A PALEOENVIRONMENTAL AND ARCHAEOLOGICAL MODEL-BASED AGE ESTIMATE FOR THE COLONIZATION OF HAWAI'I

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Recent estimates of when Hawai'i was colonized by Polynesians display considerable variability, with dates ranging from about A.D. 800 to 1250. Using high resolution paleoenvironmental coring data and a carefully defined set of archaeological radiocarbon dates, a Bayesian model for initial settlement was constructed. The pollen and charcoal assemblages of the core record made it possible to identify and date the prehuman period and also the start of human settlement using a simple depositional model. The archaeological and paleoenvironmental estimates of the colonization date show a striking convergence, indicating that initial settlement occurred at A.D. 940–1130 at a 95 percent highest posterior density region (HPD), and most probably between A.D. 1000 to 1100, using a 67 percent HPD. This analysis highlights problems that may occur when paleoenvironmental core chronologies are based on bulk soil dates. Further research on the dating of the bones of Rattus exulans*, a Polynesian introduction, may refine the dating model, as would archaeological investigations focused on potential early site locations.*