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Chronostratigraphy, site formation processes and pollen record of Ifri n'Etsedda, NE Morocco

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ABSTRACT

The rock shelter of Ifri n'Etsedda is located at the southern flank of the Kebdana Mountains, North-east Morocco, at an altitude of around 300 m a.s.l. Twenty-one radiocarbon ages attest an occupation of the shelter between 10.0 and 6.0 ka cal BP. Comb decorated pottery, also known from other Late Neolithic sites of the area, suggest a later occupation. The presence of both Epipalaeolithic and Neolithic deposits offers the opportunity to study the Neolithic transition in the area, although the Ifri n'Etsedda deposits contain a short hiatus. Next to the Ifri Oudadane shelter west of the Melilla Peninsula, it is one of the few sites in the area allowing this approach.

The paper combines stratigraphic, sedimentological and micromorphological studies in order to reconstruct the complex site formation processes. Pollen analysis offers exciting insights into environmental change, human land-use and subsistence strategies. A short overview about the artefact assemblage allows the reconstruction of occupation history and a first placement of the site within the archaeological context of the area.

The Epipalaeolithic occupation seems to be clearly bipartite and the ongoing study of the lithic assemblage promises the possibility of further subdivision in the area for the first time. Discontinuities of the Epipalaeolithic might be connected to Early Holocene Rapid-Climate-Change-events (RCC). The Neolithic occurred at about 7.2 ka cal BP, marked by the appearance of pottery, perforated snails, ovicaprides and cereals. Hunting, gathering and the use of terrestrial molluscs still played an important role during the Neolithic, as the main occupation phase, the late Early Neolithic between 6.7 to about 6.0 ka cal BP, appears. Striking similarities to other contemporary sites such as El Zafrín at the nearby coast and the Mtlili open air sites within the lower reaches of the Moulouya River suggest that Ifri n'Etsedda is part of a larger settlement cluster, providing particular adaptations to mountainous landscapes.

1. Introduction

The current contribution represents the first publication on the Ifri n'Etsedda shelter, NE-Morocco, including studies on stratigraphy, site formation, pollen, numerical dating, as well as a short description of the archaeological material. The prehistoric occupation of Ifri n'Etsedda covers a time span of about 4 millennia between 10.0 and 6.0 ka cal BP. Thus, both Epipalaeolithic as well as Early Neolithic deposits are in evidence. The onset of Neolithic occupation in Ifri n'Etsedda can be dated at around 7.2 ka cal BP. Because of a hiatus between 8.4 and 7.2 ka cal BP, the transition itself cannot be observed.

However, the process of Neolithic transition in the Eastern Rif in general was subject of several publications within the last decade (Linstädter et al., 2012a; Linstädter, 2014). First evidence of Neolithic innovations could be detected at Ifri Oudadane shelter located at the Mediterranean coast 20 km west of the Melilla Peninsula (Fig. 1A). Here, pottery (Linstädter and Wagner, 2013), remains of domesticated cereals and pulses (Morales et al., 2013) as well as indications of ovicaprides such as bones, coprolites (Linstädter and Kehl, 2012) and coprophilous fungi (Zapata et al., 2013) show the arrival of knowledge of food production at about

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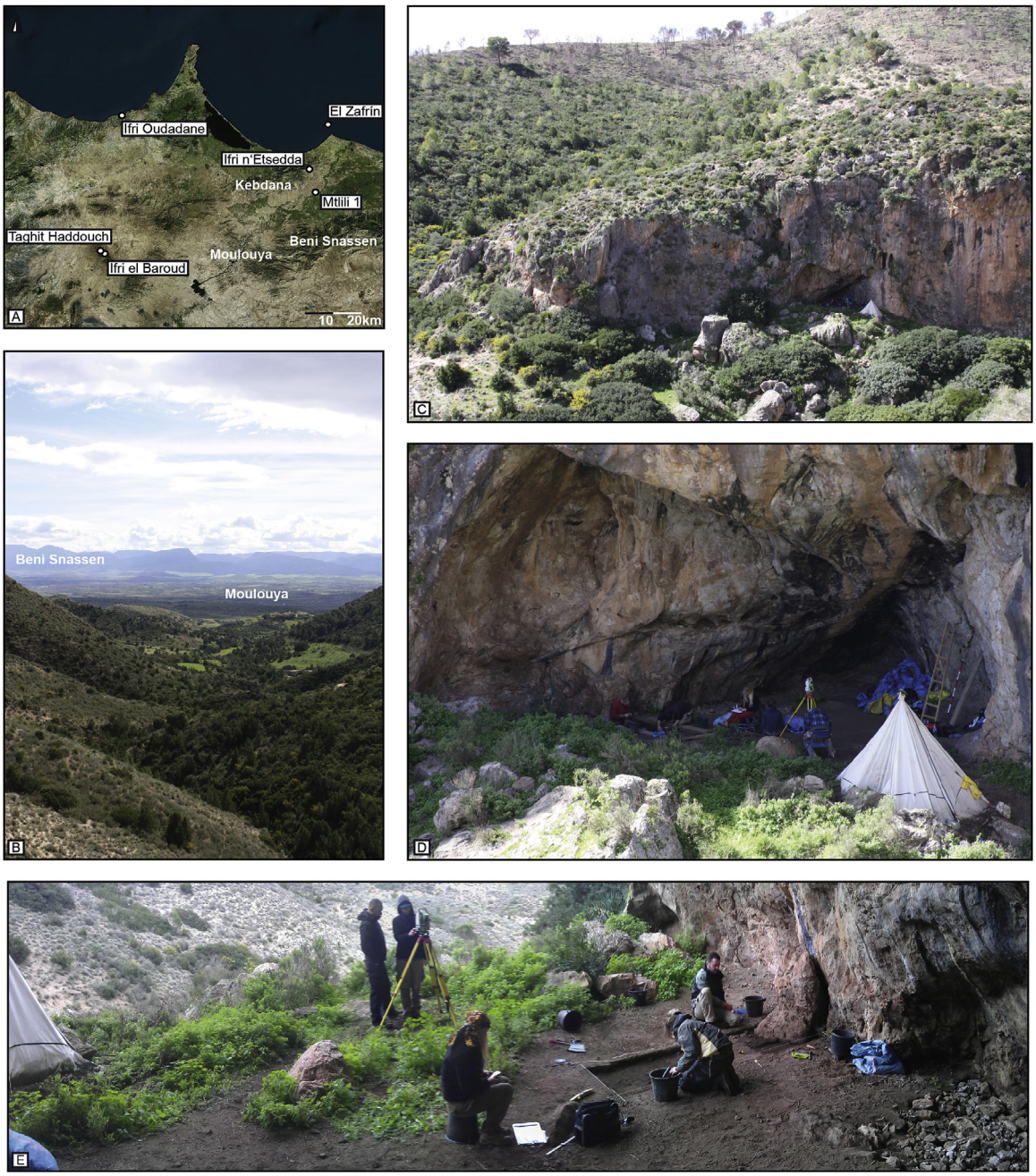

Fig. 1. [A] Map of the eastern Rif with location of Ifri n'Etsedda and nearby sites. [B] View from the hill opposite to the cave into the valley of Oued Moulouya with Beni Snassen Mountains in the back. [C] Ifri n'Etsedda seen from the same hill. [D], [E] Impressions of 2013 field campaign with the filling of the 2012 excavation visible in the right corner of [E].

7.5 ka cal BP. Furthermore, pollen analysis shows the arrival of cereals and in addition a decline of trees and shrubs probably connected to a transformation of the landscape, now also used for herding and cultivation (Zapata et al., 2013). Black carbon analysis provides indications for a shifting fire regime, related to the burning of dung and fodder remains as a result of animal penning inside the shelter (Lehndorff et al., 2015). The study of the lithic industry indicates no significant changes in raw material procurement, technology and tool composition between the Epipalaeolithic and early Neolithic assemblage, thus suggesting a certain continuity of population across the Neolithic transition.

To understand how Neolithic technologies were distributed towards the hinterland, further research is needed. However, it is clear that pottery appears at the contemporaneous site of Hassi Ouenzga some 57 km further south simultaneously at about 7.5 ka cal BP (Linstädter, 2004). Clear evidence for food production at that time is still pending. Therefore, these inland groups are seen as semi-sedentary local hunter–gatherers in the Epipalaeolithic tradition, which have adopted the knowledge of pottery production via contacts with full-Neolithic groups. The Epipalaeolithic of this region around the Plain of Gerrouaou is well represented by sites such as Ifri el Baroud (Nami, 2008), Taghit Haddouch (Hutterer et al., 2011), Ifri n'Ammar (Moser, 2003) and Hassi Ouenzga (Linstädter, 2011).

The third region, where both Epipalaeolithic and Early Neolithic sites are found, is the lower Moulouya River (Fig. 1A and B).