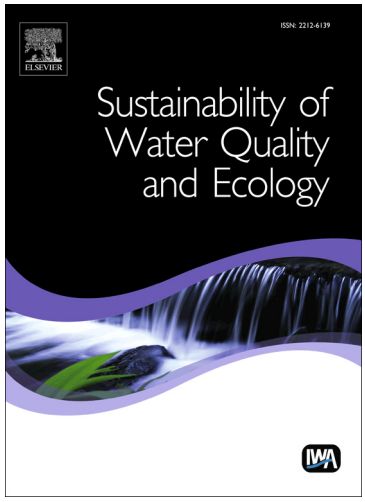

Water Quality & Natural Resource Management on Military Training Lands in Central Texas: Improved Decision Support via Bayesian Networks

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Abstract

The conservation and management of military training lands has long evolved around the unique criteria for maintaining a viable fighting force. In lieu of this primary mission, landscapes have often experienced accelerated degradation and loss of structural and functional capabilities for providing desired ecosystem services (including the basic training mission). In an effort to aid military land managers as well as anyone who makes and implements decisions for natural resource management; we support an innovative approach towards the integration of evidence and the application of diagnosis and prognosis for the decision-making process through the use of Bayesian Networks. Illustrated below is an example for utilizing Bayesian Networks in the decision support process. We utilized data and experience from ongoing efforts at the Fort Hood Military Installation to build the initial network; then integrate expert input from authors and engineers in propagating the node relationships. Through this approach, we demonstrate how military land managers can integrate varying streams of evidence, including empirical, model generated or expert opinion, into a network for decision support. The example below is developed based upon land management issues within the U.S. Army, but the process can be adapted and implemented across most all ecosystems under some form of land management.