

## **RIPARIAN AND STREAM ECOLOGY**

### **8.1 Habitat assessment using the River Styles™ methodology.**

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#### **Extract**

Assessments of available habitats along river courses, and how these are affected by variability in river discharge, are required for setting environmental flow allocations. If abstraction or storage of water is planned or ongoing within a catchment it is essential to understand the sustainable thresholds for maintaining functional habitat diversity so that the effects of management practices on ecological processes can be predicted. Traditional methods of predicting changes in habitat availability as a result of changes in flow regime assume fixed-bed morphology, whereas, in practice, geomorphic processes of sediment deposition and transport are tightly linked to discharge fluctuations (Carling 1995).

Therefore, habitat availability is unlikely to be a simple function of wetted area. A system of habitat assessment that is more closely linked to geomorphological processes, while maintaining ecological relevance, may help to overcome some of these shortcomings. Numerous studies have investigated the morpho-dynamics of modern and historical river systems but rarely has geomorphological research successfully linked the temporal and spatial variations in stream power and sediment flux to ecological condition. AS McEwen et al. (1997) suggest ‘. . . there is a need for an integrated and well-structured assessment scheme which both accurately records and interprets morphological characteristics, and reinforces the interrelationships between geomorphology and ecology in river system evaluation.’

Geomorphological processes operating at a range of spatio-temporal scales determine the physical structure of a river system, providing the physical template on which ecological processes occur (Frissell et al. 1986). Changes to the geomorphic structure and stability of rivers will inevitably affect their ecological functioning, for example by influencing the availability of instream and floodplain habitats, the structure and function of riparian vegetation, and the production and transport of nutrients and organic matter (Brierley 1999). The principle aim of the research presently being undertaken by the Rivers Group coordinated by Dr Gary Brierley at Macquarie University is to examine the relationship between River Styles™ and the ecological structure of fluvial systems within an Australian context. The project will initially focus on analysing intact or relatively undisturbed River Styles™ across coastal New South Wales.