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SPECIES-WATERSHED AREA RELATIONSHIPS FOR FISHES IN THE KANSAS-REPUBLICAN RIVER BASIN, USA

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ABSTRACT
The general biogeographical relationship of the number of species increasing with area was studied in reference to fish and watershed areas for the Kansas and Republican river systems in Kansas, Nebraska, and Colorado. For the entire Kansas River and Republican River basins, there were weakly positive but not statistically significant relationships between watershed area and the number of native species (r = 0.14, p = 0.333) or native families (r = 0.18, p = 0.190). For the entire Republican River basin (with one Kansas River site), correlations were slightly stronger but still not significant for native species (r = 0.26, p = 0.281) or native families (r = 0.40, p = 0.088). For nested watersheds of the Republican and Kansas rivers, however, the correlations were stronger (for native species r = 0.92, p = 0.013; for native families, r = 0.56, p = 0.192). A strong east to west increase in the harshness of environmental conditions in Great Plains streams, however, likely contributes substantially to this relationship. Environmental conditions result in fewer species in western catchments. A set of watersheds in the Republican River Basin, increasing in size from east to west, showed no significant correlation between watershed area and the number of native species or native families.

Reference: Griffith, J.A.; Species-watershed area relationships for fishes in the Kansas-Republican river basin, USA, Journal of Environmental Hydrology, Vol. 11, Paper 5, April 2003.

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