

A geoarchaeological study of the persistence of Stone Age sites in the southeast Arabian Peninsula

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Recent discoveries of lithic industries of anatomically modern humans (AMHs) at Jebel Faya (United Arab Emirates)[1] and the Dhofar region (Sultanate of Oman)[2] suggested the 'Southern Route Out of Africa' theory in which AMHs dispersed from East Africa to South and Central Asia through this region. The archaeological survey in the Al Wahrah and Wadi al Kabir districts of the interior of Oman in December 2012 and January 2013 identified a number of Stone Age sites with a variety of lithic industries belonging to the Middle and Upper Palaeolithic and Neolithic (Pre-Hafit) periods. These lithics were scattered on the marginal areas of alluvial fans at the foot of the hills and mountains on which good-quality chert sources for lithic production are located. A number of lithic concentrations were also found besides cairns built on the hill top. On-the-ground observation of geomorphological features and soundings revealed the following: (1) In the piedmont areas and on the remnant terraces, lithics remained due to deflation, i.e. eolian erosion of fine-grained surface sand to cause an accumulation of lag gravels on the ground surface. (2) On the piedmont fans, lithics were scattered out of context due to colluvial-fluvial activities. (3) On the lower terraces, the Pleistocene landforms were completely eroded by alluvial activities and therefore only Holocene sites remained. Using these observations as heuristic operator, we predicted the likelihood of presence of Stone Age sites and mapped it based on eco-cultural niche modelling[3].

[1] Armitage SJ et al. (2011) *Science* 331:453-456.

[2] Rose JI et al. (2011) *PLoS ONE* 6:e28239.

[3] Banks WE et al. (2006) *PaleoAnthropology* 2006:68-83.

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