Why the Trilogy Matters: Hydrology, Geomorphology & Ecology

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It is only in recent years that the restoration profession has begun to recognize the trilogy that links hydrology, geomorphology and ecology. Understanding the fundamental nature of this trilogy is essential to the effective restoration of all streams and wetlands. All three factors must be respected if any project is to be successfully planned, implemented, and the results assessed. This talk will explain how the trilogy functions and its application to any restoration project.

Hydrology focuses attention on the *availability* of water. In a project, there is no control over the *amount* of water available to work with or the *timing* of when it arrives. The only thing that can be altered is the *duration of time* that water is available. **Geomorphology** concerns the source of sediments, including their nature, transport, size, and deposition. **Ecology** highlights the way in which plant and animal species interact with the site and each other.

The lesson of the trilogy is that altering any one factor affects all the others. Changing the species composition and abundance (**ecology**) changes the water within an affected channel (**hydrology**), which changes the erosion or deposition of sediments (**geomorphology**). Any pressures affecting one factor will alter the others. To be an effective restorationist, it is essential to be ever-mindful of the interactions linking all three factors.

Although the idea of the trilogy is straightforward, the implications are profound. It is still common for many professionals to address the three factors in isolation. If restoration projects are to be effective, it is imperative that all professionals learn to think in terms of the trilogy**.**
The value of this knowledge will be demonstrated by providing examples of projects undertaken by the author over the past three decades.

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