

THE QUANTIFICATION OF ORGANIC AND NUTRIENT INPUTS FROM ITS CATCHMENT TO THE HUMBER ESTUARY

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ABSTRACT

Estuaries are sinks for organic matter and nutrients entering both from their catchments and also from the adjacent lands and urban areas. Such materials create the naturally high organically enriched and often hypereutrophic areas within estuaries which in turn support large invertebrate prey populations. The latter then support the important and large wading bird and fish populations which give estuaries their international prominence in conservation designations.

The present paper quantifies the natural and anthropogenic organic matter and nutrients entering the Humber Estuary, Eastern England. These sources include the allochthonous and autochthonous materials, those from urban and industrial sewage and from the catchment drainage of arable land. These data have been used to quantify the relative sources and thus give a budget for the estuary and to answer questions fundamental to the management of the estuary. For example, the study has determined the present inputs from reed beds and salt marsh areas and assessed these data in the light of the removal of such habitats from wetland areas through land claim. In particular, the study has attempted to determine the relative proportion of different types of anthropogenic inputs - from point sources compared with diffuse sources. In this, the study indicates the difficulties in deriving such estimates but also their value in the management of estuaries.

The estimations within the study have been carried out against a background of designating estuaries under the EU Urban Waste-water Treatment Directive and the EU Nitrates Directive. The assessment has particularly addressed the question of whether the Humber Estuary is eutrophic or likely to become eutrophic unless management measures are taken. Thus the paper indicates the nature and value of control measures such as treatment plant upgrading and the designation of Nitrate Vulnerable Zones. As such, the paper includes the recent national and European discussions on the designation of areas under these Directives. Finally, it mentions these developments against a background of the implementation of the EU Water Framework Directive.