



GIS modelling of coastal cumulative human impact: Experiences from Finland and Zanzibar

Risto Kalliola, Matti Sahla, Zakaria Khamis, and Niina Käyhkö

University of Turku, Department of Geography and Geology, Finland (risto.kalliola@utu.fi)

GIS modelling of coastal cumulative human impact: Experiences from Finland and Zanzibar

Risto Kalliola¹, Matti Sahla^{1,2}, Zakaria Khamis^{1,3} & Niina Käyhkö¹

¹ Department of Geography and geology, University of Turku, Finland

² Parks & Wildlife Finland, PL 475, Wolffintie 36, 65101 Vaasa, Finland

³ Department of Social Science, State University of Zanzibar, P. O. Box 146, Zanzibar, Tanzania

A global map of human impact on marine ecosystems was first published in 2008. It drew attention to the widespread human pressures in the world oceans and coastal seas. In this paper we report our experiences of using cumulative human pressure modelling at the local scale in two faraway coastal areas: Finnish Archipelago Sea which is a fragmented coastal area in the northern Baltic Sea, and the tropical island of Zanzibar by the Indian Ocean. In both areas, the EU list of human pressures was used as basis, and available GIS datasets from different sources were screened for useful information. Although ample spatial data were available in both areas, only some of them were readily applicable for the needs of human pressure modelling. In many cases lesser suitable data or their combinations had to be used as surrogates. Some data had to be converted into spatial pressure distribution models by using distant-based decay functions with their details based on expert opinions. In the computation of cumulative pressures, the relative weighting of different pressure parameters also required expert views. For these reasons the cumulative pressure models contain inherent subjectivity. However, the transparent procedure allowed to revisit any of the early decisions and to test the influences of alternative judgements. The final results were maps showing spatial differences in the relative human pressure levels in the study areas. They provided useful spatial overviews of the theme, which we consider helps to catalyze fruitful discussions among different stakeholders at the local level and thereby contribute to the planning and management of the coastal zone.