

■ **A critical review of catchment-scale stream rehabilitation programmes**

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Abstract:

The development of catchment-scale stream rehabilitation programmes in many parts of the world marks a shift from the application of reach-based engineering principles towards an adoption of ecosystem-centred, adaptive and participatory approaches to river management. From a biophysical viewpoint, this represents recognition of the importance of the inherent geodiversity of aquatic ecosystems and the benefits that are gained through enhancing natural recovery mechanisms. As this approach to river management matures, it is important that its key elements and assumptions are subjected to critical appraisal. In this paper, the main features of contemporary catchment-wide programmes are examined through a review of pertinent literature and through examination of various case studies from North America, Europe, Asia and Australia. Emerging challenges and tensions include those of generating an authentic and functional biophysical vision at the catchment scale, of developing a proactive adaptive management approach, of achieving genuine community participation and of integrating biophysical and social factors in a transdisciplinary framework. Issues of scale, natural variability and complexity must be addressed in meeting these challenges.

Keywords: ADAPTIVE MANAGEMENT; CATCHMENT; COMMUNITY PARTICIPATION; ECOSYSTEM MANAGEMENT; INTEGRATION; VISION; STREAM REHABILITATION

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