



Ohio Department of Natural Resources  
**Division of Soil and Water Resources**  
**Fact Sheet**

Fact Sheet 98-50

## Natural Benefits of Floodplains

Throughout history, Ohio's river systems have offered many benefits that have contributed to the development of the state. Since the time of European settlement and beyond, our rivers have been used as highways for exploration, migration, and commerce. Rivers supply our communities with energy, water supply, and even a source of waste disposal. Most of our cities have been developed in desirable settlement areas along the edges of, or at the mouth of a river. Over many decades, Ohio's communities grew and experienced very little flooding locally.

However, after two centuries, the character of Ohio's rivers and floodplains has changed drastically and the natural function of riparian ecosystems (vegetated areas along streams) has been significantly altered by human actions.

Floodplain resources, including wetlands, are experiencing increasing pressure for development. Streamside forests have been removed to make way for agricultural

activities. Expanding urbanization of our watersheds deliver increased amounts of surface water into receiving streams. Streams have been straightened and channelized to allow water runoff to flow faster.

Our desire to develop in floodplains has resulted in increased danger to both humans and the function of floodplains. **Table 1** illustrates some of the detrimental impacts that development can have on natural floodplains. Despite the expenditure of billions of tax dollars for flood control structures, flood losses continue to rise. Today floods cause a greater loss of life and property in the United States than all other natural hazards combined. To change this trend of rising damage, your community should consider the benefits and values of floodplain resources as you develop your community's goals.

As our scientific understanding of floodplain ecosystems continues to grow, we are realizing that floodplains represent important natural functions and values which provide opportunities and limitations for particular uses and activities.

<b>Table 1. Detrimental Impacts on Streams and Floodplains from Development</b>	
<b>Changes in Hydrology</b>	<b>Changes in Geomorphology</b>
<ul style="list-style-type: none"> <li>* increase in magnitude and frequency of severe floods</li> <li>* increased frequency of erosive bankfull floods</li> <li>* increase in annual volume of surface runoff</li> <li>* more rapid stream velocities</li> <li>* decrease in dry weather baseflow on stream</li> </ul>	<ul style="list-style-type: none"> <li>* stream channel widening and downcutting</li> <li>* increased streambank erosion</li> <li>* shifting bars of coarse-grained sediments</li> <li>* elimination of pool/riffle structure</li> <li>* imbedding of stream sediments</li> <li>* stream relocation\enclosure or channelization</li> <li>* stream crossings form fish barriers</li> </ul>
<b>Changes in Water Quality</b>	<b>Changes in Aquatic &amp; Terrestrial Habitat, and Ecology</b>
<ul style="list-style-type: none"> <li>* massive pulse of sediment during construction stage</li> <li>* increased washoff of pollutants</li> <li>* nutrient enrichment leads to benthic algal growth</li> <li>* bacterial contamination during dry and wet weather</li> <li>* increased organic carbon loads</li> <li>* higher toxic levels, trace metals, and hydrocarbons</li> <li>* increased water temperatures</li> <li>* trash\debris jams</li> </ul>	<ul style="list-style-type: none"> <li>* shift from external to internal stream energy production</li> <li>* reduction in diversity of aquatic insects</li> <li>* reduction in diversity of aquatic and terrestrial species</li> <li>* destruction of wetlands, riparian buffers, and springs</li> </ul>

Source: Metropolitan Washington Council of Governments. *Watershed Restoration Sourcebook*. Washington, D.C.: Anacostia Restoration Team, 1992.

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**Table 2. Natural and Cultural Benefits of Floodplains**

Water Resources	
Natural Flood and Erosion Control	Water Quality Maintenance
<ul style="list-style-type: none"> <li>* reduce flood velocities</li> <li>* reduce flood peaks</li> <li>* reduce erosion potential and impacts</li> <li>* stabilize soils</li> <li>* accommodate stream meander</li> <li>* provide a broad area for streams to spread out and for temporary storage of floodwater</li> </ul>	<ul style="list-style-type: none"> <li>* reduce sediment loads and amount of sediments</li> <li>* filter nutrients and impurities</li> <li>* process organic and chemical wastes</li> <li>* moderate water temperature</li> <li>* protect the physical, biological, and chemical integrity of water</li> </ul>
Maintain Groundwater Supply and Balance	
<ul style="list-style-type: none"> <li>* promote infiltration and aquifer recharge</li> <li>* reduce frequency and duration of low flow by increasing/enhancing base flow</li> </ul>	
Biological Resources	
Support Flora	Provide Fish and Wildlife Habitat
<ul style="list-style-type: none"> <li>* maintain high biological productivity of floodplain and wetland vegetation</li> <li>* maintain productivity of natural forests</li> <li>* maintain natural crops</li> <li>* maintain natural genetic diversity</li> </ul>	<ul style="list-style-type: none"> <li>* maintain breeding and feeding grounds</li> <li>* create and enhance waterfowl habitat</li> <li>* protect rare and endangered species habitat</li> <li>* maintain natural genetic diversity</li> </ul>
Cultural Resources	
Maintain Harvest of Natural and Agricultural Products	Provide Recreational Opportunities
<ul style="list-style-type: none"> <li>* create and enhance agricultural lands</li> <li>* provide areas for cultivation of fish and shellfish</li> <li>* protect and enhance silvaculture</li> <li>* provide harvest for fur resources</li> </ul>	<ul style="list-style-type: none"> <li>* provide areas for active and consumptive uses</li> <li>* provide areas for passive activities</li> <li>* provide open space values</li> <li>* provide aesthetic values</li> </ul>
Provide Scientific Study and Outdoor Education Areas	Improve Economic Base of Community
<ul style="list-style-type: none"> <li>* provide opportunities for ecological studies</li> <li>* provide historical and archaeological sites</li> </ul>	<ul style="list-style-type: none"> <li>* increase tourist activity</li> <li>* stimulate natural-resource businesses</li> <li>* improve property values</li> </ul>

*Source: U.S. Water Resources Council. A Unified National Program for Floodplain Management. Washington D.C.: U.S. Water Resources Council, 1979.*

By planning wisely and affording protection to natural floodplains, Ohio's communities can balance economic growth and urbanization. We can protect a floodplain's functions and processes to create and maintain a better quality of life and living environment for the future generations that will work and live in Ohio.

Floodplains play an integral part in the function of our river systems. The alteration or development of the floodplains eliminates or degrades these vital values and resources.

The Federal Emergency Management Agency has classified the natural resources of floodplains into three groups 1) water resources, 2) biological resources, and 3) cultural resources. **Table 2** identifies some of the specific benefits and values associated with floodplain resources in their naturalized (undisturbed) condition. Consider these benefits while identifying your community goals.

For more information, please contact:

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