



Changing Streamflow in the Edwards Plateau Region of Central Texas: The Role of Woody Plants and a Legacy of Overgrazing

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The coverage and density of woody plants and in particular Ashe Juniper has increased significantly in the Edwards Plateau region during the last 150 years. It has been commonly assumed that this increase has contributed to a diminished flow of streams and springs in the region. In fact small scale plot and catchment studies suggest that spring flow and/or recharge may be about 50 mm/year higher for areas cleared of juniper than for juniper woodlands. Similarly evapotranspiration studies suggest a "water savings" by the same relative magnitude when the landscape is cleared of juniper. A puzzling aspect however is that the long term record of streamflow in the region does not show any decline and in fact, river flow in the region has tended to increase. This has occurred at the same time that the coverage of juniper has increased significantly. Our analysis of baseflow (part of the streamflow contributed by groundwater) in the region indicates that baseflows have generally increased. We believe that this apparent contradiction can be explained in light of the fact that the start of the streamflow record generally corresponds to the early 1900s, which is when the rangelands in the region were in a highly degraded state. We suggest that the baseflow contribution of streamflow is increasing, in spite of the increase in woody cover, because the health of the rangelands are improving.

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