



The Importance of Instream Flow

Water is a river's most essential element. "Instream flow" refers to the water in a river's channel.

In a healthy river, water levels fluctuate naturally. The flow of a river is cyclical, varying greatly on a time scale of hours, days, years, decades, and longer.

For example, snowmelt makes many rivers flow deeper and faster in the spring; in hotter summer weather, flows tend to decrease.

Flow varies from place to place, depending on regional differences in climate, geology, and vegetation. Every river is different with its own seasonal pulse.

Why is natural flow important?

Natural flow creates diverse and complex habitats

Like a sculptor, flow shapes the river. Flow defines the size of the river and its location and course. Flow controls where the river meanders and it establishes the pools, riffles, side channels, and backwaters.

Flow's influence stretches from the immediate treambed far into the hyporrheic zone, riparian area, and floodplain.

Flow determines the amount and type of habitat that exists in and around the river-important for food sources, spawning and rearing grounds, and migration routes for wildlife, fish, and other aquatic species.

Native streamside vegetation in the riparian zone must have natural flow in order to survive and reproduce. The plants, fish, and wildlife in any given river have evolved to adapt to that river's unique rhythms.



Altering natural flow can harm these species.

Natural flow replenishes the ecosystem

Natural floods are key to maintaining the ecological integrity of river ecosystems.

Most of the plants and animals that live in and around the river have evolved to benefit from, or are actually dependent upon, the annual advance and retreat of floodwaters.

During periods of high water, fish and wildlife migrate out of the channel and onto the floodplain to use newly available habitat and resources.

For many species, the annual flood also acts as a reproductive cue. As floodwaters recede, nutrients and organic matter from the floodplain are transported into the river, providing food for fish and other aquatic organisms.

Periodic floods, such as spring runoff, help plants in the riparian zone grow. High flows scour portions of the floodplain and re-deposit sediments, allowing tree seedlings to germinate and grow on bare sandbars without competition from established plants. Many native riparian plant species disperse seeds as annual high flows subside.

Why is natural flow in trouble?

Too many rivers today are being deprived of water because of excessive diversions to serve the demands of agriculture, hydropower, and growing cities. In the West especially, the natural timing and quantity of river flows have been dramatically altered and fish and wildlife are suffering.

Human activities have adversely affected natural river flows

Dams and associated diversions can reduce or destroy aquatic habitat by blocking stream flows, creating artificial flow regimes, changing flow temperatures, changing the timing of flows, and completely bypassing some stream channels.

Diversions for irrigated agriculture remove water from the river to the farm fields. If the water eventually returns to the riverbed, it is often contaminated with sediment, pesticides, and herbicides.

Growing cities are taking more water from rivers to quench the thirsts of homes and businesses.

As towns grow, more and more of the watershed becomes "impervious." This means the ground, covered with buildings and paved roads and parking lots, can't absorb rainwater.

Instead of gradually seeping into the ground, the water rushes over the surface and floods the nearest stream. This runaway runoff increases stream velocity and causes erosion. In many cases, this huge influx of water is laden with oil and other contaminants.

Excessive logging also causes water to reach streams more rapidly. A forested hillside is like a giant sponge—remove the trees and rainwater, along with a good deal of mud, will rip down the hillside and flood a nearby stream. Add roads to the mix and you'll get even bigger landslides.

Channelizing a river to facilitate navigation or to provide flood control destroys a river's natural meanders. This process of straightening and deepening the river increases the velocity of flows. It also makes it harder for the river and its wetlands to absorb floodwaters.

What can we do about it?

Preserve or restore your river's natural flow, or match the naturally functioning aquatic and riparian ecosystems as closely as possible. This could be as basic as restoring water to a dry streambed. Or it may be more complex, involving the adjustment of natural seasonal flow variations in a river altered by dams and reservoirs.

Abandon the protection and restoration of minimum" flows in favor of maintaining "optimum" flows.

Identify an optimum flow regime considering channel formation, pool and riffle formation, growth of riparian vegetation, and floodplain integration.

Optimum flow should not be determined without first identifying the full range of ecological needs and human demands.

Hold flows to a less than natural standard only when technical, political, or legal factors prevent preservation or restoration. At the very least, ensure that flows are sufficient to sustain essential ecological functions, provide adequate aquatic and riparian habitat, and meet the needs of human health and recreation use.

Long-term needs of the river and long-term demands of humans are best served by a continual supply of healthy, clean water. Allowing rivers their natural flow regimes is the best way to provide and maintain a consistent, healthy supply of water.

Information taken from American Rivers:
<http://www.americanrivers.org/>



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May 2005