

Agent-based modelling of marine recreational activity: accounting for the drivers behind human behaviour

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Marine recreation and tourism is estimated to be worth billions of pounds to the UK economy each year. Indeed, demand for access to marine recreational services continues to grow, and is influenced by a complex web of interacting social, cultural, economic and geographic factors. Underpinning all of these factors are the questions of human behaviour and motivation: exactly why, where and when are people choosing to make their trips and how can policies best be designed to account for this activity? In this study we developed an agent-based modelling approach to improve our understanding of the behaviour of those undertaking recreational activities. Sea anglers were modelled to account for the trade-offs made between preferred catch and distance travelled, before the parameters were extended to account for additional factors such as cost accrued, fishing expertise held, communication between anglers and the overall holistic experience of the activity. A similar model was then developed to account for wildlife watching behaviour. Decision rules were set for both anglers and wildlife watchers to observe how patterns of activity emerged from the models. This data was then tested against existing information on recreation and applied to reveal the value judgments used by agents in their decision-making processes. We discuss the potential applications of the models utilised in this research for understanding and predicting behaviour, including the development of a case study of recreational activity to be conducted within the Clyde Estuary.