Rain Gardens

By Greg Sykes (greg@grsykes.com)

What looks stunning in any yard, is loved by wildlife, and helps improve water quality in local streams? It's a rain garden! These plots can be anything from centerpieces of the property to integrations into the existing landscaping. Functionally, rain gardens capture precipitation and allow the water to soak into the ground, where it is both absorbed by native plants and recharges the water table. In doing so, the soil and roots filter pollutants, such as lawn chemicals, before the runoff carries the contaminants into the waterways. Furthermore, catching runoff reduces floods and streambank erosion. The groundwater slowly emerges elsewhere at a seep or remains in a deep aquifer.

Figure 1. Sunshine streams through the river birch canopy in a large, established rain garden. The garden's basin covers roughly 0.15 acres and holds up to two inches of rain falling across a 24-hour period.

Rain gardens come in many shapes, sizes, and designs. People often opt for a more natural appearance while others apply a formal look. Install rain gardens away from underground utilities and houses, especially if the foundation is below the garden's elevation. Rain gardens can be placed on the side of a slope or other areas where surface water flows. These gardens retain water without altering runoff direction. A common mistake is selecting a site that is perpetually soggy; the rain garden's purpose is to absorb runoff, which fails in areas with already saturated soil. Turning that wet patch into a garden with plants requiring wet roots is a perfect use of the land but it is different from a true rain garden.

To see if the soil's absorbance capacity is suitable, run a percolation test by digging a 12x12x12-inch hole when the soil is dry and filling it up with water. *Remember to call Miss Utility (dial 811 in Virginia, or 1-800-552-7001) before you dig!* Return in 24 hours. If the soil soaks up all of the water, then the absorption is suitable; water remaining means either the garden will have reduced absorptive efficiency or some of the soil needs replacement with a blend of sand, humus, topsoil and/or other more porous substrates. Heavy clay requires soil amendments or replacement.

Figure 2. This rain garden's construction is near completion (A). Three river birch saplings are planted at least 15 feet apart and the last of the soil amendments are added. Photographed in March, the leaf bags resting on the berm were donated by neighbors back in autumn. Two years after installation (B), the rain garden's plants grow into the plot.

After choosing a site and garden shape, begin construction. Any soil removed to improve absorbance capacity can be used to make the berm at the lowest garden border. This berm retains surface water so that it percolates into the soil rather than continuing down the slope. Since severe storms may drop more precipitation than the garden's carrying capacity, consider capping the berm with stone pavers at the overflow point or installing an overflow pipe just under the berm that leads to the other side. Cover the bed with leaf mulch. Within the first few weeks of completion, the mulch may float on the water should a stormwater flood the garden. As time progresses, soggy mulch tends to stay submerged.

Figure 3. The primary rain garden (front) and a secondary one (back tier), are full after a heavy rain in early spring. Since all of this water will be absorbed within 24 hours after the last raindrop falls, the properly designed rain garden will never breed mosquitoes.

With the rain garden in place, planting may begin. Whereas the exact plants depend on the location, amount of sunlight, plot size, and personal preference, the species should be ones that tolerate water but are not aquatic plants. For example, the pond plant, lizard's tail (*Saururus cernuus*), requires perpetually wet roots, so dry soil during droughts kills it. Plants that thrive in dry soil will rot during the garden's wet spells. Plants that do well in moist soil are the best as many of these species evolved to withstand dry periods. Rain gardens support ferns loving soggy soil, such as sensitive fern (*Onoclea sensibilis*). However, they can be too wet for species like northern maidenhair ferns (*Adiantum pedantum*) and Christmas ferns (*Polystichum acrostichoides*) anywhere other than a drier, well-drained border. Grasses to consider include northern sea oats (*Chasmanthium latifolium*) and Virginia wildrye (*Elymus virginicus*), both like to spread. Flowering plants, such as Allegheny monkey flower (*Mimulus ringens*), swamp rose mallow (*Hibiscus moscheutos*), cardinal flower (*Lobelia cardinalis*), joe-pye weed (genus *Eutrochium*), scarlet beebalm (*Monarda didyma*), swamp milkweed (*Asclepias incarnata*), and white beardtongue (*Penstemon digitalis*) add colorful pizazz and benefit pollinators. Plot size permitting, woody plants, like river birch (*Betula nigra*), musclewood (*Carpinus caroliniana*), and buttonbush (*Cephalanthus occidentalis*), make aesthetically pleasing additions with roots that uptake much more water than herbaceous species. Avoid planting trees and shrubs directly on the berm since their roots can compromise that rim.

Figure 4. Ten years post-installment, this rain garden features many different plants (see Table 1). Species preferring especially wet conditions are closer to the berm. Birds splash in the puddles after rains or use the rustic bird bath in dry weather.

Rain garden upkeep consists of basic weeding and pruning. Fertilizers and pesticides are unnecessary, if not defeating the plot's objective of reducing chemical and nutrient load on the local ecosystem. Over the years, silt and clay carried in runoff can clog the rain garden's absorptive potential, so some folks replace the mulch and/or topsoil periodically; other people leave the soil as is and forego possibly damaging roots, especially when trees are in place. With proper planning and care, the rain garden provides decades of enjoyment and environmental functionality with minimum maintenance once established.

Table 1. This table lists some of the plants represented in this article's featured rain garden. Unless otherwise indicated, all plants are herbaceous. The keys with any successful native garden are biodiversity and selecting species appropriate for the location.

Common Name	Scientific Name
Blueflag Iris	*Iris versicolor*
Bottle Gentian	*Gentiana clausa*
Buttonbush – shrub	*Cephalanthus occidentalis*
Carolina Wild Petunia	*Ruellia caroliniensis*
Christmas Fern	*Polystichum acrostichoides*
Cinnamon Fern	*Osmunda cinnamomea*
Coastal Plain Joe Pye Weed	*Eutrochium dubium*
Common Rush	*Juncus effusus*
Dutchman's Britches	*Dicentra cucullaria*
Eastern False Rue Anemone	*Enemion biternatum*
False Solomon's Seal	*Maianthemum racemosum*
Fringed Yellow Loosestrife	*Lysimachia ciliata*
Golden Alexander	*Zizia aurea*
Goldie's Fern	*Dryopteris goldiana*
Hairy Alumroot	*Heuchera villosa*
Heartleaf Foamflower	*Tiarella cordifolia*
Hyssop Skullcap	*Scutellaria integrifolia*
Indian Pink – unconfirmed Virginia native	*Spigelia marilandica*
Jack-in-the-Pulpit	*Arisaema triphyllum*
Marginal Wood Fern	*Dryopteris marginalis*
Marsh-Marigold	*Caltha palustris*
Mayapple	*Podophyllum peltatum*
Mistflower	*Conoclinium coelestinum*
Netted Chain Fern	*Woodwardia areolata*

Common Name (cont.)	Scientific Name
New York Fern	*Parathelypteris noveboracensis*
New York Ironweed	*Vernonia noveboracensis*
Northern Sea Oats	*Chasmanthium latifolium*
Prairie Phlox	*Phlox pilosa*
River Birch – tree	*Betula nigra*
Robin's Plantain	*Erigeron pulchellus*
Royal Fern	*Osmunda regalis*
Scarlet Rosemallow	*Hibiscus coccineus*
Shooting Star	*Dodecatheon meadia*
Skunk Cabbage	*Symplocarpus foetidus*
Smooth Blue Aster	*Symphyotrichum laeve*
Spotted Beebalm	*Monarda punctata*
Spring Beauty	*Claytonia virginica*
Summersweet – shrub	*Clethra alnifolia*
Virginia Bluebell	*Mertensia virginica*
Virginia Waterleaf	*Hydrophyllum virginianum*
White Beardtongue	*Penstemon digitalis*
White Doll's Daisy	*Boltonia asteroides*
White Heath Aster	*Symphyotrichum ericoides*
White Turtlehead	*Chelone glabra*
White Wood Aster	*Eurybia divaricata*
Wild Geranium	*Geranium maculatum*
Wild Ginger	*Asarum canadense*
Winterberry – shrub	*Ilex verticillata*
Woodland Phlox	*Phlox divaricata*
Yellow Trout Lily	*Erythronium americanum*

Additional information about rain gardens is at:

http://www.raingardennetwork.com/
https://www.fairfaxcounty.gov/soil-water-conservation/bringing-rain-gardens-home/
https://www.fairfaxcounty.gov/soil-water-conservation/sites/soil-water-conservation/files/assets/documents/raingardenbk.pdf
https://extension.umd.edu/watershed/rain-gardens
https://wmeac.org/raingardens/

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