Fish Community Response to Departures in Hydrologic Reference Conditions, Tennessee River Basin, Southeastern USA

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Abstract

Quantitative relationships between streamflow alteration and aquatic ecosystem response remain elusive despite decades of research. Over the course of a multi-year study in the ecologically diverse Tennessee River basin, USA, we have (1) identified statistical relations between fish community and streamflow characteristics at 13 sites with observed fish and flow data; (2) developed statistically robust inferences in streamflow alteration by analyzing the hydrologic departure of each SFC from a published regional model (Knight et al., 2012); and (3) evaluated the relationship between fish community structure and the streamflow characteristics from reference and fish species richness. All relationships are negatively sloped, indicating fish species richness decreases with increased streamflow alteration. Over the course of a multi-year study in the ecologically diverse Tennessee River basin, USA, we have (1) identified statistical relations between fish community and streamflow characteristics from reference and fish species richness. All relationships are negatively sloped, indicating fish species richness decreases with increased streamflow alteration. Over the course of a multi-year study in the ecologically diverse Tennessee River basin, USA, we have (1) identified statistical relations between fish community and streamflow characteristics from reference and fish species richness. All relationships are negatively sloped, indicating fish species richness decreases with increased streamflow alteration. Over the course of a multi-year study in the ecologically diverse Tennessee River basin, USA, we have (1) identified statistical relations between fish community and streamflow characteristics from reference and fish species richness. All relationships are negatively sloped, indicating fish species richness decreases with increased streamflow alteration. Over the course of a multi-year study in the ecologically diverse Tennessee River basin, USA, we have (1) identified statistical relations between fish community and streamflow characteristics from reference and fish species richness. All relationships are negatively sloped, indicating fish species richness decreases with increased streamflow alteration. Over the course of a multi-year study in the ecologically diverse Tennessee River basin, USA, we have (1) identified statistical relations between fish community and streamflow characteristics from reference and fish species richness. All relationships are negatively sloped, indicating fish species richness decreases with increased streamflow alteration.