

Impacts of environmental condition on human social well-being

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Humans have wide ranging impacts on many of the world's ecosystems, but the reciprocal effects of changes in ecosystem condition on humans are poorly understood. Dynamic modelling provides a useful tool to investigate the ways in which specific aspects of well-being might be impacted by changes in the condition of surrounding ecosystems. Understanding the positive linkages between ecosystem condition and human well-being can potentially reduce the apparent conflict between environmental improvement and human interests, thus improving management of local ecosystems.

Based on existing literature, it is hypothesised that changes in coastal ecosystem condition may impact on aspects of social and community relations through affecting people's sense of place, degree of involvement in the community and the extent to which they undertake recreation in the coastal environment. Changes in these aspects of social relations can have flow-on impacts on social capital, social networks, levels of trust and physical and mental health. All of these are important components of human well-being. The links between coastal ecosystem condition, use of coastal systems and aspects of social well-being have been supported by statistical modelling of available data; however, dynamic modelling is required to examine interactions and feedback between these components.

The aim of the model presented here is therefore to examine the impacts of changes in coastal waterway condition on social aspects of human well-being. The model was designed to examine the sensitivity and response time of social well-being to changes to in coastal ecosystem condition and to examine feedback and interactions between components of social well-being. As there are currently few examples of modelling of social well-being, one of our aims is to present this model as a basis for further discussion and exploration of possible approaches to modelling social structures and their interactions with local environments. Further stages of the project aim to incorporate impacts on human health and regional economic production and employment.