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**THE EUROPEAN WATER FRAMEWORK DIRECTIVE PHYSICAL
TYPOLOGY AND RIVPACS-TYPE MODELS AS ALTERNATIVE
METHODS OF ESTABLISHING REFERENCE CONDITIONS FOR
BENTHIC MACROINVERTEBRATES**

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The EU Water Framework Directive requires European Member States to establish 'type-specific biological reference conditions' for each water body type. Types can be defined by using either a fixed typology (System A), defined by ecoregions and categories of altitude, catchment area and geology, or by means of an alternative characterisation (System B) that can use a variety of physical and chemical factors. Member States can choose to use either System A or System B. However if choosing System B, Member States must achieve at least the same degree of differentiation as would be achieved using system A. Practically, this means that Member States wishing to use a System B typology, must show that that average biotic community variance within their System B stream types is lower than average biotic community variance within System A stream types. In this analysis we compare biotic community variance of the WFD System A typology with biotic community variance in RIVPACS-type (System B) models in Great Britain– using RIVPACS, Sweden – using SWEPAC_{SRI} and the Czech Republic – using PERLA. We also explore the relative explanatory power of individual physical variables used in both the System A typology and three RIVPACS-type models.