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INSECT-HABITAT RELATIONSHIPS IN INTERMITTENT STREAMS OF EASTERN SOUTH DAKOTA

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ABSTRACT

Relationships between habitat and invertebrate community structure are an important aspect of bioassessment. Little effort has been made to address these relationships in intermittent streams. The objective of this effort was to examine relationships between habitat and insect community metrics in intermittent streams in Eastern South Dakota. Habitat parameters were measured at 21 sites August 2001 and April, June and August 2002. Aquatic insect samples were collected from all sites, August through October 2001 and April through September 2002. Spearman rank correlation analysis was performed on mean site values (n=21) for habitat and insect community metrics. Only significant correlations ($p < 0.05$) are reported here. Several invertebrate metrics were positively correlated with substrate, bank, and flow measurements. Percent Chironomidae and sprawlers were associated with percent unstable substrate ($\rho = 0.41$ and 0.45 , respectively) while percent Ephemeroptera plus Trichoptera were positively associated with fine gravel ($\rho = 0.47$). Numbers of filterers were associated with greater bank erosion, undercut banks and stream flow ($\rho = 0.42$, 0.60 and 0.90 , respectively). In contrast, percent Diptera and Trichoptera and Ephemeroptera richness were negatively associated with emergent vegetation ($\rho = -0.46$ to -0.50) and percent predators were negatively associated with stream flow and percent bank erosion ($\rho = -0.58$, -0.73 , respectively). These results demonstrate strong relationships between insect community composition, richness and guild metrics and habitat characteristics which may facilitate bioassessment of intermittent streams in Eastern South Dakota.