



New Upper Palaeolithic Rock Art Complex in the Tejo Valley, Central Portugal

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Abstract

This short report presents newly discovered Palaeolithic rock art panels within the Ocreza Valley (Lower Tejo River), central Portugal, comprising several engraved zoomorphic figures, including auroch and horse. Together, they substantially increase upon the previous headless horse found in 2000, and the style of the engravings is identical to Upper Palaeolithic open-air engravings from other areas of western Iberia, including the Côa, Sabor, Tua, Siega Verde, La Salud, Zêzere valleys, and Vale Boi. Currently, no clear deposits with Upper Palaeolithic artefacts have been identified over and next to the newly discovered rock. However, these discoveries indicate the occupation of Ocreza Valley during the Upper Palaeolithic and a possible concentration of Upper Palaeolithic rock art in this area of the Tejo Valley, yet to be established. If confirmed by future fieldwork, such Palaeolithic rock art may be overlapping the territory of an already-known Holocene-dated Tejo Rock Art Complex.

Keywords Engravings · Iberian Peninsula · Palaeolithic · Rock art · Tejo Basin

Introduction

The Iberian Upper Palaeolithic presents a notable quantity of rock art divided between paintings and engravings inside caves, rock shelters, and overhangs. However, in western Iberia, this phenomenon occurs almost always as engravings at open-air sites, particularly concentrated in the Douro (Aubry et al., 2022) and Guadiana (Reis, 2021) river basins (Fig. 1a).

In contrast, the Lower Tejo River, which extends across the central Portuguese region for ~230 km with a catchment area of ~25,000 km², had a limited number of examples with only four panels known until 2021: a single engraving in the Ocreza (Panel OCR15) and three in the Zêzere (Baptista, 2009). Nevertheless, the region has two features that potentiate more Upper Palaeolithic rock art. Downstream, with the confluence with Zêzere River, where the bedrock is composed of limestone and fluvial terrace deposits, are ca. 40 Upper Palaeolithic sites, some with several occupation levels. Upstream from the confluence, where the bedrock is composed of schist and quartzite, there is a large number of post-Palaeolithic rock art engraved panels (Epipalaeolithic to the Bronze Age) (Baptista, 2009, 2024; Garcês, 2017) known as the Tejo Valley Rock Art Complex. This complex

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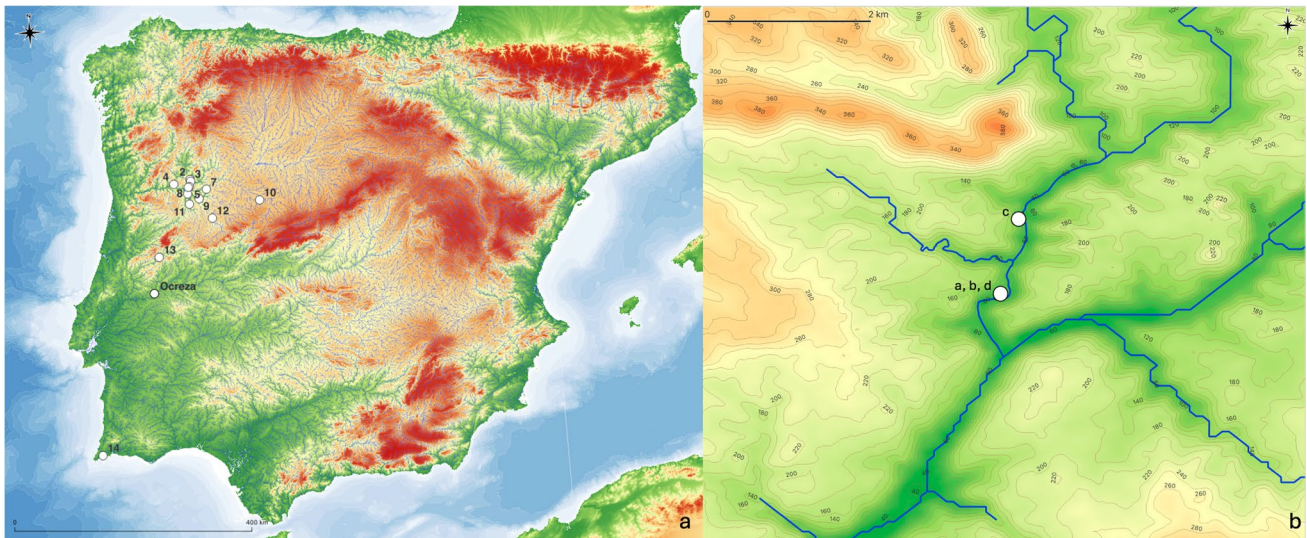


Fig. 1 **a** Location of the Ocreza rock art complex and other Palaeolithic engravings: (1) Sampaio, (2) Pousadouro, (3) Fraga Escrevida, (4) Foz do Tua, (5) Foz do Sabor, (6) Ribeira da Sardinha, (7) Mazouco, (8) Foz Coa complex, (9) Redor do Porco, (10) La Salud, (11) Faia, (12) Siega Verde complex, (13) Poço do Caldeirão e Costalta, (14) Vale Boi. **b** Location of the Ocreza rock art panels: **a** OCR15, **b** OCR20, **c** OCR21, and **d** OCR22

has 1636 panels and 7000 engravings distributed across a 120 km expanse of river catchment, representing ca. 2000 km² of landscape.

We hypothesized that the few instances of engraved Upper Palaeolithic rock art at Tejo could be related to the absence of dedicated fieldwork. To test this hypothesis, we surveyed and test-pitted selected areas of the Ocreza Valley. The Ocreza River is 64 km long, and its catchment covers 1422 km² and flows into the Tejo River at around 48 masl. The bedrock comprises schist, greywacke, metagreywacke, and quartzite, resulting in a molded landscape based on tectonic folds and faults.

Materials and Methods

Panel OCR15 is a part-outline of a horse assigned by style and technique to the Solutrean (c. 25 to 19 ka cal BP) (Baptista, 2001; Santos, 2017) and is located on the northern bank facing south of the Ocreza River (Fig. 1b). Since our team and students repeatedly visit this panel and the post-Palaeolithic engravings around it, we suggest that more engravings may be hidden under the colluvial deposits within the vicinity.

To test this hypothesis, in 2021 we opened a 4 × 4 m test pit ca. 40 m east of Panel OCR15 (Fig. 2a and b). The excavation followed the natural layers controlled by 5 cm spits. The sediments were dry sieved, using a 3-mm mesh, with individual bagging of finds. When charcoal and ash pit were discovered, its sediments were processed by flotation using a 0.25-mm mesh to collect charcoal samples for

identification and radiocarbon dating. A sample of charcoal was identified at the Archaeosciences Laboratory of the Portuguese Heritage Institute and sent to the Waikato Radiocarbon Laboratory for radiometric dating.

In 2023, a walkover survey was undertaken between 1.5 and 1.0 km upstream on the same terrace platform of Panel OCR15, between 53 and 57 MASL, to find new Palaeolithic engravings on exposed outcrops and estimate the extent of Palaeolithic rock art in the Ocreza catchment (Fig. 2c).

In 2024, using similar excavation methods, we expanded the area excavated in 2021 a further 20 m² to the east and west (Fig. 2d).

Results

The 2021 excavation located near OCR15 (Fig. 3a) uncovered a new Upper Palaeolithic rock art panel with a complex set of engraved figures (Panel OCR20) (Fig. 3b and c), while the excavation of 2024 revealed an engraved horse (Panel OCR22) (Fig. 3d).

A sorted stratigraphic sequence from the top to the base of the excavation included (Fig. 4a and b):

S.U. 1: 10 cm. Colluvium. Silty-sandy matrix, loose, medium beige colour (5/3 10 YR), with reduced organic components consisting of a few small grassroots and very few angular greywacke pebbles.

S.U. 2: 5–10 cm. Colluvium. Semi-compact silty matrix, loose, light beige colour (7/3 10 YR), with larger greywacke pebbles.



Fig. 2 Details of the fieldwork. **a** During the discovery of OCR20 in 2021. **b** The recording of OCR20 in 2021. **c** During the survey of 2023. **d** During the excavation of 2024

S.U. 3: 30 cm. Colluvium. Semi-compact silty matrix, light beige colour (7/3 10 YR), with numerous angular blocks and pebbles of greywacke and schist and a flint flake.

S.U. 4: 15 cm. Colluvium. Semi-compact silty matrix, dark reddish beige colour (4/1 5YR), with few angular pebbles and rare angular blocks of greywacke, some of schist, and three quartzite flakes.

S.U. 5: 1–5 cm. Hearth. Semi-compact silty matrix, dark brown (2.5 YR), with abundant charcoal and ash, angular greywacke, and schist pebbles in similar quantities larger than the overlying stratigraphic units.

S.U. 6: 1–3 cm. Fluvial terrace deposit. Coarse quartz sand matrix, beige (7/2 7.5 YR). It has packets with abundant well-rolled and flattened pebbles of schist and greywacke reaching a depth of 10 cm when filling holes in the outcrop.

S.U. 7: <5 cm. Fluvial terrace deposit. Sandy-silt matrix, reddish brown colour (5/8 10 YR), with some coarse quartz sand and small well-rolled and flattened pebbles of schist and greywacke.

S.U. 8: 10 cm. Silty matrix, very compact, light beige colour (7/3 10 YR), without clasts.

S.U. 9: Bedrock.

The nine stratigraphic units correspond to three horizons: an accumulated historical colluvium covering the panel, a charcoal and ash pit (with the charcoal taxonomically identified as *Erica arborea*) of the Roman age (Table 1), and a basal one corresponding to the remnants of a Quaternary terrace. In turn, the survey of 2023 revealed an engraved auroch (Panel OCR21) at ca. 1.3 km upstream. The already-known Panel OCR15 and the new Panel OCR21 were exposed to natural erosion.

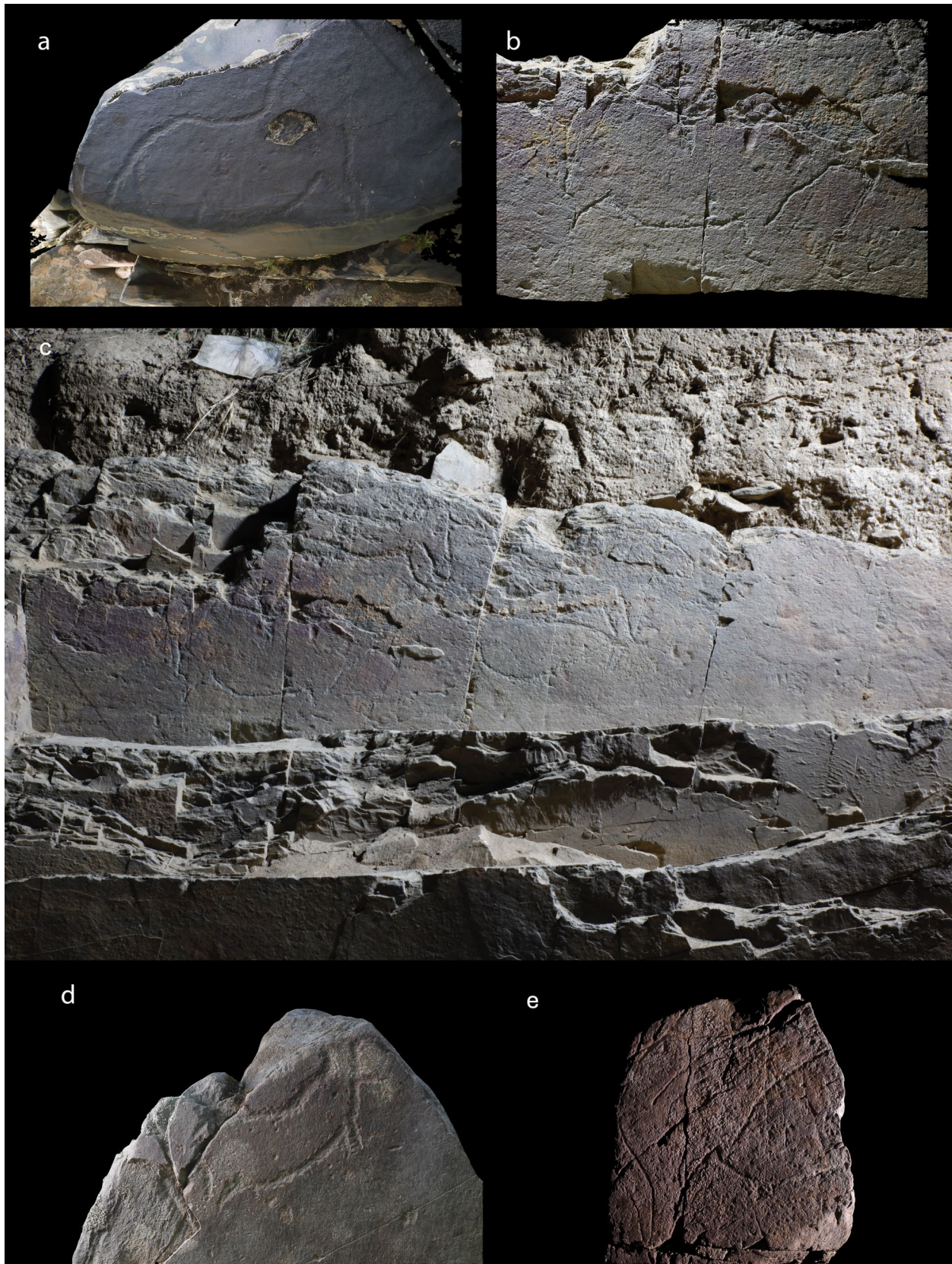


Fig. 3 Palaeolithic rock art from Ocreza Valley. **a** Panels OCR15. **b** Detail of an auroch on OCR20. **c** OCR20 where, although heavily damaged, it is possible to see the Palaeolithic engravings of auroch, horse, and a possible post-Palaeolithic capreolus (Danelatos, 2022). **d** OCR22. **e** OCR21

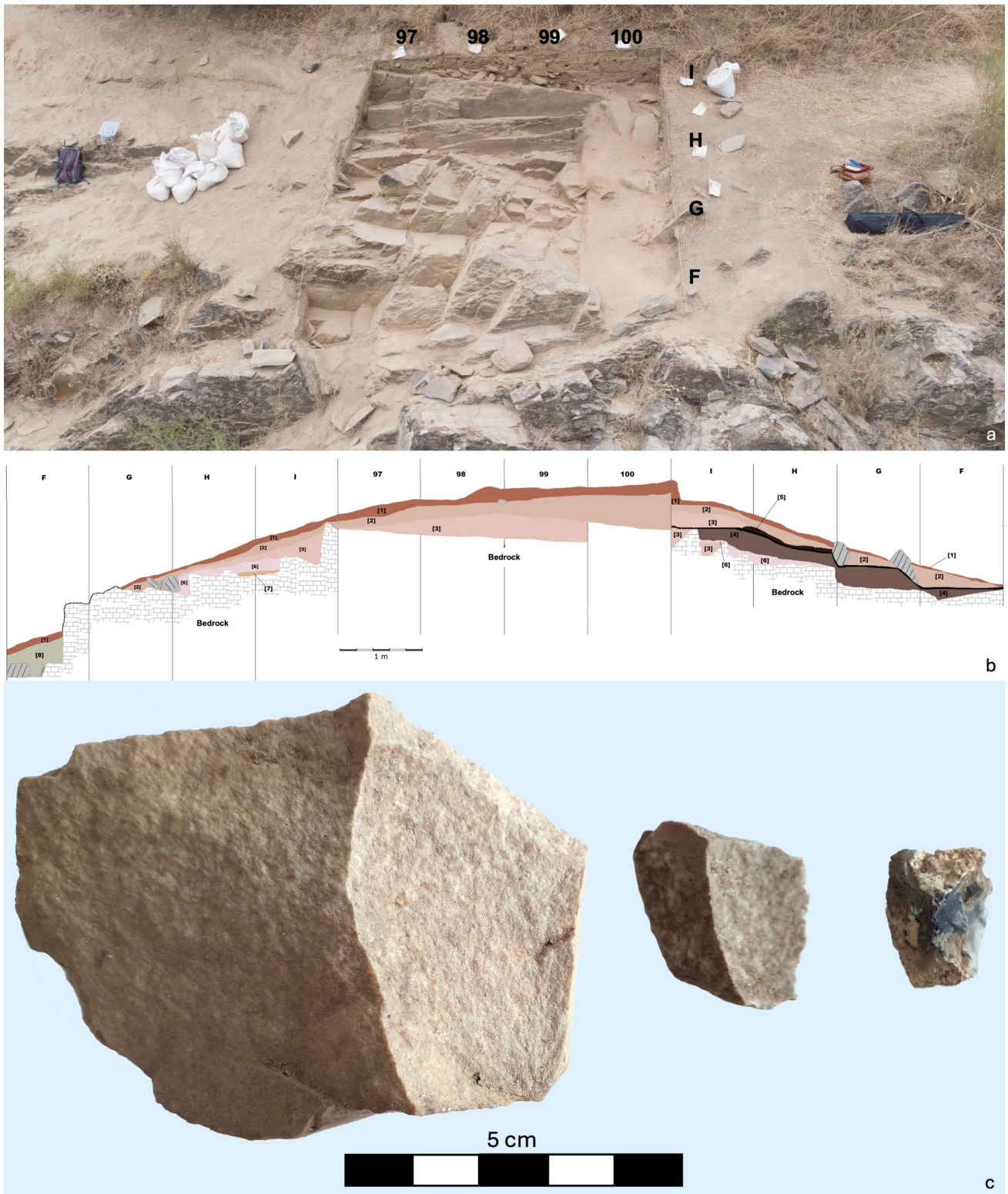


Fig. 4 a View of the excavation area with Panel OCR20. b Profiles of the excavated area. c Two undiagnostic quartzite flakes found inside S.U. 4 and one undiagnostic chert flake found inside S.U.3

Table 1 Radiocarbon date from the charcoal sample recovered from stratigraphic unit 4 of OCR21

Lab code	Species	dC13	Years BP	Years cal BP (95.4%)	Years cal BP (99.7%)
Wk54118	Ericacea (possible <i>Erica arborea</i>)	80.5 ± 0.2*	1746 ± 16	1705–1585	1710–1548

Panels OCR15, OCR20, and OCR22 are c. 50 m from each other at the northern margin of the river on a steep slope facing south where the river runs east–west, whereas Panel OCR21 is 1.3 km further north on the western margin facing east, where the river runs north–south. All of them are at the right margin of the Ocreza and an altitude between 53 and 57 MASL. Our preliminary results indicate that all panels are on vertical to sub-vertical schist outcrops, with OCR20 presenting foliation, while OCR15, OCR21, and OCR22 present joint fractures.

They also display engraved zoomorphic figures depicted in absolute profile, in a side-on stance, with prominent bellies, dorsal lines, and upper leg thigh sections; the torso and legs with the lower leg sections and hoofs are rarely represented.

Panels OCR15, OCR21, and OCR22 display single figures (a horse, an auroch, and a further horse, respectively), while Panel OCR20 presents a complex set of identified and unidentified figures, including at least one auroch.

The Panel OCR20 engravings are mainly pecked, but within its complexity, there are also incisions and abrasions, while in Panels OCR15, OCR21, and OCR22, the engraving method is always pecking.

Unfortunately, there are no artefacts directly linked *sensu stricto* with the rock art so far, and the flakes found (Fig. 4c) were on the colluvial stratigraphic layers above the Roman age hearth, meaning that they came from somewhere above the site, and arrived much later, after the engravings were made.

Discussion

The absence of a preserved stratigraphic unit with Upper Palaeolithic artefacts and Upper Palaeolithic radiometric dates adjacent to the engravings is problematic. This is an essential problem that affects plenty of other open-air sites with early prehistoric engravings.

From the geomorphological point of view (Fig. 5), the new panels are on a terrace platform at 61 to 53 masl. Since there is no evidence of a terrace platform below, we interpret this one as being that of the later terrace of the Lower Tejo system, that is, the T6. Filling the voids of this bedrock, including within the excavated area, are gravels and coarse grain sand coherent with the basal gravels of the T6, dated between 60 and 44 ka (pIRIR on sediment), but can be as recent as 38.5 ka (fading-corrected IRSL on sediment) or

33.5 ka (U-series on faunal remains from the Mousterian context of Foz do Enxarrique) (Cunha et al., 2016). This chronology is corroborated by the colluvial deposit and the Upper Palaeolithic hearth inside of it at Ribeira da Atalaia (OSL 25.3 ka on sediment, OSL 24.7 ka on burnt sand from the hearth, TL 24.8 ka and 24.9 ka on burned quartzite from the hearth) (M. Dias et al., 2010).

Between this platform and the present riverbed is a 5-m vertical section likely formed by the combination of regional tectonics (Martins et al., 2017) and the lowering of sea level following the LGM (Lambeck et al., 2014). The new engravings could only be made after the terrace platform was formed and later abandoned by the river. As of yet, there are no similar engravings on the walls of the 5-m vertical section or on the rocks along the present-day riverbed, where Epipaleolithic rock art is abundant (Garcês, 2017). Therefore, in the light of the present geomorphological, technical, and stylistic data, it appears that the newly discovered engravings should have been made during the formation of the present riverbed but before the Epipaleolithic, that is, during the Upper Palaeolithic. Of course, that does not exclude the production of post-Palaeolithic rock art at the T6 terrace platform or above, where they exist, because these outcrops were already accessible during the Holocene.

Although the Ocreza Valley panels are still few, besides their geomorphological position, various data converge towards attributing these panels to the Upper Palaeolithic, as they share similarities in terms of panel location, panel inclination, and panel orientation, engraving technique and style with some of Foz Côa, Sabor, Tua, Siega Verde, La Salud, Zêzere valleys and Vale Boi (Baptista & Reis, 2001; Baptista & Varela Gomes, 1996; Santos, 2017; Santos et al., 2015). At these sites, the engraved panels were assigned to Upper Palaeolithic periods between 30 and 12 ka based on stylistic comparison with mobile art recovered from dated contexts, charcoal painting directly dated by radiocarbon or engraving covered by dated deposits at Fariseu panel nº1 in the Côa Valley (Aubry, 2024; Aubry et al., 2014; Mercier et al., 2006). It is expected that similar conditions will be discovered at Ocreza during future fieldwork.

The newly discovered rock art follows a generic pattern of facing south and east, similar to panels found in Foz Côa (Fernandes, 2010) and being in vertical or sub-vertical outcrops (which is the opposite to the majority of the ca. 7000 post-Palaeolithic engravings from the Tejo Valley Rock Art Complex that are in a horizontal to sub-horizontal position). They are also similar in style, representing animals depicted in absolute profile; in a side-on stance, with prominent

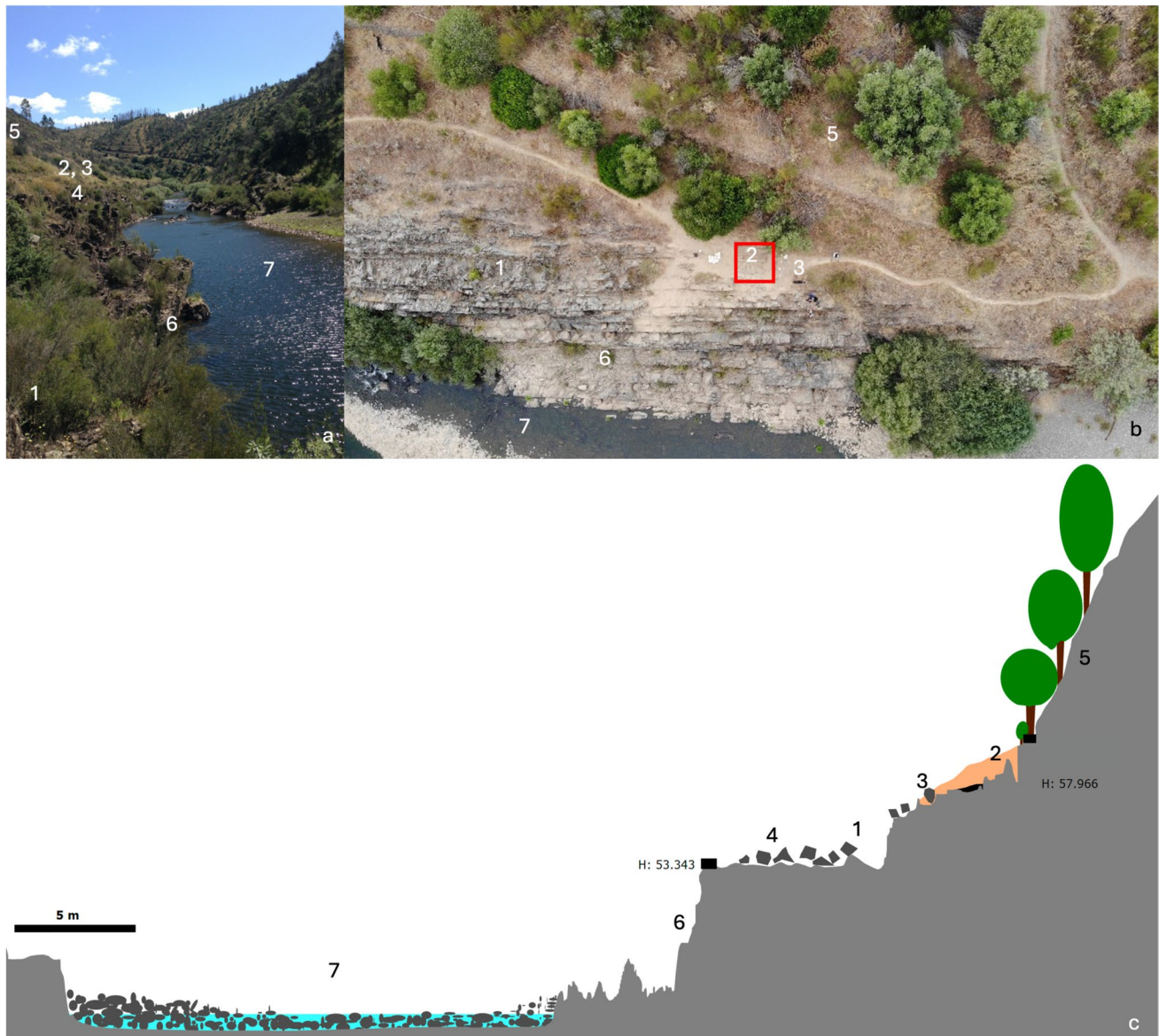


Fig. 5 Ocreza Valley. **a** Facing upstream. **b** Aerial view of Panels OCR20 and OCR22. **c** Schematic representation of the valley (facing downstream). (1) abrasion platform, (2) Panel OCR20, (3) Panel OCR22, (4) Panel OCR15, (5) Colluvial deposit, (6) cliff, (7) Ocreza riverbed

bellies, dorsal lines, and upper leg thigh sections, with lower leg sections and hoofs rarely represented; and in technique (predominately pecking).

The close relationship to freshwater resources is often highlighted when approaching prehistoric hunter-gatherer cultural choices, mobility, subsistence strategies, territoriality, environmental conditions, archaeological visibility, and site formation processes (Aubry et al., 2010, 2012; Fernandes, 2013; Hussain & Floss, 2016).

The largest river basins that cut across the Iberian Peninsula through a variety of landscapes, such as the Douro, the Tejo, and the Guadiana, closer to Escoural Cave and also with important Upper Palaeolithic rock art clusters

(Collado Giraldo, 2008) played a fundamental role for these communities during the Upper Palaeolithic, as evidenced by a large number of sites. Reinforcing the importance of these settings, the western Iberian open-air Palaeolithic rock art follows a specific landscape pattern with numerous engravings positioned mostly on schist outcrops next to rivers (Jordá Pardo, 2012). While the major clusters of Palaeolithic rock art are located in the northwest of the western Iberian Peninsula, there are other clusters dispersed across the central and southwestern regions (e.g., Costalta, Poço do Caldeirão, Ocreza Valley, Escoural Cave, Maltravieso Cave, and the Guadiana Valley) (Reis, 2021).

Conclusions

This short report presents the new rock art engravings within the Ocreza Valley in the Lower sector of the Tejo Basin. The new Ocreza panels contribute to a potential emerging cluster of Upper Palaeolithic rock art within this region of the central western Iberian Peninsula. The size of the Holocene assemblage within the Tejo Rock Art Complex and the distribution of rock art in the Ocreza Valley may only represent a small percentage of the rock art of a much larger cluster, which alters the significance of the Tejo during the Upper Palaeolithic. Additional Upper Palaeolithic figures in the Tejo Basin, such as those in the Zêzere Valley, may extend this influence. Therefore, these discoveries seem to suggest that the area within the Ocreza catchment may yield more engraved rock art from this and other river tributaries that feed into the Tejo River. However, such a possibility can only be confirmed through future dedicated surveys and excavations of the colluvial deposits that cover the bedrock, particularly those covering the vertical and sub-vertical panels along the T6 terrace platform.

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Data Availability Detailed context and interpretation of OCR20 is publicly available in Danelatos Master thesis at the Instituto Politécnico de Tomar Repositorium: <https://comum.rcaap.pt/handle/10400.26/43455>. Several publications have images and descriptions of OCR15.

Declarations

Competing Interests The authors declare no competing interests.

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