Supplemental Materials for:
Historical Patterns of Resource Exploitation and the Status of Papua New Guinea Coral Reefs

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Supplemental Appendix 1
STUDY LIMITATIONS

Data were not evenly distributed across our seven guild types. In particular, there were few records (less than five) available for assessment of the sea grass guild, so the interpretation of the ecological status of sea grass guilds should be taken with caution. A similar situation possibly applies to the demographic and water-quality degradation human influence indices, which are supported by fewer records than the other indices. This reflects a more recent emphasis on documentation of social characteristics of the coastal populations and the existence of very few studies assessing water quality of reefs, both in Papua New Guinea (PNG) and worldwide. We recommend that this research be augmented in the future with reef water-quality assessments and the increasingly available literature on the socio-demographic characteristics of people dependent directly or indirectly on reef resources.

Our findings are qualified by three additional biases. First, the literature used to assess the Colonial Occupation and Colonial Development periods was in some cases biased toward large, conspicuous animals (e.g., turtles, sharks), with much fewer references to smaller ones (e.g., sea urchins, crustaceans). Second, certain locations in PNG (e.g., Port Moresby, Madang, Rabaul,  

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Samarai) have been studied in greater detail than others (e.g., Sepik, Mussau, Bougainville, Hermit Islands). Finally, some organisms are better represented in the archaeological record (mollusk shells, fish bones) than others (crustaceans, holothurians) simply because they preserve better over time (Waters and Kuehn 1996, Langley et al. 2011).

Although these biases qualify our findings, due to the large amount of literature we reviewed we were able to obtain documentation on smaller, commonly overlooked species (such as sea urchins and noncommercial crabs), and at least some of the literature reviewed managed to capture the ecological status of relatively isolated sites (such as Feni or the Ninigo Islands). We encourage other approaches to infer past condition and to estimate the ecological status of species represented poorly in the fossil record. These include ecosystem and bioclimatic modelling (Christensen and Pauly 1992, Martinez-Meyer et al. 2004, Sarmiento et al. 2004) and genetic studies (Roman and Palumbi 2003, Hajibabaei et al. 2006, Millar et al. 2008).

**Supplemental Literature Cited**


