Using An Index Of Biotic Integrity As A Surrogate Indicator In The TMDL Process For Prairie Streams[AES]

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The State of Montana is determining total maximum daily loads (TMDLs) for pollutants in streams, rivers, and lakes identified as water quality impaired. Common impairments listed for eastern Montana prairie streams include sediment loads, salinity, and temperature. However, numeric water quality standards either have not been developed for these impariments, or criteria have been based on data from western Montana streams. As part of the TMDL process Garcia and Associates (GANDA) sampled fish populations at 11 sites on three streams within the Flatwillow and Box Elder watersheds near Winnett. We then analyzed the results from each site using an index of biotic integrity (IBI) for prairie fish communities. The IBI ratings were used to support water quality information collected, and to determine level of impairment for sites on each stream. We are applying a similar approach to the Redwater River planning area near Circle. No new fish collections have been made, but existing collections made by Montana Fish, Wildlife and Parks and Montana State University were used to calculate IBI scores. We then used the IBI scores to assess whether total suspended solids (TSS) and salinity levels negatively impact native fish communities. TSS and salinity levels from less impaired reaches are also being used to support "background levels" of these parameters in eastern Montana streams. The goal is to develop fish-based monitoring plans to assess whether water quality restoration plans are effective within prairie streams.