

Give rivers room to heal

By SANDRA POSTEL

AMHERST, MASS.

THE agreement announced last month to tear down two dams and bypass another to give wild Atlantic salmon a comeback chance in Maine's Penobscot River heralds a new approach to river management that this country – and the world – urgently needs.

Negotiations among a private hydroelectric power producer, conservation organizations, and government officials have produced a decision that is good for fish, anglers, local economies, and the river itself with minimal impact on energy production. Such a sensible rebalancing of priorities on a larger scale could go a long way to restoring health to the planet's ailing rivers.

The disruption of natural river flows – especially by dams and diversions – is causing a worldwide decline in fish populations, aquatic habitat, and overall river health. Rather than flowing to the natural rhythms of the hydrologic cycle, most rivers of the industrialized world are turned on and off like a bathroom faucet. At least 45,000 large dams (15 meters or more high) now block the world's rivers, up from 5,000 in 1950

– an average completion rate of two large dams a day for half a century. Along with hundreds of thousands of smaller dams, like those on the Penobscot, these projects have boosted electricity output, food production, and water supplies, but their ecological downsides have also been great.

Scientists now know that a healthy river requires more than just reasonably good water quality and some minimum flow in the channel. To support the variety of life within them and the ecological work they perform, rivers need flow patterns that resemble their natural ones. This is because over the millenniums, freshwater fish, insects, birds, and other creatures have become adapted to these natural flow cycles. They migrate, spawn, nest, and feed when nature cues them to do so. Their life cycles depend on habitats that those flow patterns create. For instance, high flows flush silt out of the gaps between channel cobbles, opening up space for tiny salmon fry to occupy. Low flows, at the right time, may expose sandbars that water birds need for nesting.

It is the natural variation in flow that produces the mosaic of habitats that freshwater life depends upon. But it is precisely this natural variation that many of our dams and reservoirs are designed to eliminate. As a result, river life is gravely at risk: At least 20 percent of the earth's 10,000 freshwater fish species are at risk of extinction or are already extinct. In the US, 37 percent of freshwater fish species are at risk of extinction, as are 36 percent of amphibian species and 69 per-

cent of freshwater mussel species.

A complete return to natural river flows is not practical. Our economies are too dependent on the dams and other infrastructure we have put in place. But a rebalancing of river management to better meet nature's flow requirements while still meeting human needs is possible and sensible. Indeed some degree of flow restoration is already taking place in more than 350 rivers around the world. Dams are being taken down, levees are being set back to reconnect rivers with their floodplains, conservation practices are enabling some water to return to river channels, and dam operations are being modified to recreate predam river flow patterns and critical habitats.

The good news coming from these restoration efforts is this: When given a chance, rivers do heal. Within six years after the

restoration of more natural low flows below Thurlow Dam on Alabama's biologically rich Tallapoosa River, fish diversity had increased from 25 to 46 species and the overall number of fish climbed by 70 percent. Just a year after officials in Thailand opened the gates of a large dam on the Mun River, a tributary to

the Mekong, more than 150 species of fish reportedly returned to the river. On the Penobscot, conservationists are justifiably hopeful that after the dismantling and decommissioning of the dams, Atlantic salmon will rebound rapidly to 10 times their present depleted number.

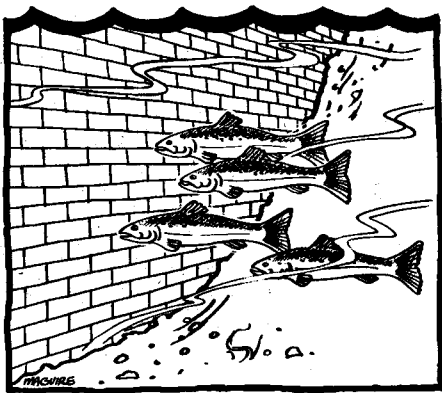
SUPPORT for such efforts is crucial. But so are policies that foster a larger shift in river management toward the restoration and protection of river health. A good place to start is for governments to request that public agencies responsible for dam operations incorporate improvements in ecosystem health as an explicit goal to be balanced with hydropower, flood control, irrigation, and other economic purposes.

In the US, for example, more than 1,900 dams – many of them large – are managed by federal agencies, primarily the Army Corps of Engineers and the Bureau of Reclamation. Most of these dams were built long before concerns about endangered species, depleted fish populations, and lost ecological health. It is time to align their operation with contemporary values and scientific knowledge.

Rivers do heal – but they need to be given a chance to do so. With so much freshwater life facing risks of extinction, the window of opportunity to provide that chance will not be open for long.

■ Sandra Postel is coauthor, with Brian Richter, of *Rivers for Life: Managing Water for People and Nature*, recently published by Island Press.

A trend to balance nature's flow and modern human need has begun. Make it widespread.



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