

A GIS-based model for ditch erosion risk assessment in peatland forestry

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Abstract The maintenance of ditch networks in conjunction with peatland forestry increases erosion and suspended solid loads delivered to watercourses. Against this background, we tested a simple one-dimensional GIS-based steady-state hydraulic model for assessing erosion risk in forest ditch networks. Model accuracy and reliability were tested against experimental field measurements in two intensively drained peatland forestry catchments located in northern and central Finland. Despite the crude assumptions behind the simplified computational method, we found that low input data requirements, good visualization capabilities and short run times make the model a promising tool for informing water protection planning, although the spatial location of erosion risk simulated with the simplified model was not always consistent with the observed pattern of ditch erosion.

Key words peatland drainage; erosion risk; modelling; GIS; water protection