A Cognitively Realistic Model of Decision Making in Ocean Ecology

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There is strong evidence that a key determinant of the ecological state of the world's oceans is the decision-making of fishers and policy-makers. There is a large empirical literature on the complex reality of human decision-making, but a comparative lack of work bringing detailed cognitive facts to models of aggregate behavior of this kind. We show how a psychologically realistic description of decision-makers can be integrated into a large-scale ocean systems model, going beyond profit maximization agent-based models. In particular, we seek to model the questions that frame decisions of different types of fishers and the motivating reasons on the basis of which those questions are resolved. The broader purpose of the model is to see how those patterns could inform regulatory policy. We present the basic architecture of the model and the data gathering tools that will allow us to adapt the model to fishers in different environments.