

RAPA NUI: MODELING THE PLAUSIBILITY OF RESOURCE LIQUIDATION

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Jared Diamond's best-selling book *Collapse* (2005) has reinvigorated the academic debate surrounding the likelihood of human driven natural resource liquidation on various scales. The second chapter of Diamond's *Collapse* details the "ecocide" of Rapa Nui (Easter Island), and offers the example as a parable of the environmental hazards facing our economically integrated modern world. However, some, including most notably Terry Hunt and Carl P. Lipo (2006, 2007, 2009), contest Diamond's account of massive deforestation as the primary cause of the cultural collapse of Rapa Nui's people. Hunt and Lipo suggest instead that undocumented European visitors with disease and slave trade caused the cultural collapse first recorded by Dutch navigator Jacob Roggeveen in 1722 (2009). While both parties agree Rapa Nui's indigenous peoples largely drove its deforestation, the likelihood that they were the sole cause of its deforestation remains puzzling.

In this paper we model how different perceptions of resource availability and pressure to harvest may lead to resource liquidation. Standard models of the self-interested exploitation of common-goods fail to explain the complete devastation of resources in situations where information about availability of resources is readily available, and especially in the absence of private property as on Rapa Nui. Using agent-based models of resource consumption we assess the plausibility of Diamond's explanation of Rapa Nui's deforestation against the explanation offered by Hunt and Lipo in their various rebuttals of Diamond's work. We investigate the likelihood that a population with good information regarding a resource would exhaust it with and without external influences.