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BRIDGES

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Forest management practices based on emulation of natural disturbances (END): implications for aquatic ecosystems

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Emulation of natural disturbance (END) strategy is a rising paradigm for forest management (Perera et al. 2004, Long 2009), but the implications for aquatic ecosystems have not been assessed or synthesized. END in forestry has implications for aquatic ecosystems because of strong land–water linkages among watersheds, riparian forests, and receiving waters, and because some intentional near-water logging will be encouraged to emulate natural riparian forest disturbances. This *BRIDGES* cluster is intended to promote an exchange of ideas on how, why (or why not), when, and where to apply END in riparian forests. The authors of articles in this cluster have embraced the concept of applying END to riparian forest management, but recognize that many uncertainties remain regarding actual applications and their outcomes. Kreutzweiser et al. (2012) introduce the concepts of END and provide a theoretical basis for use of intentional watershed and riparian disturbance by forest managers to emulate natural disturbances and renewal processes that sustain aquatic habitat complexity and ecosystem integrity. Richardson et al. (2012) offer an historical perspective on shoreline forest management in North America. They provide the context for rethinking the use of standard riparian buffers in forestry and highlight the need for field-derived models and guidance for site-specific riparian management. Natural forest disturbances as drivers of aquatic ecosystem sustainability are examined by Moore and Richardson (2012), who compare fire as a natural disturbance agent and riparian forest harvesting. They show that reasons for some riparian logging may be compelling in some areas, but that the catchment and landscape contexts will have to be considered when deciding whether to log riparian zones. This need for multiple considerations is further described by Naylor et al. (2012) as they illustrate the use of emergent science, applied ecology, and a decision support system to develop new directions for riparian forest management in the context of END. They end by offering guidelines for careful riparian logging. Sibley et al. (2012) bring these perspectives together into a synthesis and provide some guiding principles and ways to move toward integrating END with watershed and riparian forest management. They discuss some shortcomings and uncertainties and suggest that the application of END to watersheds should include development of ecologically relevant guidelines and policies set in the context of disturbance-ecology principles and adjusted by insights gained via empirical applications and adaptive management.

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