Title: Taxonomic approach and potential anthropic indices to understanding cross-sectional morphology and landscape modification of a tropical river Basin, India.

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Abstract: During the Anthropocene, human modifications to fluvial landscapes have become a common aspect of their progress and development. The primary objective of this research is to delve into the human-induced alterations on fluvial landscapes at both the channel and basin scales. For channel scale investigation, we classify the channel cross-sections in terms of human interventions and relate them with the potential anthropic (or anthropogenic) geomorphology in the Kopai River basin (KRB) in India. A total of 35 cross-sections (CS) were surveyed at an interval of ~ 3 km from source to mouth, and a perceptional survey was executed among randomly selected 960 respondents in the seven community development blocks. The CS are classified into natural (alluvial and bedrock) and anthropogenic (monatogenic – mining-influenced, traffic-road-stream crossings, hydrogenic-influenced by hydrological projects like dams, and agrogenic-agriculture-influenced) categories following Sźabo's (1971) taxonomic approach. The statistical difference between natural and anthropic cross-sections is measured using seven hydromorphological characteristics. Basin scale investigation adopting Nir's index (1983) of potential anthropic geomorphology (I_{PAG}) from 1961 to 2021 depicts that the I_{PAG} is progressively decreasing with time, although the reality is different. We propose to extend the basic notion of the I_{PAG} by incorporating more relevant parameters.

Keyword: Potential Anthropic Geomorphology, Channel Scale Approach, Basin Scale Approach, Environmental Impacts, Land Transformation, Anthropic Cross-Sections.

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