

Conservation Paleobiology Research Highlight

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Confirmed archaeological evidence of water deer in Vietnam: relics of the Pleistocene or a shifting baseline?

Studies of archaeological and palaeontological bone assemblages increasingly show that the historical distributions of many mammal species are not representative of their longer-term geographical ranges in the Quaternary. Consequently, the geographical and ecological scope of potential conservation efforts may be inappropriately narrow. In a recent paper, my co-authors and I consider a small Vulnerable cervid, the water deer *Hydropotes inermis*, as a case in point. Water deer have historical native distributions, which are becoming increasingly restricted, in eastern China and the Korean peninsula. Introduced populations in Europe now account for c. 40 % of the global population. We report confirmed and dated archaeological evidence of these small cervids in northern Vietnam. We describe and diagnose late Pleistocene-age jaws and teeth recovered from Hang Thung Binh 1 cave in the Tràng An World Heritage Site, dated to between 13,000 and 16,000 years before present. The new specimens are valuable contributions for a species with a very sparse fossil record and complement regional studies as further evidence of a much wider Quaternary distribution in East Asia. But are these new Vietnamese fossils relicts of extirpated Pleistocene populations?

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Or perhaps the fossils indicate there was once a longer standing, but now forgotten, southerly population of water deer? It is certainly true that, today, water deer are associated with more temperate climates. Perhaps climatic changes and the onset of the sub-tropical conditions of the Holocene were not amenable to the survival of these small cervids in Vietnam? Holocene archaeological finds in Southern China and Taiwan, however, would dispute this and this raises the intriguing question that water deer may have survived into Holocene Vietnam: a hypothesis to be tested.

*Photo captions: (Upper) Mandible and canine fragments of *Hydropotes inermis* recovered from Hang Thung Binh 1 in Tràng An World Heritage Site, Northern Vietnam. (Image: C. Stimpson).*

(Lower) The entrance of Hang Thung Binh 1 (left) and aerial view of the location of the cave (red marker) in Tràng An World Heritage Site (right). (Images: C. Stimpson/T. Kahlert, respectively).



For more details see article by Stimpson et al. (2021) in Royal Society Open Science:

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