

Abstracts

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Wood in Landscapes and River Networks

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Landscape-level processes influence the form and dynamics of river networks, channel geomorphology, hydrology, and riparian plant communities. Interactions between these landscape elements shape the dynamics of wood at levels of reaches, basins, and entire river networks. Many of the previous papers presented at this conference on Wood in World Rivers describe the physical processes and disturbance that influence patterns of wood in streams and riparian areas. Collectively, they temporally and spatially shape patterns of wood across river networks and landscapes. At any point in time, abundances of wood vary longitudinally along a stream, creating an overall distribution of conditions that reflects the multiple attributes of local reaches. Landscape concepts of wood dynamics require consideration of both local and network patterns and processes.

Landscape ecology has recognized the major role of episodic disturbance processes on ecosystem structure and functions. Disturbances in streams and riparian areas, such as floods, storms, fires, landslides, and earthquakes, deliver large volumes of wood to channels and redistribute existing wood. Such disturbances interact along river networks to alter subsequent processes and modify site conditions that determine future mechanisms for delivering or retaining wood. Most studies have focused on local patterns of abundance and distribution, but patterns and processes across landscapes have received little attention. Interactions of processes and landscape scales are exceedingly scarce.

Ecologists and geomorphologists have explored biophysical processes that determine patterns and functions of wood in streams, rivers, and estuaries. Much less attention has been devoted to the legacies of past management policies. Human policies on river management change as rapidly or more rapidly than physical conditions and riparian community structure. The history of land use practices leaves a major imprint on the landscape, and in many regions determines patterns of wood in streams and river to a far greater degree than the natural biophysical processes. One of the important areas for future research and landscape analysis is the consequence of the interaction of historical patterns of land use and the temporal and spatial dynamics of biophysical processes that determine abundances and distributions of wood across the landscape.