

## **Stopping Runoff and Erosion**

Gaye Mara, Fairfax County Master Gardener

In recent years, we've become more conscious of the pollution that runoff can carry into our waterways. We are more careful these days about the chemicals we apply to our lawns and gardens.

### **So What's the Problem?**

There is a further danger to which we pay less attention: the sheer physical force and volume of runoff, and the damage it can do. Land development in our area over the past few decades has hugely increased that volume. Forests and fields are like sponges; they soak up rain where it falls. But rooftops and pavement shed rainwater, which runs off slopes, carrying soil and groundcovers with it. Then the water pools and floods in low-lying areas. The more our woods and fields are replaced by impervious surfaces, the greater the volume of runoff that must be absorbed by the land that remains.

As a result, heavy rains do more damage today than in the past. Dramatic evidence of that damage can be seen downstream.

Mason Neck State Park and National Wildlife Refuge is at the southeastern corner of Fairfax County. It was set aside in 1969 to protect nesting sites of the bald eagle, which was then an endangered species. Since then the eagle population has recovered nicely and is off the endangered list.

But the park itself is not doing so well. The Potomac and Occoquan Rivers converge there. With every heavy rainstorm, a virtual tsunami of runoff roars downriver, batters the banks, and topples trees into the water. In the 30-plus years since the park opened, its scenic shoreline has retreated 50 feet inland.

### **What Can Homeowners Do About Runoff?**

The basic principle is to catch and hold raindrops where they fall, and all of us can do that. There are a number of possible strategies:

*Amend and mulch your soil to increase its absorptive capacity.* Unamended, our native clay soil is dense and hard, and it drains poorly. Fluffing it up with organic matter (e.g., peat moss or compost) greatly increases its capacity to absorb water. Topping soil with mulch helps it hold even more water.

*Increase vegetative cover, both horizontally and vertically.* The foliage and roots of plants hold water. The more extensive the foliage and roots, the more water they will hold – bushes hold a lot more water than grass. Potted plants on your deck or patio will capture water that would otherwise run off.

*Terrace slopes.* Water will run down a steep slope even when it is covered with vegetation. With terracing you can stair-step a series of level surfaces down a slope, each of which will hold the rain that falls on it.

**Photos:** The cumulative impact of runoff: (Top left) Where rainfall strikes, denuded soil, exposed rocks and tree roots, and gullies in the soil. (Top right) Where storm drains empty into local creeks, deeply scoured stream channels. (Bottom) Downstream at Mason Neck, collapsing banks and trees toppling into the river.



*Minimize impervious surfaces and maximize permeable surfaces.* Use groundcovers instead of paving. Space pavers and intersperse them with soil planted with mosses, creeping thyme, etc.

*Install rain barrels.* Capture the water from your roof in a rain barrel, instead of letting it pour out of a downspout onto the ground. In dry weather, use the contents of the barrel to water your garden and congratulate yourself on your foresight. (Plus, your garden will be happier: Our tap water contains chlorine and fluorine compounds that don't agree with many plants.)

*Plant a rain garden.* A rain garden is a slightly sunken garden plot with a well-draining soil structure and plants that can survive, and even thrive in, temporary flooding. General information on rain gardens can be found on the Virginia Forestry Department web site at [www.dof.virginia.gov/rfb/rain-gardens.shtml](http://www.dof.virginia.gov/rfb/rain-gardens.shtml). Virginia Cooperative Extension has published a list of plants that do well in rain gardens at [www.ext.vt.edu/pubs/waterquality/426-043/426-043.html](http://www.ext.vt.edu/pubs/waterquality/426-043/426-043.html).

A new rain-capture strategy that is just beginning to be utilized in the Washington area is the *green roof* – in essence, a roof-top garden. This requires a roof that is level or nearly level, thoroughly waterproofed, and strong enough to support a layer of soil and plants on top. There are two basic types of green roofs: (1) *extensive*, with a shallow layer (say 3 inches) of soil or soil substitute planted with shallow-rooted, drought-tolerant plants such as small sedums and cactuses; and (2) *intensive*, with larger plants up to and including trees and a much deeper layer of soil. Besides capturing water that would otherwise run off, green roofs confer the additional advantages of energy efficiency and longer roof life.

I'm not aware of any green roofs in Fairfax County. There are some in the Metro area, however, and in a few cases tours are available. See, for example, [www.caseytrees.org/programs/greeninitiatives.html](http://www.caseytrees.org/programs/greeninitiatives.html) for information about the first green roof on a D.C. office building and a schedule of tours.

Make your property part of the solution, not part of the problem, by capturing rainwater and not letting it add to the runoff that is ravaging the lands downstream.