# REFRESH

### **REFRESH – Riparian Forests can help mitigate climate warming effects in lowland temperate streams**

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Relatively short stretches of forest alongside streams may combat the negative effects of heating of stream water.

### **Synthesis**

Stream water temperature is predicted to increase with climate change and this will affect stream biotic assemblages and ecosystem functioning, threatening the implementation of the EU Water Framework Directive and Biodiversity Strategy 2020.



## What are the implications of global change for EU biodiversity and water related policies?

The results from REFRESH provide evidence for the **major benefits of riparian forests** as a potential response option for climate change adaptation within the context of EU biodiversity and water related policies.

Riparian forests provide numerous physical, hydrological and ecological functions, enhancing hydromorphological and ecological quality of streams and thereby contributing to the implementation of the **EU Water Framework Directive** and to the integration of climate change into the River Basin Management Plans. Furthermore, conservation and restoration strategies incorporating management of the riparian zone could contribute to combat biodiversity loss and meet targets of the **Biodiversity Strategy 2020**. Results from the REFRESH project conducted in five lowland temperate streams show that the presence of riparian forest has a cooling effect ranging from 1°C to 3 °C, depending on the reach length and canopy cover.

River restoration by planting riparian trees, combined with open reaches allowing the presence of aquatic plants, can be a useful adaptation measure to combat the negative effects of future warmer temperatures on freshwater life.





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#### Get in touch!

The key objective of REFRESH is to develop a framework that will enable water managers to design cost-effective restoration programmes for freshwater ecosystems. Visit the REFRESH website: www.refresh.ucl.ac.uk Kristensen, P. B., Kristensen, E. A., Riis, T., Baisner, A. J., Larsen, S. E., Verdonschot, P. F. M., Baattrup-Pedersen, A. 2013. Riparian forest as a management tool for moderating future thermal conditions of lowland temperate streams. Hydrology Earth System Sciences Discussion, 10, 6081–6106.

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