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Why Climate Change Makes Riparian Restoration More Important than Ever

Climate change will dramatically alter the context of natural resource management. Specifically, historical reference conditions may no longer serve as benchmarks for restoration success. The inability to return to historical reference conditions may foster a "why bother?" attitude toward ecological restoration.

In a paper published in *Ecological Restoration*, we have evaluated the contributions that protecting and restoring rivers and their unique vegetation can make toward preparing these ecosystems for climate change. We also make recommendations for how restoration practitioners can accelerate and enhance the capacity for restoration to prepare riparian ecosystems for climate change.

We propose that riparian ecosystems can contribute to ecological adaptation to climate change because they are naturally resilient, provide habitat connectivity, link aquatic and terrestrial ecosystems, and create thermal refugia for wildlife.

However, because riparian systems and the projected impacts of climate change are highly variable geographically, there is a pressing need to develop a place-based understanding of climate change threats to riparian ecosystems. Restoration practitioners should consider how they can modify practices to enhance the resilience of riparian ecosystems to climate change.

Basic challenges confronting restoration practitioners today will remain important in the future. Invasions of non-native species, facilitated by climate change and movements by people, will continue to occur. Altered hydrological regimes may increase the risk that restoration strategies that worked in the past will fail in the future.

Despite numerous challenges, the potential for riparian restoration to enhance ecosystem resilience to climate change makes it imperative that we continue restoring riparian ecosystems and developing the science that supports this work.

Management Implications

- Restoring and protecting riparian areas can prepare ecosystems for climate change because these areas provide habitat connectivity, link aquatic and terrestrial ecosystems, and create thermal refugia for wildlife.
- Restoration strategies that consider climatic uncertainty may increase the odds of short-term success and maintain important evolutionary processes.
- Restoration practitioners and ecologists must provide decision makers with information on how changes in water use will influence riparian restoration efforts.
- Restoration of private lands will contribute to the connectivity, size, and quality of riparian areas at spatial scales appropriate to the challenges of climate change.

Seavy, N.E., T. Gardali, G. H. Golet, F. T. Griggs, C, A. Howell, T. R. Kelsey, S. Small, J. H. Viers, J. F. Weigand. 2009. Why climate changes makes riparian restoration more important than ever: Recommendations for Practice and Research. *Ecological Restoration* 27:330-338 (open online at:

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