

Hydrological Restoration of Degraded Grasslands in Arid and Semi-Arid Communities

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We live in the Anthropocene. The entire surface of the earth has been impacted by human activity and our land management decisions. In this context, most of the grasslands in arid and semiarid regions are experiencing severe and continuing degradation. This work describes the changes European culture has made to the landscape of northern Mexico and the Southwest United States and how this has drastically altered the hydrologic response to rainfall intensities typical of this region. It explains the prime causes of the deterioration of grasslands in semi-arid zones, identifies systemic strategies to address these causes, and presents several basic landscape intervention techniques that can help restore hydraulic function to these ecosystems. These include the restoration of historic flow paths, road drainage with rolling dips, Induced Meandering using post vanes to restore eroded stream banks, and one-rock-dams to arrest downcutting in small, incised tributaries.

Restoration is difficult; therefore, it is imperative for a project to identify and remove the root cause of degradation so that we don't waste time. The effects of these techniques are documented photographically. The interventions and management guidelines presented in this paper can improve grassland hydrology, conserve soil resources, and have a large potential to reduce the vulnerability of ecological communities to droughts and floods.

Published originally in Spanish (*Restauración Hidrológica de Pastizales Degradados en Comunidades Áridas y Semiáridas*) in the Mexican journal **Vivienda y Comunidades Sustentables** in 2019 and recently translated into English.

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