

Streams need trees to withstand climate change

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(PhysOrg.com) -- More than twenty years of biological monitoring have confirmed the importance of vegetation for protecting Australia's freshwater streams and rivers against the ravages of drought and climate change.

Researchers from Monash University, the Environment Protection Authority and the Arthur Rylah Institute for Environmental Research studied the effects of drought on Australia's fragile freshwater ecosystems using data collected in Victoria before, during and after the severe drought that lasted from 1997 until 2009.

The sustained monitoring allowed researchers to compare how sites with

differing levels of vegetation responded to sustained drought.

The research, published in *Global Change Biology*, showed streams with extensive surrounding vegetation, whether natural or re-planted, were healthier, both in terms of water quality and biodiversity. These sites were much more robust in the face of drought than sparsely vegetated areas.

Dr. Ross Thompson, of the Australian Centre for Biodiversity at Monash University's School of Biological Sciences, said the results provided clues as to how Australia's waterways and surrounding areas would respond to [climate change](#).

"Changing climate is a reality, and even with current efforts to manage carbon emissions it will take decades to reverse the patterns of warming which we are already seeing. It's incredibly important to understand how we can better manage the environment in the face of this challenge," Dr. Thompson said.

Climate change is expected to cause reduced river flows through decreased or more variable rainfall. Extreme weather events, such as drought are expected to become more frequent and severe. This would be exacerbated by increasing agricultural demands for water.

Dr Thompson said reduced river flow would impact water quality, aquatic habitat, and the ability of organisms to move around in an ecosystem. These effects would likely be aggravated by human activity, and together with rising water temperatures would have a negative impact on biodiversity.

"This study shows that replanting vegetation around streams not only acts to absorb carbon from the atmosphere, helping us arrest climate change in the future, but may also work now to protect biodiversity through

providing cool refuges and protecting habitat in warming landscapes," Dr. Thompson said.

The research was supported by an Australian Research Council Linkage grant, with Monash University working in partnership with state and regional policy and management agencies.

Provided by Monash University

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