Rivers of Carbon = Rivers of Life

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Key Points

- The 'Rivers of Carbon' project works with landholders to connect and rehabilitate riparian corridors to achieve multiple benefits including biodiversity and carbon sequestration.
- Science and technical information complements landholder experience to create new knowledge about how to restore riparian zones to achieve optimal outcomes.

Keywords

riparian, rivers, restoration, carbon, biodiversity, sequestration, collaboration, communication, story

Introduction

Recent research reviewing the costs and benefits of a carbon economy for the conservation of Australian biodiversity concluded that the most important area of work to mitigate climate impacts and protect and conserve biodiversity, is to plant diverse, resilient native vegetation linking existing patches of remnant vegetation to create living corridors (Bradshaw etal). Riparian zones are ideal locations in the landscape to achieve these aims, they are contiguous, clearly identifiable, and often a part of the farm landholders are prepared to manage differently, within the context of their overall property plan.

Commencing in 2012, the 'Rivers of Carbon' project works with landholders to connect and rehabilitate riparian corridors to achieve multiple benefits, including biodiversity and carbon sequestration. The project is funded through the Australian Government's Biodiversity Fund and is managed by the Australian River Restoration Centre, working in partnership with Greening Australia Capital Region.

The context for the project is the emerging carbon economy, with incentives provided for landholders to plant trees that may later be used as carbon offsets or credits. Expanding biodiverse habitats is also important, with high recovery potential sites chosen within the Lachlan and Murrumbidgee River Catchments, and preference given to those that have value for threatened species (for example, Superb Parrot, Southern Pygmy Perch).

Why Rivers of Carbon?

Rivers are hotspots for biodiversity, encompassing both aquatic and terrestrial systems. A diversity of plants and animals such as trees, shrubs, grasses, native mammals, birds and fish are associated with rivers and riparian zones. A 'river of carbon' describes the sum total of carbon that is found and can be captured in rivers, riparian habitats and the terrestrial systems they connect with. As with the carbon cycle, 'rivers of carbon' is a dynamic concept that is influenced by the cycle of the river itself, the prevailing climate and the management practices in place.

To date 47 sites have been finalised covering 728 hectares and 103 kilometres of riparian zone. The Rapid Appraisal of Riparian Condition assessment tool is used at all approved sites to provide baseline information that we can track progress against over the life of the project. We also record other details to complement the Rapid Appraisal of Riparian Condition assessment, for example, stream type, stream class and bank profile. The landowner's goals for the sites are also recorded so that joint decisions are made about the work to be undertaken. This ensures landholder and project roles, responsibilities and expectations about the site are clear and unambiguous.

Once the works are planned and agreed upon, individual species lists for each site is developed based on pre-1750's vegetation (GIS mapped) and any remnants that are on site. Plants are chosen with regard to their position in the landscape and moisture availability. Planting tubestock is a key part of the Rivers of Carbon project, as many sites cannot be direct seeded due to high fertility, grass competition and accessibility. While single species plantations will do the job of sequestering carbon, an emphasis is placed on 'biodiverse carbon' by planting a mix of species to provide an additional array of ecosystem services such as habitat for native wildlife, a mix of native vegetation, a supply of food, leaves, litter and shade for aquatic animals, a reduction in soil erosion, and improved aesthetic, social and cultural values.

Sharing knowledge

The Rivers of Carbon project has a strong commitment to sharing knowledge, and to date we have developed a Technical Guideline entitled 'What is a River of Carbon?' that provides the theory behind the project, as well as a Fact Sheet and a 70 page Edition of the *RipRap* Magazine entitled 'Rivers of Carbon=Rivers of Life'. This edition features work from across Australia focusing on carbon, biodiversity, and ways to manage our riparian and wetland areas to obtain environmental, social and economic benefits. The Rivers of Carbon website also has a facility to enable anyone to register and upload content relating to biodiverse carbon and riparian restoration.

Story telling is another integral part of our project, and four of our landholders have shared their stories about being involved in the project. We enjoy working with landholders who are as passionate about their rivers as we are, but who also bring other goals and ideas about what they want to see happen along their river or stream. Though negotiation, we aim to get the best outcome for the environment, as well as on-farm sustainability and productivity. Everyone we work with has different motivations for being involved, from reducing stock mustering time, to gaining carbon credits, attracting more birds, reducing soil erosion and making the river a nicer place to be.

The case studies are on the Rivers of Carbon website that has a range of resources to enable people to learn from scientists and landholders about how to create and manage rivers and riparian areas for multiple benefits. We have produced the case studies in different formats so they are easy to read on the website, downloadable as pdfs, or available in hard copy through the ARRC Shop. You can also hear the landholders talk about the work they are doing, as they have kindly allowed us to record our interviews with them – they are available on the www.riversofcarbon.org.au website.

Conclusions

The Rivers of Carbon project brings together science, practice and experience to achieve environmental, economic and societal benefits by enhancing biodiversity and sequestering carbon. Incentives are provided to encourage landholder involvement and acknowledge their contribution at local and regional scales to mitigating climate change impacts. Communicating and sharing the knowledge gained through projects like Rivers of Carbon is vital if we are to continue to inspire and support people to value rivers and riparian areas for their ecosystem services, as well as the other, less tangible, but no less important, emotional, social and spiritual connections they provide.

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