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A WINDOW INTO EARLY HOMININ EVOLUTION? CLUES TO THE ORIGINS OF TECHNOLOGICAL EVOLUTION AND BIPEDALITY FROM CHIMPANZEE FIELD EXPERIMENTS

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Primate archaeology research at Bossou, Guinea, focuses on chimpanzee nut-cracking, using non-human primate models to elucidate variables underlying the origins of technology in early hominins. An "outdoor laboratory" in Bossou forest provides the opportunity for nut-cracking field experiments with locally available (*Elaeis guineensis*) and unavailable (*Coula edulis*) nuts. Two recent sets of findings have possible implications for hominin evolution. First, detailed records of tool selection by chimpanzees reveal raw material selectivity, tool function discrimination, and preferential re-use of particular tool-composites. We argue that these usage patterns present a potential model for the first incidental knapping episodes in early hominins. Second, the rare provision of Coula nuts increased the incidence of bipedal transport, as chimpanzees carried nuts and tools by hand, foot, and mouth, to novel locations. While numerous theories attempt to explain the selective advantage of human bipedalism, one specifically relates bipedality to carrying items (food, infants, tools). We suggest that bipedal walking during carrying in chimpanzees may relate to: 1) resource value: not all items are worth transporting, but those with high value and unpredictable availability are more so; and 2) group dynamics: movement to a different location may create a "personal space boundary", allowing individuals to process and consume food without sharing it. Bossou chimpanzees provide useful models for this unsolved problem, as their habitat matches recent predictions that favour niche diversification emerging in isolated populations. Rare food items and increased levels of resource competition may have acted as selective forces triggering bipedalism in the earliest ape-like hominins.

Keywords: chimpanzee, tool technology, bipedalism, selective forces