

Riparian areas to sustain freshwater life



The restoration of degraded riparian habitats will significantly contribute to halting freshwater biodiversity loss, to the delivery of good ecological status of water bodies, the provision of ecosystem services and to climate change mitigation

Multiple stressors in freshwater ecosystems

While freshwaters are essential for livelihoods due to the functions and services they provide, no other ecosystem has experienced such rapid and massive biodiversity declines due to the impact of multiple stressors. In Europe, freshwater biodiversity is severely threatened and many freshwater habitats remain in “bad” or “inadequate” condition. Further, more than half of surface water bodies are in less than good ecological status and will need restoration measures to meet the Water Framework Directive (WFD) objectives. Among the main stressors affecting surface water bodies in EU are pollution from diffuse sources causing nutrient enrichment (eutrophication) and hydromorphological alterations causing habitat degradation, which are related to catchment land use. The effect of some stressors could be exacerbated (e.g. warming and eutrophication acting along similar pathways) under climate change conditions. Riparian areas and associated ecosystems can be fundamental for reducing the adverse effects of multiple stressors in freshwaters.

Multiple benefits of riparian areas

Riparian areas are created by transitional habitats between the terrestrial and aquatic systems providing a wide range of ecosystem functions and services. Some examples are enhanced habitat connectivity and heterogeneity; water purification by retention of nutrients and other pollutants; sediment retention and bank stabilization offering a higher capacity for protection of extreme flood events; and cooling of water temperature by shading. However, the increased conversion of riparian areas to agricultural land has negative effects on the freshwater environment. Research results showed at the Water Lives Symposium demonstrated how intensive land use along rivers is the most important stressor limiting the achievement of good ecological status and diminishing biodiversity in most freshwater ecosystems. Biodiversity and ecological status of streams and rivers increase when well-developed riparian areas are present.



Furthermore, when considering climate change, results indicated that relatively short stretches of riparian forest alongside streams can combat the negative effects of increased temperature on stream water. The EU has recognized the benefits of riparian areas, e.g. in the recently published Blueprint to safeguard Europe's water resources it is stated that '*pressure from agriculture and flood protection can be mitigated or prevented by developing buffer strips and using green infrastructure such as the restoration of riparian areas, wetlands and floodplains*'. Additionally, they are an important component of the Green Infrastructure (GI), playing direct or indirect roles across different policy areas, such as biodiversity and nature (e.g. Biodiversity Strategy 2020), agriculture (i.e. CAP), and climate change (e.g. EU Strategy on Adaptation).

Action is needed: advocating for riparian restoration

Successful restoration measures need to integrate conservation and management programmes at the catchment scale. One key message from the symposium was the need to further reduce nutrient loading in the future considering expected climate change, with clear implications for the catchment land use. Given the evidence of the multiple benefits provided by riparian areas, their restoration should be promoted within the River Basin Management Plans. This would offer win-win solutions by enhancing ecological quality and ecosystem services (e.g. natural water retention measures for climate change adaptation), but also would encourage synergies with other sectorial policies such as greening of the CAP (e.g. the identification of ecological focus areas). Considering that time lags of 10-20 years are expected to observe a recovery of freshwaters from the impact of multiple stressors, riparian restoration is urgently needed and should be a priority in management actions.

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Additional information

WaterLives Symposium video streaming

www.ufz.de/waterlives/index.php?en=32365

WaterLives Symposium presentations

www.ufz.de/export/data/437/56373_01_Hering_MultipleStressors.pdf

www.ufz.de/export/data/437/56490_04_Verdonschot_ImpactsofClimare%20and%20Iand%20use.pdf

www.ufz.de/export/data/437/56383_05_noges_guiding%20principles%20for%20management%20of%20freshwaters%20%28recommendations%20%5Bkompatibilit%C3%A4tsmodus%5D.pdf



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www.waterlives.eu

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www.freshwaterbiodiversity.eu
www.refresh.ucl.ac.uk