

## Economic Reasons for Sound Management of Primary Headwater Streams

*There are economic benefits to good stewardship and the proper management of primary headwater streams.*

### Need for proper management

Headwater streams are the small swales, creeks and streams that are the origins of larger streams and lakes. Headwater streams with a watershed area generally less than a square mile are referred to as primary headwater streams. The quality of waters in the larger streams and lakes has a close connection to the quality of the water coming from the primary headwater streams. If there is poor water quality at the source of a larger stream or lake, it is likely that there will be poor water quality within the larger stream or lake.



### What are the threats facing primary headwater streams?

Nearly every person living in Ohio has a primary headwater stream within a relatively short distance of their home. Because of their small size and their proximity to human activities, these streams are often impaired.

Human activities that can degrade primary headwater streams include: channelizing them or enclosing them in culverts; habitat destruction such as removing vegetation along the banks of streams and constructing dams within streams; mining near streams; urban/suburban sprawl; and discharging pollutants from homes, businesses and livestock operations. It is important to remember that when headwater streams are degraded, especially if over a large area, larger rivers which they feed into are also threatened.

### Channelization and culverting

Natural drainage patterns are often altered by channelizing streams or enclosing them in culverts. Many stream channels have been straightened in an attempt to quickly remove storm water and prevent flooding. This alteration results in more extremes to flows within the watershed – including both “flashier” floods and lower base flows.

### Habitat destruction

Removal of trees and natural vegetation from the land surrounding headwater streams commonly occurs. Without native vegetation, the health of headwater streams is in danger, as is the health of larger streams if enough headwater streams are impacted in their watersheds. This can result in increased erosion and flooding, and decreased water quality.

### Mining

Acidic water, and degraded channels are common in areas in which mining operations occur.

### Urban/suburban sprawl

Urban/suburban sprawl can result in the relocation or removal of stream channels, increased erosion and increased runoff from the surrounding landscape. Sprawl usually results in more land being covered by pavement, rooftops, and other impervious surfaces. This results in more storm water runoff into primary streams unable to cope with the higher flows. This, in turn, can result in flooding and degradation to the larger streams and lakes into which the primary streams flow.

### Pollutants

Sewage from malfunctioning septic systems, chemicals from businesses, manure from confined livestock operations and other pollutants can all degrade primary headwater streams.

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## The economic reasons for improving headwater streams

### Improved water quality

Common sense tells us that water flows downhill, and thus when water is clean near its origin, in the headwaters, the effects are felt downstream. An intact network of functioning headwater streams, including primary headwater streams, will help prevent the negative impacts of poor water quality, including contaminants reaching public drinking water supplies, excess sediments in streams and excess sediment accumulation in lakes and reservoirs. Avoiding these negative impacts can result in decreased dredging and water treatment costs, decreased human health risks and healthier fish and wildlife populations in lakes and rivers.

### Reduced flooding

Another economically significant impact caused by the alteration of primary headwater streams and their drainage areas is flood damage. The modifications made to remove water quickly from the watersheds of primary headwater streams can often put too much water and energy in larger streams. This can cause more frequent and more damaging floods, excessive scouring of natural stream channels, and damage to bridges and other structures. Maintaining an intact network of functioning headwater streams, including primary headwater streams, will reduce these impacts.

### Improved wildlife habitat and increased aesthetics

Well managed primary headwater streams and their adjacent vegetation provide wildlife habitat. They also improve aquatic conditions in larger streams that are conducive to healthy fish populations. Results of well managed primary headwater streams include maintenance of good biological diversity and improved hunting and fishing opportunities. Furthermore, studies have shown that people enjoy having natural streams on or near their property, resulting in increased property values.

## The bottom line

Improved management of primary headwater streams and their watersheds makes economic sense.

## What can be done to improve the management of headwater streams?\*

### Co-existing with headwater streams

“Human activities need not be devastating to headwater ecosystems. Thoughtful land-use planning and development can protect and even restore headwater streams as sustainable ecosystems that serve as oasis of life and diversity within the neighborhoods and valleys where we work and live.” Scientific research has shown that a healthy network has shown that a healthy network of headwater streams, including primary headwater streams, “is a fundamental component of good river management.”

### Seeking a balance

“Where preservation or restoration of natural headwater conditions is impractical because of human activities, we can seek a balance between human use and ecosystem needs to support and maintain important headwater functions.

Possibilities include:

- Minimize the impacts of activities like logging, grazing, and mining by managing them in a way that prevents excessive damage to the landscape and natural hydrology or stream flow
- Protect riparian zones along perennial and intermittent streams
- Minimize and monitor pollution discharges
- Refine land-use codes and construction site plans in developed areas to reduce impervious surfaces, preserve green space, and protect water quality.”

\*Taken and adapted from *The Importance of Healthy Headwaters* – by American Rivers

## Contact

For more information, visit the Primary Headwater Habitat webpage at [epa.ohio.gov/dsw/wqs/headwaters/index](http://epa.ohio.gov/dsw/wqs/headwaters/index).