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Local environmental restoration organizations collaborate on climate change

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Sonoma County can be proud of its leadership role as the first in the nation for all cities and the county to set meaningful goals and take significant actions to reduce greenhouse gas emissions. But climate change is already happening. Even if we meet objectives such as 350 parts per million CO₂ in the atmosphere, the lag time for the climate to correct itself could take decades.

What can environmental restoration practitioners do to adapt to a changing climate? That was the overarching question at a recent three-day conference hosted by the Laguna Foundation and attended by environmental organizations, government resource agencies, scientists, restoration professionals and elected officials. It was agreed that the preservation and restoration of riparian corridors (streamside ecosystems) is a top priority.

Previously, rain and stormwater were viewed as an inconvenience to be moved out of town as fast as possible. This strategy was misguided for three main reasons. First, today's rain and stormwater is tomorrow's groundwater, upon which literally tens of thousands of wells in Sonoma County depend.

Agricultural and developed lands were graded and drained to convey water to the nearest creek as quickly as possible. Many urban streams were channelized, straightened, and stripped of significant vegetation to increase flows. This "pave and pipe" approach limits the infiltration of water into the ground for future use. Second, increased stormwater discharge and stream velocity leads to erosion and flooding downstream. Not only does flooding cause costly damage to downstream communities like the lower Russian River, but loss of soil is a serious problem. Once eroded, soil sediments are on a one-way trip to the ocean, polluting drinking water, diminishing aquatic habitat, and clogging streams along the way.

Third, biodiversity leads to resilience and stability. Healthy riparian systems are among the most biodiverse habitats, harboring a wide variety of plants, insects, amphibians, birds and mammals. To maximize tillable land, vineyards often remove vegetation from and narrow riparian corridors, eliminating habitat for beneficial insects. When the glassy-winged sharpshooter arrived carrying Pierce's disease, there was no natural control available from native insects, and the resulting damage costs millions of dollars to the industry and taxpayers.

How will restoring and protecting riparian corridors help to mitigate for, and adapt to, climate change?

Besides reducing greenhouse gas emissions, we need to reduce the carbon already in the atmosphere. By planting trees, shrubs and perennial grasses, CO₂ is absorbed and held (sequestered) in plant tissues both above and below ground. Deep, penetrating root systems increase the ability of water to infiltrate and become groundwater. This means that less water has to be pumped in from outside the area, reducing energy costs and carbon emissions. More water stored in the soil means less water is needed for irrigation. Root systems hold the soil in place, reducing erosion and loss of topsoil, and improving water quality. This helps protect against property and infrastructure damage during flood events that are expected to become more severe. Riparian understory plants filter out sediment in surface water flows, further improving quality of drinking water supplies and aquatic habitats.

Shady tree canopies reduce water temperatures, essential for native fish such as salmon and steelhead, and other aquatic organisms. Cooler water lowers bacteria levels, already a problem for drinking water supplies and recreational usage, like swimming, in many of our streams. Healthy, contiguous riparian

corridors will allow animals to migrate and seek out climatic conditions necessary for their survival. The potential exists to engage thousands of private landowners, bringing them willingly into better land and water use practices.

The good news is that the local environmental community is poised and eager to take on this significant challenge. The Sonoma County Water Agency owns and manages over 100 miles of stream channels and has a long-term goal of developing tree canopy over the entire extent. The Agency has access roads next to many of their streams and is making many of these available as pedestrian and bike paths, offering transportation and recreation opportunities free from carbon emissions.

At the conclusion of the recent conference, a working group of restoration professionals was formed to increase awareness of the benefits of riparian restoration and to further collaborations that will increase efficiency and effectiveness in these difficult economic times when funding is scarce.

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