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Land gastropod piercing during the Late Pleistocene and Early Holocene in the Haua Fteah, Libya

Evan A. Hill [a], Chris O. Hunt [b,*], Giulio Lucarini [c], Giuseppina Mutri [c], Lucy Farr [c], Graeme Barker [c]

[a] School of Geography, Archaeology & Palaeoecology, Queen's University Belfast, Belfast BT7 1NN, UK
[b] School of Natural Sciences & Psychology, Liverpool John Moores University, Byrom Street, Liverpool L3 3AH, UK
[c] McDonald Institute for Archaeological Research, University of Cambridge, Downing Street, Cambridge CB2 3ER, UK

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ABSTRACT

Land snail shell is a frequent constituent of archaeological sites, but it is rarely clear whether it represents food refuse, the remains of scavengers, or evidence for natural processes. Piercing of land snail shells enables the animal to be extracted from the shell and thus provides direct evidence for human consumption. We report pierced land snails from the Haua Fteah, Libya. The earliest pierced land snail shell in the Haua Fteah pre-dates the Last Interglacial, while the most recent is Late-Classical in age, but the largest quantities are in layers of Late-Glacial and earliest Holocene age, where they are associated with atypical microliths which may have been used to pierce shells to enable easy extraction of the animal.

1. Introduction

Marine gastropods are major components of shell middens worldwide and are usually regarded as evidence for human consumption of the animals, except in the cases of shell middens produced during the processing of Muricids for dye production (e.g. Reese, 1980, 2010) and the use of gastropods for bait (Oliver, 2015). The issue of consumption of land gastropods is, however, more complex. Land snails are reported on many prehistoric sites, especially in caves. In some cases the quantities are so great that excavators report a shell midden and it is very clear that the molluscs were consumed (e.g. Rabett et al., 2011; Taylor et al., 2012; Hutterer et al., 2014), but with the exception of the great open-air escargotières in the Maghreb (Lubell et al., 1976), land snail middens are globally a relatively rare component of the total archaeology of a region. There are many cases, however, where land snail shell is present in archaeological cave sites, but not in huge quantities and not forming obvious midden deposits. This is not surprising because some molluscs use caves to hibernate, lay eggs or to forage, or because natural processes can bring land snail shell into caves, or that some taxa will enter caves to scavenge on food refuse left by humans or animals (e.g. Hunt, 1993; Girod, 2011; Weigand, 2014). Signs of burning or calcining might reflect human consumption of the snails, but it is possible that shells which had entered the site by natural means might come into contact with fire by chance. Removal of the tips of apices has been linked with consumption of snails (Borzatti von Löwenstern, 1964). Recently, Hutterer et al. (2011) reported characteristic patterns of piercing damage from late prehistoric levels in Moroccan caves. Piercing of the shell enables the animal within to be removed easily. It appears to be an unequivocal signal for the consumption of land snails.

This paper describes pierced land snails from the deposits of the Haua Fteah in Northeast Libya. We have noted piercing of shells extensively throughout the complete Haua sequence, but the nature of the piercing changes with time. We suggest, following the argument of Hutterer et al. (2011), that the piercing of the shells was anthropogenic and done to aid consumption of the snails. We then describe lithic artefacts likely to have been used in the consumption of the snails during later prehistory. The lithic artefacts described here show characteristics consistent with their use to pierce and consume the molluscs.

2. The Haua Fteah

The Haua Fteah is a huge cave of probable phreatic origin, lying approximately 1 km south of the Mediterranean coast in Northeast

* Corresponding author.
E-mail address: C.O.Hunt@ljmu.ac.uk (C.O. Hunt).

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Libya, some 7.5 km East of Susah at E22° 03′06″ N32° 54′ 01″. It was first excavated by Charles McBurney in the 1950s (McBurney, 1967) and is the subject of ongoing research by the TRANSNAP Project, led by Graeme Barker (Barker et al., 2007, 2008, 2009, 2010, Barker et al., 2012; Hunt et al., 2010, 2011, 2015; Rabett et al., 2013; Douka et al., 2014; Farr et al., 2014).

McBurney excavated a 13 m deep trench at the Haua Fteah. The trench had two steps, subdividing it into three broad levels: an Upper Trench, which is excavated in deposits of broadly Holocene age, a Middle Trench, which cuts through deposits which range in age from MIS 4 to the Late Glacial, and the Deep Sounding, which sampled deposits from late MIS 6 and MIS 5. The TRANSNAP project has cleared the McBurney trench and excavated new trenches on the side of the original excavation (Fig. 1). In the Upper Trench, the TRANSNAP team cut several small sample columns through the whole depth of the trench, together with the small Trench U, which sampled Neolithic and post-Neolithic deposits. In the side of the Middle Trench, the TRANSNAP team cut Trench M. Two trenches were cut in the Deep Sounding. Trench D started at the base of the Middle Trench and runs down the side of the Deep Sounding, while Trench S was cut in the base of the Deep Sounding and continues down into previously-unknown stratigraphy. Excavation was by a single-context system following natural layering, with natural layers more than 5 cm thick subdivided into spits. Profile diagrams showing contexts in these excavations are shown in Figs. S1–S5.

Throughout its deep stratigraphy, the Haua Fteah contains very abundant material – bones, plant macrofossils, shell – resulting from the processing and consumption of animals and plants for food and other purposes (McBurney, 1967; Klein and Scott, 1995; Barker et al., 2008, 2009, 2010, Barker et al., 2012; Hunt et al., 2011; Rabett et al., 2013). The cave fill appears to have started to accumulate during MIS6, perhaps around 150,000 years ago, and to have accumulated relatively continuously until the present day, preserving an enormously important archaeological record. Stone artefact technology (McBurney, 1967) divides this record into a series of industries (Table 1). Mollusc shell, both marine and non-marine, is extremely common in some parts of the cave fill, particularly in those layers attributed by McBurney (1967) to the Oranian to Neolithic. Much of this is most probably food refuse, although shell tools and beads are also present.

Table 1
Stone tool industries in the Haua Fteah, following McBurney (1967). Dating based upon Baysian Modelling (with calibration of radiocarbon dates) carried out by Douka et al. (2014) and calibrated ^{14}C dates from Hunt et al. (2010) and Hill (2015).

Approximate dates (ka) before present	Industry	Affinities
>65	Pre-Aurignacian	MSA
65–46	Mousterian	MSA
46–17	Dabban	LSA/Early Upper Palaeolithic
14–12	Oranian	LSA/Epipalaeolithic
11–9	Capsian	LSA/Epipalaeolithic
8.4–6	Neolithic	Neolithic
~4	'Pre-Classical'	Unknown
<2.7	Classical	Greco–Roman

3. The taphonomy of mollusc consumption in the Haua Fteah

Initial investigations of the mollusc shell showed that much was heavily fragmented as the result of taphonomic processes (Barker et al., 2010, 71–72; Hunt et al., 2011). Further study of the shell has suggested that several characteristic types of damage pattern may be linked with the taking and consumption of the molluscs for food. In *Patella* spp. (limpet), the most common breakage is to the margin of the shell, characteristic of their removal from the rocks using a point of some sort to pry under the edge of the shell, breaking the suction of the foot on the substrate. With the top-shell *Phorcus* (*Osilinus*) *turbinatus* (Born), in many cases the very tip of the apex of the shell was removed in antiquity, most probably to facilitate the sucking of the animal from the shell. In the Late Glacial and Holocene parts of the sequence, many specimens attributed to these taxa are slightly to very charred, suggesting perhaps that they were roasted beside fires or in hot ashes (Hunt et al., 2011). In Trench D in the lower part of the sequence in the Haua Fteah, burnt *Phorcus* and *Patella* occur in contexts 695, 696, 698, 699 and 706, pointing to human consumption of these marine gastropods. In the same trench, burnt *Trochoidea cretica* occurs in context 1005 and burnt *Sphincterochila* sp. in context 1011, but this cannot be regarded as definite proof of consumption.

In general, with shells of land molluscs, the proportion of charred material is relatively low (Fig. 2), but much material is incomplete,

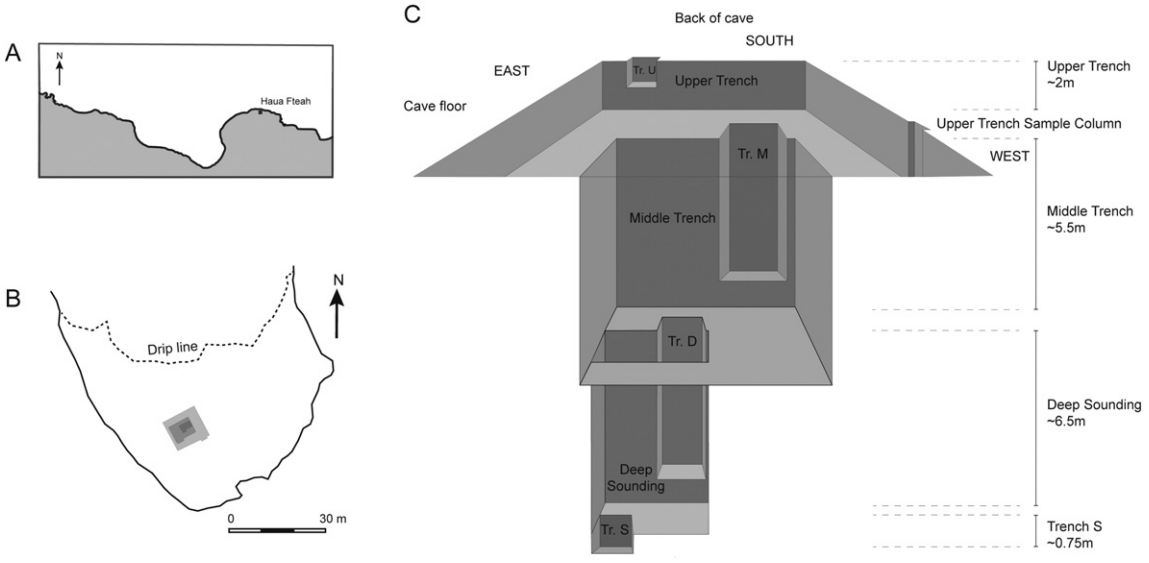

Fig. 1. The Haua Fteah. (A) Location of the Haua Fteah in North Libya; (B) location of the excavation in the Haua Fteah, indicated by grey shades; and (C) sketch of the McBurney and TRANSNAP excavations.
After a drawing by Dr Sacha Jones.