

Life at the Water's Edge

How Streams Work

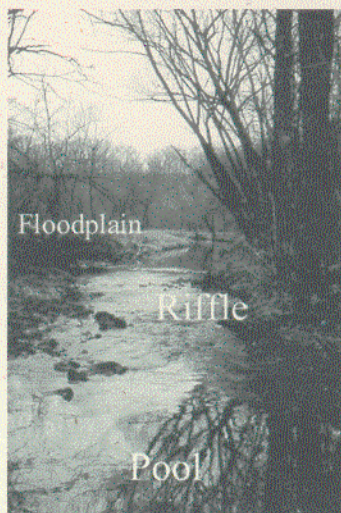
two in a series of six fact sheets on stream management

Streams are "dynamic systems", which means they're constantly changing over time, but are always striving to balance energy.

Components of a natural stream

In our area, many streams are composed of alternately spaced, deep and shallow areas called pools and riffles. *Pools* are deep areas that often contain fine materials such as sand, a perfect respite for fish! *Riffles* are shallow, fast moving areas that often contain larger materials like cobbles and boulders. These areas provide important habitat for fish spawning and macroinvertebrates (i.e. mayfly nymphs), an important food source for fish. Another important component of streams is the *floodplain*. Active floodplains provide a critical service to the community and are essential for healthy streams because they:

- ☛ Reduce flooding in our communities by containing excess storm water.
- ☛ Reduce stream bank erosion by relieving energy in the channel.
- ☛ Reduce pollution by allowing sediment, bacteria and fertilizers to settle out and be utilized by plants.
- ☛ Recharge and filter groundwater so streams can maintain flow in dry weather.



STREAM CORRIDOR RESTORATION: PRINCIPLES, PROCESSES, AND PRACTICES, 10/98, BY THE FEDERAL INTERAGENCY STREAM RESTORATION WORKING GROUP

Why do streams meander?

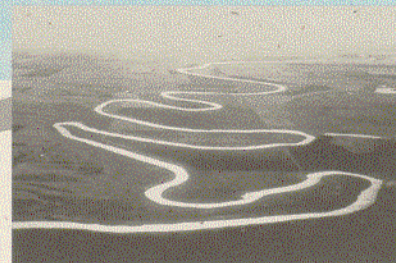
It's a balancing act! All streams transport water along with bed materials like soil and rocks. By meandering, streams can balance the work involved in carrying bed materials and the energy of transporting water.

How much will a stream meander?

The size of the meander is related to the slope of the stream and the area of the land draining to the stream. Steep mountain streams hardly meander at all, while large rivers in flat valleys often have large meanders.

What happens when a stream un-meanders?

Streams are not pipes. When we eliminate natural meanders in streams, and attempt to "nail" the stream into a straight line, the effects are often dramatic. Excessive energy often becomes trapped in the stream channel. Erosion increases as the stream attempts to recreate the missing meanders. Floodplains often become disconnected from the stream, and downstream landowners are at a greater risk of flooding and erosion.



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Fact: Even water flowing through a pipe at low flow will meander!

Is stream bank erosion natural?

Even streams in balance erode, but usually not in a way that degrades the stream. Erosion in a healthy stream usually equals the amount of material deposited. If a stream begins to erode excessively, it may be out of balance. Increased storm water runoff upstream may start a downward cutting process, which leads to unstable, eroding stream banks.

What's a healthy stream?

- ☛ A meandering, winding, "S"-shaped curve
- ☛ Open access to floodplains
- ☛ Vegetated "Buffer Zone" on the stream banks



CUYAHOGA SOIL & WATER CONSERVATION DISTRICT



Backyard

Habitat

Improvement

Ideas

Benefit with Butterflies



Attracting butterflies is a great way to begin the process of making our yards more wildlife friendly. Butterflies require two types of plants: a nectar source for the adult butterflies, and a host plant for

caterpillars. Butterflies can actually smell these plants up to two miles away! What's so amazing is that these plants are so common. Nectar Sources: lilac, phlox, zinnias, cosmos, purple coneflower. Host Plants: dill, parsley, carrot, violet, dogwood, viburnum.



Returning our urban areas to a more natural environment

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