

## Importance of watershed land use in predicting benthic invertebrate condition in the Virginian Biogeographic Province, USA.

Marguerite C. Pelletier, Arthur J. Gold, Jane Copeland, Liliana Gonzalez, Peter V. August

Estuaries are dynamic transition zones linking freshwater and oceanic habitats. These productive ecosystems are threatened by a variety of stressors including human modification of coastal watersheds. In this study we examined potential linkages between estuarine condition and the watershed by developing regression models between landscape condition indicators and benthic invertebrate communities. We examined variables at the watershed and riparian scale to determine if the spatial arrangement was important in predicting benthic invertebrate condition. Since they were highly correlated, either riparian or watershed variables were adequate for assessing estuarine invertebrate condition. Modeling estuarine condition indicated that inherent landscape structure (estuarine area, watershed/estuary ratio) is important to predicting benthic invertebrate condition. Estuarine area was positively related to invertebrate condition while the watershed/estuary ratio was negatively related. As shown in other studies, more natural land cover features (wetland, pasture/hay) help improve estuarine condition while anthropogenic impacts (development, sewage treatment plants) can have adverse impacts. Our results emphasize the importance of considering the value of natural land as well as the minimization of the effects of development through best management practices.

Keywords: watershed, estuary, invertebrates