

A Watershed Condition Assessment of Rocky Mountain National Park Using the FLoWS Tools

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Abstract

Increasingly, the management of natural resources requires “thinking big” at broad ecoregional scales and “thinking process” to more directly incorporate important ecological processes that flow across boundaries. This type of ecosystem management has been recently required by watershed-level assessments for Federal agencies and ecoregional planning by nongovernmental organizations. In this presentation we will describe the watershed-based framework we have developed to conduct an assessment of ecological condition in Rocky Mountain National Park (RMNP). We will describe some general findings of our analysis in RMNP and more generally place these findings within a broader watershed analytical framework. In particular, we will describe the use of the FLoWS tools (Functional Linkage of Water basins and Streams) built for ArcGIS and the detailed, consistent, and refined spatial dataset that provides basic and advanced watershed attributes, including estimates of likely effects of near-term (approximately 20–30 years) climate change. To build this FLoWS dataset we have integrated 1:24k (and 30-m National Elevation Dataset) into the 1:100k National Hydrography Dataset structure to produce both networked watersheds with attributes as well as key raster datasets such as overland and instream flow distances. Our approach represents a conceptual shift from lumped analyses of watersheds to a network-based framework that allows integration of likely threats through spatial analyses that directly incorporate hydrological processes.

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