

OPINION & COMMENTARY

Nature will always have her way

Flooding can't, and shouldn't, be completely eliminated

By CHRISTOPHER ORSINGER
and STAN GREGORY

This week's flooding in the Willamette River basin is a testament to a river's ownership of its floodplain. We may borrow floodplain lands for human uses, but the day will always come when the river returns to reshape what it created.

For those who suffer its destructive forces, a flood is a tragedy. But paradoxically, major floods help restore a river's health, clean its sediments, create critical aquatic and streamside habitat, exchange nutrients between the river and its floodplain and renew its fisheries.

Throughout recent history, humans have attempted to "harness" and control rivers for our use. Starting in 1894, the Army Corps of Engineers removed huge log jams from the Willamette to improve river navigation. Now we clear channels to quickly drain water off the land and provide safer recreational use of the river.

To protect farms and other lands from flooding, we have built levees and rock revetments along the banks. Generally, this constricts the river into a single channel, rather than allowing the more natural "braided" or multiple channels that are a signature of a healthy river.

But the complex channels and massive log jams provided important habitats for salmon, trout, beaver and numerous aquatic organisms and wildlife. And while getting the water off the land faster may diminish one aspect of flooding, it rapidly delivers the water to this smaller channel and creates higher peak flows, which can intensify impacts downstream.

Dams were our next big effort. The Willamette's big floods in 1943, 1945 and 1948 flooded more than 350,000 acres of land. By 1950, the Corps of Engineers issued a report recommending that 20 flood-control dams be constructed.

Thirteen dams were actually built on various tributaries to the Willamette, providing a degree of flood protection to about 27 percent of the basin. The corps estimates that its Willamette dam system is capable of

containing a 2- to 5-year flood, that is, one that occurs with that frequency. Larger flows, such as those occurring this week, will continue to exceed the capacity of our dam system.

But building more dams is not the answer. Creating "natural valley storage" is the least-cost solution for nonstructural flood control. Establishing areas where the river can safely interact with its floodplain would produce flood control and other benefits.

For example, the corps studied the means for controlling flood damage in the Charles River Basin in Massachusetts. It found that protecting wetlands in the upper watershed, which absorbed and slowly released flood waters, was the most cost-effective means to protect the highly urbanized lower watershed.

Eventually, the agency bought wetland conservation easements for \$8 million, instead of spending an estimated \$100 million to build dams or other structures to provide the same protection.

Given the increasing population and land values in the Willamette Valley, Oregonians need to explore such options as quickly as possible. Private groups, such as Rivers Network, work to acquire riparian lands for such purposes. Public agencies, such as the corps, could incorporate this function as part of their role in managing the region's rivers.

High-water events provide other important benefits. Throughout the world, fisheries of major rivers are known to be most productive in years following major floods. Fish have experienced floods in the Pacific Northwest for more than a million years, and their life histories allow them to use "refugia" (areas protected from flood forces) to rebound quickly.

Floods clean out silted habitats, scour deep pools, deposit new productive riffles and create complex accumulations of large wood. The floods also bring leaves, needles, wood and dissolved nutrients into the river from the adjacent floodplain and upland forests. Soon after flooding, aquatic communities have access to new habitats and increased food supplies.

Floods may initially reduce fish populations, but survivors reproduce and their offspring use the renewed habitat and food resources.

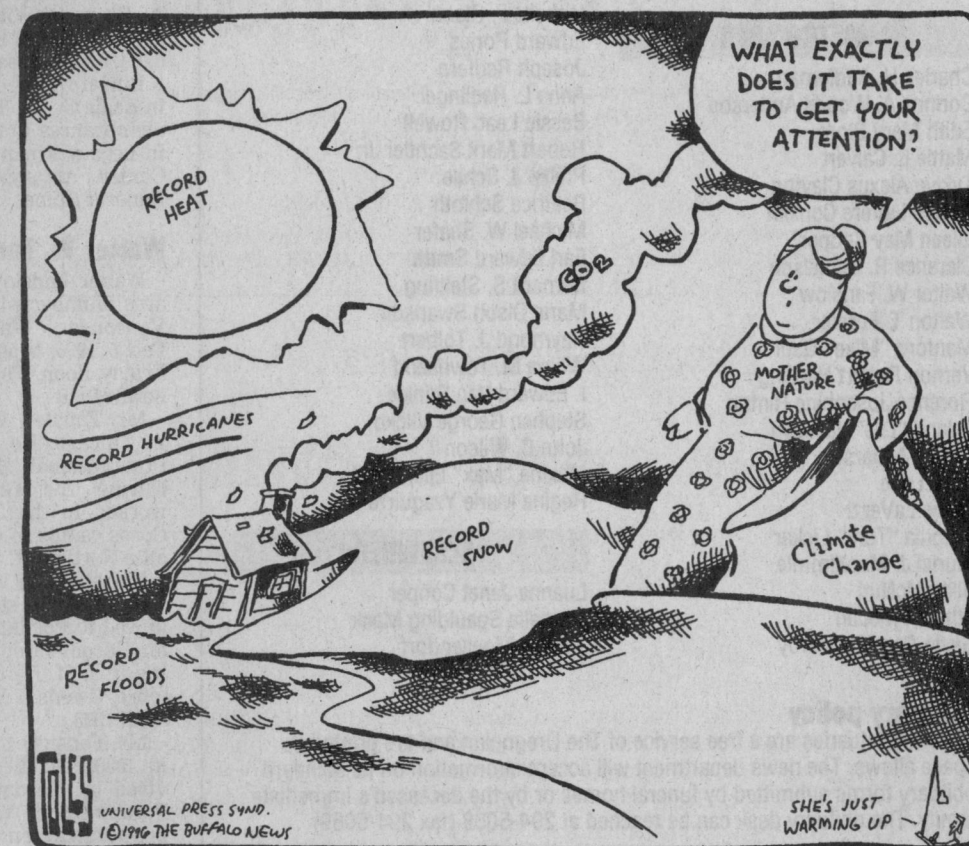
Over the last two decades, resource agencies have committed millions of dollars to restore degraded salmon habitats throughout the Pacific Northwest. Many of

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these projects involve placing large logs and boulders back into streams to scour deep pools or store gravels for spawning. While these efforts are important elements of a larger policy to maintain and restore healthy ecosystems, the floods occurring in Oregon now are moving more gravel, scouring more pools and creating more debris dams and complex habitat than all our human efforts can accomplish over the next century.

One of our major challenges after a flood is to recognize the ecological benefits to the river ecosystems and minimize the loss of these benefits as we repair the damage to human property.

Nationally, the losses due to flooding in lives and property (in constant dollars) has increased exponentially. But this is not because floods are any larger or more frequent; rather it is because human development in floodplains has increased and rivers inevitably return to their floodplains. Taxpayers currently subsidize floodplain development by underwriting federal flood insurance. Land-use regulations can do more to discourage development in floodplains.



In the future, we have an opportunity to protect Willamette River communities from future flooding by establishing conservation easements and acquiring and restoring floodplain lands where this is appropriate and cost-effective.

Such policies and practices would both reduce future losses from floods and simultaneously enhance aquatic ecosystems and riparian forests, fisheries and wildlife habitat, recreational uses and water quality for the many who use the Willamette River.

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