

# Freshwater Science

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## Forest Management Practices Based on Emulation of Natural Disturbances (END): Implications for Aquatic Ecosystems

Five papers in this BRIDGES cluster explore the implications for aquatic ecosystems of emerging forest management guidelines that use intentional riparian (shoreline) logging to emulate natural landscape disturbance patterns. Key points include:

- Emerging forest management guidelines in North America based on the emulation of natural disturbances (END) promote some degree of forest harvesting closer to water than conventional riparian buffers previously allowed. Management by END has implications for the protection of aquatic ecosystems and their resources.
- Land/water linkages and general disturbance theory suggest that periodic watershed and riparian disturbances may be required for long-term sustainability of aquatic ecosystems ([Kreutzweiser et al. 2012](#)), yet conventional forest management usually defaults to fixed-width riparian buffers with little empirical testing of their effectiveness ([Richardson et al. 2012](#)).
- Many impacts of riparian harvesting are qualitatively similar to riparian wildfire (except in-stream wood recruitment is reduced after harvesting), but configurations for riparian buffers under END will need to consider natural patterns and frequencies of disturbances at multiple scales ([Moore and Richardson 2012](#)). These and other considerations are demonstrated in Ontario's new riparian forest management direction where emerging science, applied ecology, and a decision support system were integrated to guide riparian management under END ([Naylor et al. 2012](#)).
- Further applications of END should include refinement of guidelines set in the context of disturbance-ecology principles and should be empirically tested and adjusted by insights gained ([Sibley et al. 2012](#)).



Forest harvesting in a riparian area to emulate natural shoreline disturbance patterns in the boreal forest of northern Ontario.

### ABOUT THE AUTHORS:

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