storms rain gardens can provide benefits remedying a few of the most serious environmental problems we deal with in the watershed, uppermost being flooding and contamination of streams by the accumulated pollutants from paved surfaces. These pollutants include oil, grease, powdered brake lining, pet droppings and detergents from car washing.

What is a rain garden? A rain garden is any planted area that captures water from impervious areas. This concept can also be referred to as bio-infiltration, bioretention, and low-impact-development (often referred to as LID). These names reflect a variety of purposes, such as recharging aquifers and groundwater, which promotes growth of native trees and plants, and increases summertime creek flows. Hydromodification refers to the use of these systems to collectively slow runoff from our urban areas and to buffer the severity of localized flooding.

During a downpour, rainwater runoff from a parking area at Good Earth in Fairfax flows into planted areas rather than being directed into storm drains. Photo by Gerhard Epke

One of the most common applications of rain gardens in Marin represents mitigation for newly created impervious surfaces, ostensibly for water quality reasons. This is a new policy of the State Water Quality Control Board and Marin County's Stormwater Pollution Prevention Program, MCSTOPPP. A surprising aspect of this concept is the role of the microbial community in the rain garden's soil. It is these microbes that are responsible for much of the pollution removal.

A shortcoming of this new permitting requirement is that it doesn't implement rain gardens where they are needed most—namely, farther down in the watershed, to deal with runoff from streets and from places that are already developed, where pollution is concentrated.

Rain gardens, and frankly, most stormwater infrastructure in our watershed, are typically scaled to handle the 10-year storm. However some communities in the Bay Area have scaled these up in size to address flood control problems, at which point they become more akin to passive detention basins.

Why aren't we using this approach in our own watershed? My best guess is that it is a jurisdictional problem between the flood control district and the towns, and the property rights of residents. Rain gardens could greatly mitigate flooding, but it would have to involve a shift in the management of the vegetated areas throughout the watershed.

Even without a development project on your property, you can get involved as well. Assess the soil at your house. Are there rocky outcrops, indicating shallow soils that would limit infiltration? Or are you in the lowlands in an area that gets saturated every year? Try using a sand bag or landscaping to pool water during and immediately after storms, or terrace slopes to slow runoff. The plants, the microbes, and even the fish will thank you—as may your neighbor too.

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