Some Effects of Streamflow and Reservoir Storage on Selected Trout Population Dynamics[AFS]

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Between 1982 and 2002, the Missouri River headwater drainages experienced two extremely wet climatic periods, each of which was followed by periods of extreme drought. Over the 20-year study period, trout populations in free-flowing rivers, irrigation storage reservoirs, and river tailwaters below reservoir dams were studied in order to discern salmonid population response to ample and reduced flow regimes. During the study, salmonid populations responded positively to ample flow regimes and declined markedly as

flow regimes were reduced during drought. Data strongly suggest that the population dynamics most predictably and significantly affected by flow include standing crop, densities of large, mature fish in the population, and condition factor, particularly that of the large, mature segment of the population. Population density and juvenile recruitment also responded positively to increased streamflow but were not always reduced under restricted flow conditions suggesting that other variables might influence those dynamics as significantly as flow.