The Nature Conservancy

SUSTAINABLE RIVERS PROGRAM

- ***ADVANCE:*** ***3,325 miles of river***
  Define flow prescription(s) with stakeholders and US Corps of Engineers
- ***IMPLEMENT:*** ***531 miles of river***
  Test flow prescription to determine optimum dam operations
- ***INCORPORATE:*** ***1,255 miles of river***
  Revise water control manual or other legal means to include environmental flows in dam operations

TOTAL: 5,111 MILES OF RIVER

Restoring Seasonal Flows

Adjusting dam operations to mimic natural river flow patterns yields diverse benefits for nature and people:

WATER QUALITY. Natural flow patterns—such as seasonal high flows into floodplains and wetlands—help maintain and restore water quality by allowing these areas to filter sediment and pollutants from our rivers. According to the USGS, some 23.8 billion gallons of water are withdrawn daily from rivers, lakes and reservoirs for public water supplies.

FLOOD PROTECTION. More natural flow patterns—achieved by adjusting dam operations and increasing floodplain protection—can reduce flood impacts. U.S. flooding since 1980 has caused $120 billion in damages, and the number of floods and their associated costs are rising annually.

FISH AND SHELLFISH. Natural flow patterns trigger fish spawning and migration. Flows also maintain habitat for species, such as mussels and bass and other game fish, that generate billions of dollars in economic activity each year through commercial and recreational fishing.

HABITAT AND THE ECONOMY. Natural flow patterns sustain scenic natural lands and habitat for wildlife. Across the U.S., outdoor recreation generates $887 billion in revenue, including $120 billion in state and federal taxes, and it supports 7.6 million jobs.

In a 2018 bi-partisan survey, 72 percent of American voters reported being seriously concerned about the health of our nation's rivers and lakes.

The Importance of Flows

While water development projects have brought benefits to society, the unsustainable use and management of water has created a crisis situation for our rivers, lakes and wetlands. Today more than 40 percent of our fish species and 70 percent of our fresh water mussel species are listed as imperiled, and many commercial fisheries have been decimated.

Too often, dams, levees, over-extraction of water and floodplain development disrupt natural flow patterns that are critical to river health. Seasonal patterns of high and low flows support animal and plant lifecycles, preserve water quality and maintain diverse habitats. By artificially stabilizing river levels across the seasons, dams can set off a domino effect that can be damaging for plant, fish and animal species, whole ecosystems and the diverse array of benefits they provide to people.

With just 2 percent of our nation's three million miles of rivers and streams still free-flowing and undeveloped, the survival of our freshwater systems hinges on our ability to reduce the impacts of dams on nature.

Prescriptions for River Health

In 2002, The Nature Conservancy and the U.S. Army Corps of Engineers—the largest water manager and hydropower producer in the nation—launched a collaborative effort to find more sustainable ways to harvest goods and services from rivers. Since then, the Sustainable Rivers Program (SRP) has grown to a Corps "Program" that now includes 66 federal dams on 16 rivers in 15 states.

Through the SRP, the Conservancy and the Corps are assembling state-of-the-art research on the rivers' unique flow requirements and then creating dam operating plans that achieve environmental flows—scientific prescriptions for the timing and level of water flow that must occur downstream of dams in order to revive and sustain critical ecological functions and habitat for species.

Paddling and fishing are popular activities on Kentucky's Green River. © Mike Wilkinson

Prescriptions for River Health

In addition to providing practicable guidance to dam operators, environmental flow prescriptions can serve more broadly as blueprints for restoring and maintaining river health.

For example, with flow prescriptions as a guide, the Conservancy has also begun acquiring flood-prone land along certain SRP rivers. These investments enhance flood protection for communities downstream, preserve wildlife habitat and provide the Corps with more flexibility to implement healthy flow patterns at dams.

This two-pronged approach—adjusting dams and increasing floodplain protection–improves river health under existing circumstances and helps make rivers stronger and more resilient in the face of diverse, growing pressures, including rising demand for water and the uncertain impacts of climate change.

Potential for Nationwide Impact

Along with on-the-ground work at the 16 pilot SRP rivers, the Conservancy and the Corps are conducting joint training courses, research projects and staff exchanges and have collaborated to develop innovative water management software. The two partners have engaged dozens of additional public and private partners around the nation—including state and federal resource agencies, academic institutions and NGOs—to share information and resources.

The true potential of the Sustainable Rivers Program is the applicability to the more than 600 dams, 403 million acre feet of water storage and over 53,000 miles of river impacted by Corps dams. The SRP currently invests in 5,111 of river miles regulated by the Corps. With the knowledge gained from the SRP, it could be expanded ten-fold to improve operations affecting all 53,00 miles of river.

Enabling the Army Corps of Engineers to universally implement the innovative practices developed through the Sustainable Rivers Program offers the opportunity to turn exceptionally modest investments into sweeping, lasting benefits for our rivers and the communities, economies and wildlife that depend on them.

Case Studies

GREEN RIVER, KENTUCKY

In 2006, the Conservancy and the Corps designed an innovative water-release schedule for the Green River Dam that created more natural patterns of water flowing from the reservoir. Benefits of these modified operations included extension of the summertime recreational use; enhanced flood protection; and well-documented benefits to sensitive freshwater mussel species found downstream of the reservoir and within Mammoth Cave National Park.

Recently, several old lock and dams within the Green River basin were deauthorized by Congress and set on a path for removal. In April 2017, Green River Lock and Dam #6 was removed as part of a collaborative effort by many interested stakeholders. Plans are now being formulated to remove additional deauthorized dams within the basin. Removal of obsolete dams, especially in SRP rivers, provides benefits of improved natural flows that reach farther into newly free-flowing sections of the river.

BILL WILLIAMS RIVER, ARIZONA

The Bill Williams River corridor in western Arizona provides vital habitat for a diversity of plants and animals, including nearly 350 species of birds. With hundreds of thousands of people engaging in bird watching in Arizona each year, protecting bird habitat is a matter of tourism economics as well as conservation.

Scientists monitoring implementation of the environmental flow prescription at the Corps dam on the Bill Williams have observed the regeneration of a cottonwood-willow forest that flanks the river. These stands of cottonwood-willow, which are vital habitat for a broad array of bird species, are some of the best remaining in the Lower Colorado River Basin.

Also, indications are that adjusted water release schedules are providing cottonwood and willow trees a competitive advantage over invasive tamarisk. This has benefits for wildlife and improves a variety of recreational values along the river corridor.

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