Point Blue Conservation Science

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New Research: Streamside forests store tons of carbon

Restoring degraded forests is a critical strategy for addressing climate change given the potential for forests to store significant amounts of carbon, both in the trees and the soil. However, despite extensive efforts to restore streamside forests globally, the carbon storage potential of these forests is often overlooked. In a new effort from Point Blue Conservation Science and Santa Clara University, researchers led by Dr. Kristen Dybala compiled carbon storage data from 117 publications, reports, and other data sets on streamside forests around the world. This inquiry is the first of its kind to evaluate global results on the potential carbon storage benefits of streamside forests.

Researchers found that the average amount of carbon stored in mature streamside forest rivals the highest estimates for any other forest type around the world, such as tropical or boreal forests. These estimates vary depending on climate, but the average values for mature streamside forests range from 168 to 390 tons of carbon per acre in the trees alone. Researchers also found that, on average, soil carbon can be expected to more than triple when converting from an unforested site to a mature streamside forest. However, as with other forest types, it can take decades for these changes to go into full effect, on the order of 40-90 years for the carbon stored in trees (depending on climate) and more than 115 years for soil carbon.

“One of the most important things we found was that actively restoring forests by planting trees jump-starts this process,” said Dr. Dybala. “If you look at two forests, one planted and one regenerating naturally, the restored forest gains carbon in the trees at more than twice the rate of the naturally regenerating forests over the first ten years. After that point, however, the total amount of carbon stored is comparable.” This finding drives home the important role of restoring degraded streamside forests as a climate mitigation strategy.

Streamside ecosystems around the world have been severely degraded, and their large-scale restoration is a priority in many places, including California’s Central Valley and Brazil. Restoring these ecosystems is known to benefit water quality, habitat for fish and wildlife, and recreational opportunities like fishing and wildlife watching that help support local economies. These new

results demonstrate the substantial additional benefit of carbon storage, which should increase the priority of restoring and maintaining streamside forests.

Looking ahead, new tools and funding sources are emerging to help plan for and implement effective streamside forest restorations. Countries around the world have pledged to restore degraded forests under the Bonn Challenge, a global commitment to restore forests as a climate mitigation strategy. “As these countries strive to meet their goals, we hope restoring streamside forests will be a key part of their strategy,” says Dr. Dybala.

The article, “Carbon sequestration in riparian forests: a global synthesis and meta-analysis” was published on November 8th in the peer-reviewed journal *Global Change Biology* (DOI 10.1111/gcb.14475).

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About Point Blue Conservation Science:
Point Blue advances conservation of birds, other wildlife, and ecosystems through science, partnerships, and outreach. Our highest priority is to reduce the impacts of habitat loss, climate change, and other environmental threats while promoting nature-based solutions for wildlife and people, on land and at sea. Visit Point Blue at www.pointblue.org.