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### Abstract

#### An empirical approach to predicting water quality in small streams of southern British Columbia using biogeoclimatic ecosystem classifications

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Water quality data from a synoptic survey of low-order streams ( $n = 581$ ) were investigated as a function of the biogeoclimatic zone and moisture subzone groupings of the biogeoclimatic ecological classification (BEC) system. The potential utility of the BEC system as a watershed characterization tool was evaluated. The preliminary results were limited to streams sampled during June 1998 and 1999 over the large spatial scale of southern British Columbia. Significant differences ( $p < 0.05$ ) were observed among biogeoclimatic zones and moisture subzones for specific conductance, turbidity, pH, and dissolved organic carbon (DOC) concentration. Our approach explained between 8 and 37% of the variation in water quality data, which could significantly reduce error in assessing water quality or investigating the effects of watershed activities among watersheds. The data provide a snapshot of water quality and identify areas that are likely to exceed water quality guidelines ( $p > 0.50$ ). High proportions of low-order streams within the southern interior of British Columbia are likely to exceed water quality guidelines for turbidity and DOC content during a comparable sample period. Similarly, streams located in coastal areas of southern British Columbia exhibited pH values that were below the approved guideline of 6.5. Overall, the BEC system accounted for a significant amount of variation in water quality, suggesting that further development of this approach is warranted. The addition of other variables such as a history of land-use activities should be included, and data should be extended temporally to account for different flow regimes.

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