

A SYNOPTIC SURVEY OF ECOSYSTEM SERVICES FROM HEADWATER CATCHMENTS IN THE UNITED STATES

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Ecosystem production functions for water supply, climate regulation, and water purification were estimated for 568 headwater streams and their catchments. Water supply per unit catchment area was highest in the Northern Appalachian Mountains and lowest in the Northern Plains. C, N, and P sequestered in trees were highest in Northern and Southern Appalachian and Western Mountain catchments, but C, N, and P sequestered in soils were highest in the Upper Midwest ecoregion. Catchment denitrification was highest in the Western Mountains. In-stream denitrification was highest in the Temperate Plains. Ecological production functions paired with published economic values for these services revealed the importance of mountain catchments for water supply, climate regulation, and water purification per unit catchment area. The larger catchment sizes of the plains ecoregions resulted in their higher economic value compared to the other ecoregions. The combined potential economic value across headwater catchments was \$14,000 ha/ y, or \$30 million/y per catchment. The economic importance of headwater catchments is even greater considering that our study catchments statistically represent more than 2 million headwater catchments in the continental United States.

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