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Paleolithic zoomorphic figures in SW of Iberian Peninsula

Dissertação de Mestrado

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For my beloved parents,

who did their best to let me achieve my dreams.

‘Animals are good to think with’, we analyse the cultural context of animal figures in various recent rock-art traditions and ask what light this can throw on the cultural context of the animal art of the Upper Palaeolithic.’

(Sauvet et al., 2009)

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ABSTRACT

This thesis examines the paleolithic zoomorphic figures in the Southwest (SW) of the Iberian Peninsula, which will be accomplished through the study of four sites: Escoural cave, Maltravieso cave, Mina de Ibor cave, and Guadiana River, an open-air site. The study aims to answer the following questions: is there a pattern in the representation of the zoomorphic figures in the SW of Iberian Peninsula or not? If a pattern is identified, can it indicate a relationship between the three caves and the open-air site?

This study begins with a general introduction about upper paleolithic rock art and the discovery of rock art sites in Portugal and Spain. Then the methodology of the research includes: a) a bibliographic analyses to have a full comprehension of the four sites, b) the field visit to document Escoural cave by using the new digital method (photography and 3D modeling) and taking samples of pigments in order to obtain the first absolute dates if possible, c) the lab work by applying tools such as DStretch® and photoshop to obtain a better view of the painted and engraved figures that are distributed in the four sites.

After collecting this data, the analyses started by establishing two statistics, the first one for each individual site and the second for all sites together. Both statistics presented: a) the type of the represented species, b) the technique used, whether it is engraving or painting, in case of painting then which pigment color is used, c) the physical characteristics, if it is full figure or only partial such as, the head, muzzle, cervical-dorsal line, ventral line, front and hind leg (at the end of the thesis there will be appendix representing the studied zoomorphic figures), as well as the orientation of the animal. The purpose of this statistical analysis is to identify differences and/or similarities in the zoomorphic figures in the selected sites.

Finally, there will be a discussion comparing these sites with sites from South of Spain that have Paleolithic rock art sites, and from the West of the Iberian Peninsula as Ocreza open air site, and La Griega cave. The aim of presenting this comparison is to understand if there was a geographic connection between groups that occupied the Iberian Peninsula.

This methodology revealed the following primary results: The total of zoomorphic figures of the four sites are 71; the identified zoomorphic figures are 59, while the unidentified are 12; Escoural has the highest number of zoomorphic figures representations and Mina de Ibor has the least figures. The most represented zoomorphic figure in the four

sites was the equid, then cervid, bovid, goat and bear; the most used technique in the four sites was engraving.

There are some similarities between the three caves. They have the same representation of the zoomorphic figure. It could indicate interaction between the groups that recurrently occupied the Iberian Peninsula. The Guadiana River, however, was different particularly in having the highest representation of physical characteristics of the zoomorphic figures. It is worth asking why this different complexity happens on this site when it is located near the other three sites. The answer may be related to the hypothesis of this site being occupied, probably at a later Prehistoric time.

Keywords: Paleolithic art, Zoomorphic figures, Escoural, Maltravieso, Mina de Ibor, Guadiana.

RESUMO

Esta tese examina as figuras zoomórficas paleolíticas no Sudoeste (SW) da Península Ibérica, o que será realizado através do estudo de quatro locais: Gruta Escoural, Gruta Maltravieso, Gruta Mina de Ibor, e Rio Guadiana, um sítio ao ar livre. O estudo visa responder às seguintes questões: existe ou não um padrão na representação das figuras zoomórficas no SW da Península Ibérica? Se for identificado um padrão, poderá este indicar uma relação entre as três grutas e o sítio ao ar livre?

Este estudo começa com uma introdução geral sobre a arte rupestre paleolítica superior e a descoberta de sítios de arte rupestre em Portugal e Espanha. Depois, a metodologia da investigação inclui: a) uma análise bibliográfica para ter uma compreensão completa dos quatro sítios, b) a visita de campo para documentar a gruta Escoural utilizando o novo método digital (fotografia e modelação 3D) e a recolha de amostras de pigmentos para obter as primeiras datas absolutas se possível, c) o trabalho de laboratório aplicando ferramentas como DStretch® e Adop photoshop® para obter uma melhor visão das figuras pintadas e gravadas que são distribuídas nos quatro sítios.

Após a recolha destes dados, as análises começaram por estabelecer duas estatísticas, a primeira para cada sítio individual e a segunda para todos os sítios em conjunto. Ambas as estatísticas apresentaram: a) o tipo da espécie representada, b) a técnica utilizada, quer seja gravura ou pintura, em caso de pintura, qual a cor do pigmento utilizado, c) as características físicas, se é figura completa ou apenas parcial, tais como, a cabeça, focinho, linha cervico-dorsal, linha ventral, pé dianteiro e traseiro (no final da tese haverá apêndices representando as figuras zoomórficas estudadas), bem como a orientação do animal. O objectivo desta análise estatística é identificar diferenças e/ou semelhanças nas figuras zoomórficas nos locais seleccionados.

Finalmente, haverá uma discussão comparando estes sítios com sítios do sul da Espanha que têm arte rupestre paleolítica, e do oeste da Península Ibérica como Ocreza, e a gruta La Griega. O objectivo de apresentar esta comparação é compreender se existia uma ligação geográfica entre os grupos que ocuparam a península Ibérica.

Esta metodologia revelou os seguintes resultados primários:

o total de figuras zoomórficas dos quatro sítios é 71; as figuras zoomórficas identificadas são 59, enquanto as não identificadas são 12; Escoural tem o maior número de representações zoomórficas e Mina de Ibor tem as figuras menos representadas; a figura zoomórfica mais representada foi a eqüídea, depois cervídeo, bovino, caprino e urso; a técnica mais utilizada foi a gravura.

Existem algumas semelhanças entre as três cavernas. Têm a mesma representação da figura zoomórfica. Isto pode indicar a interacção entre os grupos que recorrentemente ocupavam a Península Ibérica. O rio Guadiana, porém, é diferente, particularmente por ter a mais alta representação das características físicas das figuras zoomórficas. Vale a pena perguntar porque é que esta complexidade diferente acontece neste sítio quando este se situa perto dos outros três sítios. A resposta pode estar relacionada com à hipótese de que esse local foi ocupado provavelmente numa época pré-histórica posterior.

Palavras-chave: Arte paleolítica, figuras zoomórficas, Escoural, Maltravieso, Mina de Ibor, Guadiana.

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CHAPTER 1. INTRODUCTION

1.1. Introduction to Paleolithic rock art.

Rock art is one of the oldest forms of cultural heritage, an important witness of the mankind`s past. Rock art carries different names such as cave art, rock painting, and parietal art. All of them are mainly used to describe archaeological record (Smith, 2014). In order to produce art different techniques were used such as pecking by direct or indirect percussion, or engraving with flints and burins (Nash, 2005; Donaldson, 2012) .

According to Collado et al., (2006), the incised engraving is the main technique used in the representations of paleolithic fauna .

There are three different types of lines are used :

A. Continuous Lineal Line: it is done by incision that does not present any faults line and is barely corrected. Generally, it is used to define anatomical outline of the animal figure.

B. Discontinuous Lineal Line: it is less numerous than the previous one. In this case the execution line seems intercurred, consistently shaping one single line, it is used to define the outline of the figure also.

C. Multiple Line: it consists of different length lines grouped together in the same direction. They are mainly used to fill details of the figures, such as the head, the legs, and the neck.

Another technique used is the painting, that can be produced by fingers, sticks, and bark fibers, which is used as paint brushes (Donaldson, 2012). The pigments in prehistoric rock paintings are classified as inorganic or organic and as natural, artificial, or synthetic. The organic ones are very difficult to recognize as they are not preserved for long time. The ochers are considered an Inorganic natural pigment. The crushing and, acerated processed identify the pigments as natural ones, in the contrary any physical treatment as heat identifies it as artificial pigment, and if the pigment is not found in the nature and can be prepared by mixing different substance, in that case it is classified as synthetic pigment (Gomes et al., 2013).

Paintings initially used to be monochrome and were of charcoal, or burnt bones were commonly used as black pigment. It was combined with binders like animal fats. Time went by, artists began to use mineral-based pigments that did not fade. In the Paleolithic

depiction pigments were derived from raw materials sourced locally near the image's actual location, Kaolin or ground white lime calcite are used to make white pigment. The black is known as magnetite (Fe3O4), the red is recognized as hematite (Fe2O3), and yellow is known as goethite (FeO (OH), these pigments were the main colors in rock art paintings (Chalmin et al., 2003; Gomes et al., 2013).

Animal shoulder bones were used as mortars to grind the colorants into powder. To make the powder bind to the cave wall, it was combined with cave water or bone marrow, fats of animal, urine, albumen, and blood (Chalmin et al., 2003). This powerful potent artistic form was considered a visual communication, nevertheless, it was restricted to t a stratified society member, may the reason could a part of a phase of initiation, or a group means of communication with the spirit world in the recesses of a cave (Nash, 2005).

Rock art also has territorial function, The cultural or economic ties that exist between locations are referred to as territory. Researchers can use these correlations to evaluate the configuration of past socio-spatial interactions in a given region, the same interactions that create a territory (Troncoso et al., 2016; Sepúlveda et al., 2019). In this case rock art is the tool that can construct and help to identify symbolic territory. Means an area that had interaction in term of culture and identity requires establishing links between places that marked by shared visual symbols. In this case rock art could be the key for this interaction (Gallardo et al., 2012; Troncoso et al., 2016; Sepúlveda et al., 2019) .

In another meaning through rock art motifs, there will be constitute evidence of cultural landscape representation that is shared by artists and by those who visited these sites. The rock art spatial distribution indicates the group rights to reach to the resources within regions with higher population densities, while, in lower populations regions, there will be less landmarks (Niskanen, 2019; Sepúlveda et al., 2019).

Eventually with the motifs with stylistic similarities became a type of codification was used to establish areas of influence and determined cultural landscape at a specific moment and sociohistorical context (Troncoso et al., 2016; Sepúlveda et al., 2019). Nevertheless, if it is established, the territory may differ, the sites will not lose their symbolic meaning. It could be interpreted as a resignification of motifs and places may occur, which alter, re-interpret a specific influence that was constituted it in the first place (Sepúlveda et al., 2019).

1.1.1. Types of motifs in rock art

- Zoomorphic figures

Zoomorphic figures are the main themes depicted on the cave walls, especially in the beginning. They are more represented than the anthropic figures (Garate et al., 2013). The equid is the most often portrayed animal in paleolithic cave paintings, although there are also paintings of bovine, mammoth, ibex, cervid, rhinoceroses, and other animals (Figure 1) (Garate et al., 2013). Some motifs are depicted with physical characteristic features such as head with or without the ears the dorsal and ventral lines, frontal and hind legs and the tail (Collado, 2013).

Chauvet Cave is the rarest example of cave paintings for having dangerous predators such as lions and bears. However, archaeologists were puzzled about the hunted animals depicted on the cave walls and if there was a selection for certain animals (Gray, 2010). Moreover, the skeletal remains found in caves and surrounding areas indicate that the animals consumed were not the ones that were normally drawn. For example, several paintings of bison can be found in one location, even though the local diet consisted primarily of ibex (Gray, 2010).

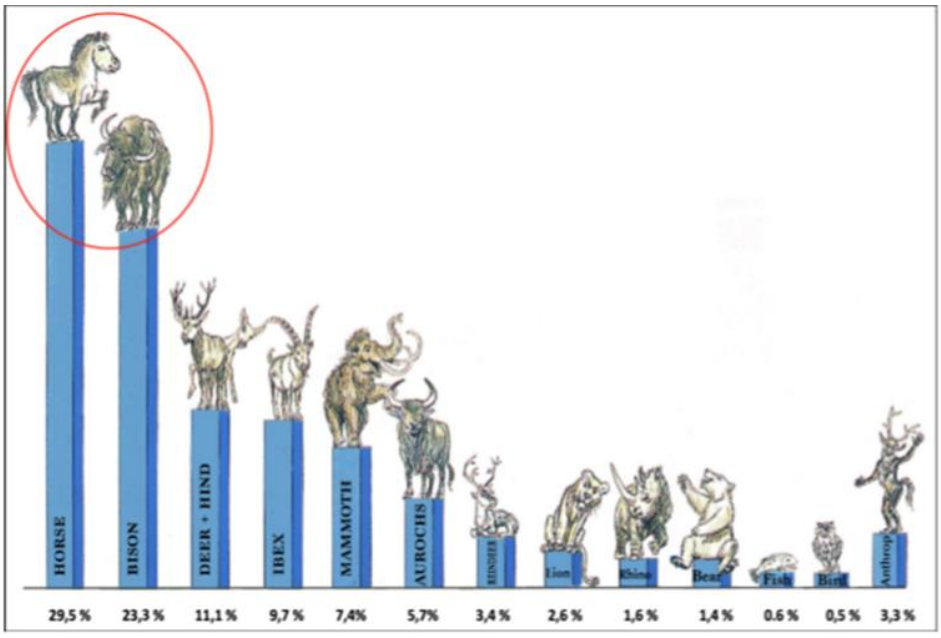


Figure 1. Paleolithic art shows the hierarchy of the animals in cave art (Sauvet, 2019).

One of the reasons to paint animals on the cave walls is being a part of a ritual package, make a ceremonial performance to guarantee successful hunting (Nash, 2005). This

ceremony could incorporate an act of animal killing, which has included the use of sympathetic magic. This act could assist in the ritual act of hunting as rock art creates an ideal world to depict the hunted animals, as in reality, hunters will not always succeed from the first time (Nash, 2005).

In terms of shamanistic concepts to landscape, the human mind's interpretation of the natural surroundings is linked in memory and myth. Rock outcroppings can transform into beasts, humans, and inanimate objects depending on their shape and texture, creating rich storytelling, myth, and legends. Thanks to the landscape, the shaman used it as a base to relay the stories from the rocks to the people (Green et al., 2019).

Another reason is human's admiration for animals' physical abilities as they are dangerous and efficient hunters, bigger, stronger, and faster. Moreover, their weapons like claws and tusks are part of their bodies. Aurignacian artists started to give attention to predators, as hunting predators became the favorite theme (Lewis-Williams et al., 2003). It was interesting to paint carnivore, but may be due to their ferocity, they became totemic identity. They gave the artists and their clan potency the power over others (Nash, 2005). It could be also one of the reasons that different painters depicted their animal's totems, to help the future generation to know which totem they belonged to (Lewis-Williams et al., 2003).

- Anthropomorphic figures

There are few paintings or engravings of humans in naturalistic appearance except handprints, that come in a variety of types, including Negative hand stencils that produced by blowing pigment around a hand that is positioned against a flat surface, such as a cave wall. After the hand is removed a negative outline remains (Gray, 2010). When pigment is applied directly to the palm and fingers of the hand, and the hand is then put against a flat surface, positive handprints are made (Ripoll et al., 1999).

- Non-figurative markings

Abstract marks and symbols were found in many caves. They could resemble shapes, but they do not give at the same time any explanation of their symbolism or meaning. They could be early attempts for writings or communications or a method of counting and remembering or marking places and roads (Gray, 2010).

1.1.2 Paleolithic European art phases

The first phase 50,000-45,000 KA was when Neanderthals experimented the new technological systems regionally of mass production of blades and bladelets. It ended with the Proto-Aurignacian intrusion, in a phase where probably the first wave of modern human immigration began (Zilhão, 2014).

Then by 45,000 Ka the representable upper European Paleolithic art began. With time, it became intense around 15,000-10,000 Ka. and spread to Romania, Italy, France, and Spain (Zilhão, 2014).

Then the second phase started when the interaction inherited from the Transitional Period was the Aurignacian (43 000 – 26 000 BP). It was the earliest culture found in caves and witness production artworks like cave art, such as of Chauvet (Zilhão, 2014). The mammoth, rhinoceros, or bear depictions, as well as the lion in Chauvet Cave, were probably the most famous, as these animals were rarely shown in Paleolithic parietal art. The equid appeared in Aurignacian art as a consistent iconographic feature. It was not always brought up in thematic approaches to early phases, though. At some sites, the ibex was the dominant species (Petrognani, 2015).

With the arrival of the Gravettian came Venus figurines, which were associated with this period. They were typically carved from ivory or limestone. The culture was first discovered in the southwestern French department of Dordogne, at the site of La Gravette 33,000 -21,000 (Jacobi et al., 2010).

During the Upper Paleolithic, communities witnessed a progressive increase during the Solutrean and Magdalenian periods. These two periods, that proofed the appearance of the bow and arrow, the distance hunting, and the improvement industry of lithic (López, 2017). The main reason to use the space of a territory was to obtain the resources of the area to survive (Castañeda, 2017). The occupation sites were chosen depending on the availability of resources in areas such if it a hydrographic source, and near the area of living where the preparation of lithic tools and consumption of food. To make benefit of the resources such as the hunted animals, and the raw material of the area. It would require an area that is near to the place of daily life living. This area would be considered strategic point, where it was

situated passageways that the animals live there, and it would be easy to haunt dismemberment them (González, 2011).

The importance of territory where the daily life and work area happened, could be noticed with the distribution of rock art figures. They could be found in caves or small shelters, where it was used as resting place during travelling between areas, or open-air sites in different technical (Castañeda, 2017).

During Solutrean 22,000 – c. 17,000 BP, where it is important to pay attention to the development of the art features as it connects sites that are separated by distances and lapses of time. One of the main pre-Magdalenian features that are seen during early Paleolithic art is the concave ventral line of mammals, the frontal view of bison's horns and the depiction of equids' jaws as "duck bills" (Figure2) which were characteristic features in Solutrean (Pigeaud, 2007).

Nevertheless, there are figures of equids presenting what so called duck's bills on sites dated to the Magdalenian period. Which led us eventually to think that the duck's bill is a method of styling the end of an equid's nose, but it is not a method to define a site, nor attribute to a certain chronological period (Petrognani, 2015). Magdalenian cultures are presented with approximate dates 17,000 to 12,000 where we can see the unique paintings, as art witnessed the full flowering. The best example was the Altamira cave which appears especially in the bison figures. The large polychrome murals that achieved by using charcoal and hematite to create shading and some of them were depicted in life-size proportions (Gheorghiu et al., 2018).

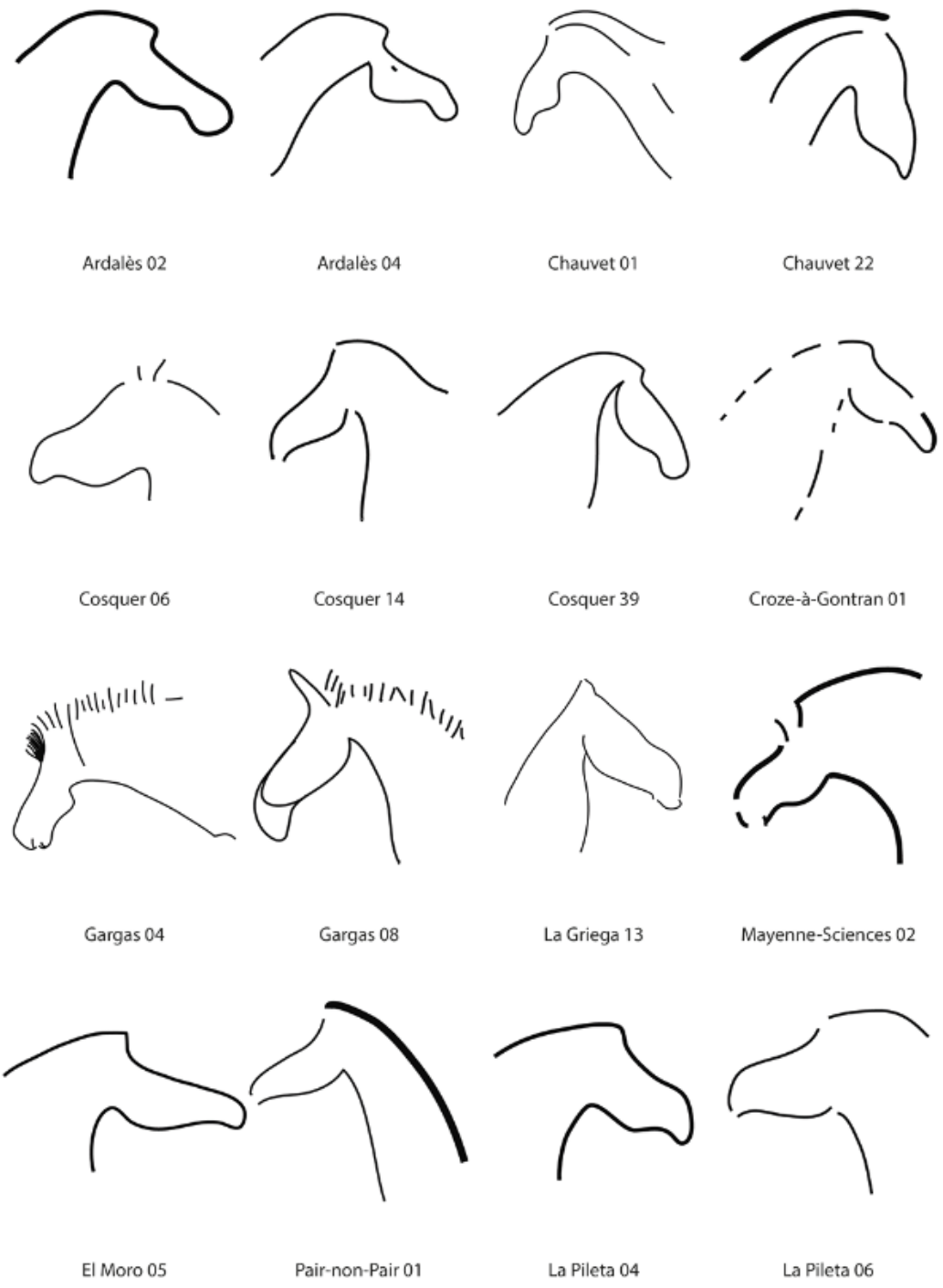


Figure2 .Equids has "ducks bills" from different caves, Chauvet 01; Chauvet 22; Pair-non-Pair 01; Croze-à-Gontran 01; Ardalès 02-04; Gargas 04-08; Cosquer 06-14-39; Mayenne-Sciences 02; La Pileta 04-06; El Moro 05 (S. Ripoll Lopez); La Griega 13 (Petrognani, 2015).

1.1.3 Discovery of rock art in Iberian Peninsula

The Southern west of Iberian Peninsula obtains more than 200 Paleolithic rock art (Bicho et al., 2007) In Portugal Escoural is still the only known Paleolithic cave art site in Portugal (Mauran, 2016). It was the first time Paleolithic art had been discovered on Portuguese territory. After shooting a quarry that worked in the area, the cave was discovered by chance in 1963 at Herdade da Sala (Montemor-o-Novo) (Silva, 2011).

In the northeast of Douro River, the second site was discovered Mazouco site in early of 1980s. It was considered the first open air rock art site in Europe beside Domingo Garcıa Spain and Fornols Haut site in the eastern French Pyrenees (Bicho et al., 2007). Mazouco site has one panel, which is an engraved equid. There was two unidentifed figures, they could be from Middle or Upper Magdalenian age, the opinion is giving by chronological of Andre Leroi-Gourhan (Bicho et al., 2007).

However, during the middle 1990s and early 2000's follows several major dam projects affecting several rivers in northern and central Portugal engraved Upper Paleolithic rock art was discovered on open-air rock sites panels in the Douro, and Tagus Basins Côa, Zezere and Ocreza, and Guadiana River (Figure 3) (Nash, 2005). In 1994–1995 with the scientific work at Côa Valley rock art, that is framed to periods of Gravettian-Magdalenian periods with further studies, Portugal is recognized as one of the countries that discover and carry research scientific work in paleolithic art (Bicho et al., 2007).

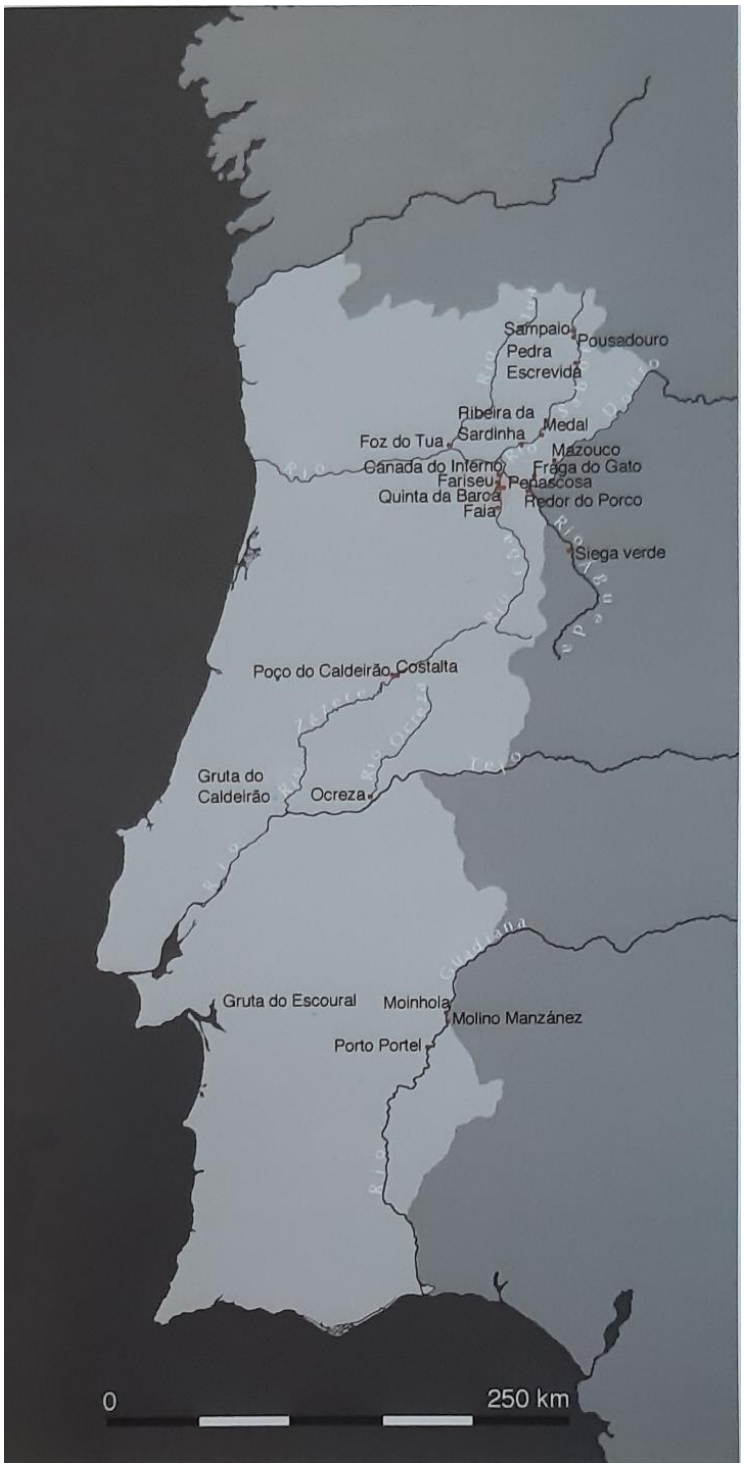


Figure 3. Ditribution of paleolithic Art in Portugal (Baptista, 2012).

Spain

Thanks to Marcelino Sanz de Sautuola in 1879 who took his daughter, Marıa in his investigation on Altamira Cave at Santillana del Mar -Cantabria, where they saw the first anatomically modern humans; expressive activities who inhabited Europe in the Last Ice Age. Sautuola was the first who analyze many of Upper Paleolithic cave art sites in Spain (Nash, 2005; Bicho et al., 2007). Also caves as La Pasiega, and El Castillo, played a major role regarding Paleolithic rock art. Others are in Spain were discovered later like Guadiana (Molino Manzanez), Domingo Garcia, and Siega Verde (Baptista, 2009).

Southern Spain

There are more than 20 Paleolithic sites rock art sites in Andalusia and Extremadura, namely the provinces of Cáceres and Badajoz. They carry different types of rock art site such as the open air of Molino Manzénes on the Spanish side, caves as La Pileta, short caves such as Mina de Ibor and Maltravieso (Figure 4) (Collado, 2008).

The common factor in these sites is the karstic location, some of them are in deep areas and some are used over time, however most of the Mediterranean Spain back to Solutrean. The equid, arches, ibex, cervid, and some signs are probably during late Solutrean, that indicated territorialism among human groups at a time when population density was relatively high (Bicho et al., 2007).

From a temporal perspective direct radiocarbon dating was run in the Andalusian region, mainly from La Pileta and Nerja had AMS on charcoal pigment. Direct chronometric dates are done on three samples at Andalusian rock art by Sanchidrián (Sanchidrián et al., 2001).

1- La Pileta cave in Sanctuary Room figure an aurochs 20.130±350 BP.

2. La Pileta cave from the lake Hall near to incomplete figures of two caprid: 8760±100 BP.

3. Nerja cave Upper Galleries a sample of charcoal near to black cervid 19,900±210 BP.

Then there is the oldest handprint is in Maltravieso cave, Cáceres, Spain, that dates back to 64,000 with U-Th which is considered the oldest art by Neanderthals (Hoffmann et al., 2018).

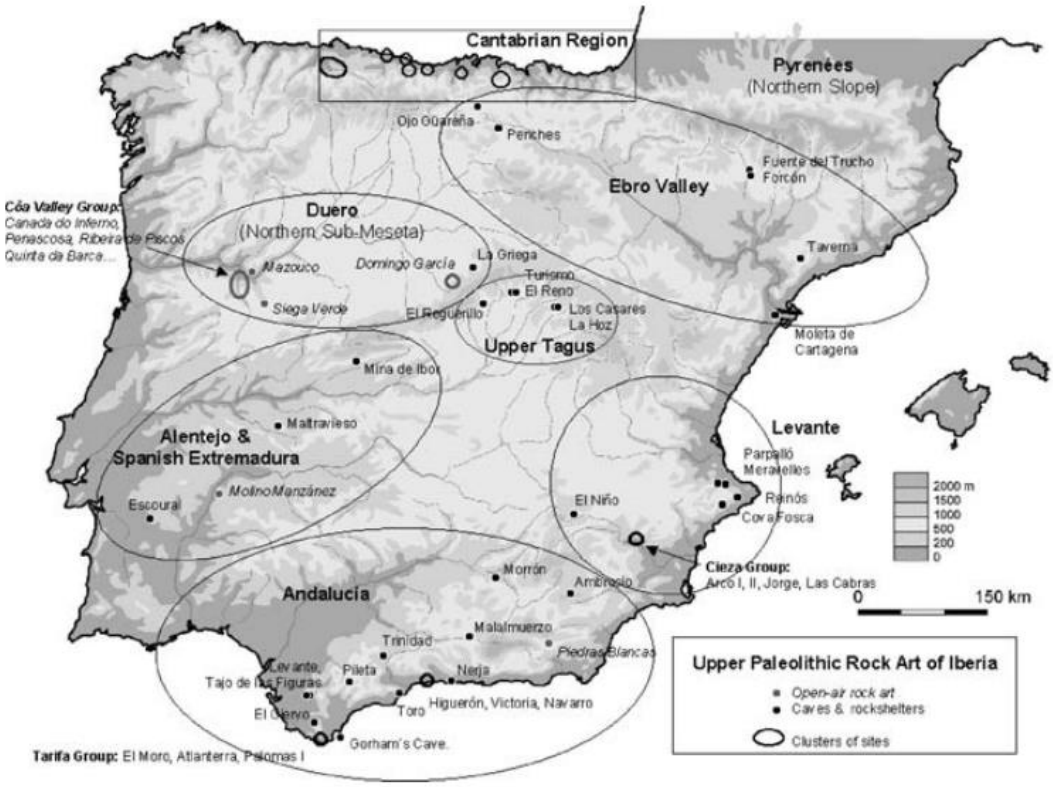


Figure 4. Distribution of Paleolithic Rock art in Spain (Bicho et al., 2007)

1.2. Objective of the work

The main objective is to study the paleolithic zoomorphic rock art figures in Southwest of Iberian Peninsula. One has to take into consideration sites in Portugal Escoural cave, and the Portuguese side of Guadiana River and Spain with Maltravieso cave, Mina de Ibor cave, and Guadiana River Spanish side (Figure *5*).

This study is established by bibliographic reference to understand the sites. The field work to document Escoural cave. The lab work is used by applying tools such DStretch® and Adope photoshop® to present the zoomorphic figures with photos that have digital treatments in each site. Final step is to establish statistics, that we hope to help us to understand relationship between the selected sites.

We question if there are patterns on the paleolithic animals of the southwest of Iberian Peninsula. If a pattern is identified, can it indicate a relationship between the three caves and the open-air site? Or there are differences between caves and river. The most and the least species represented in SW of Iberian Peninsula. The technique that is used engraving or paintings (black, red or both).

We aim to present the physical characteristics of the zoomorphic figures. The physical parts represented frequently (the head, muzzle, cervical dorsal line, ventral line, and the limbs). This will help us to have better comprehension of the similarities and differences in SW of Iberian Peninsula, such as the different positions for presentation of the animals and orientation preference. Are this similarities or differences due to geographical, or social differences?

We aim to make some comparison with sites from, south-Spain, that have Paleolithic rock art sites, and from the west of the Iberian Peninsula like Ocreza river, and La Griega cave. We hope to understand if there are similarities between all these sites in terms of technique and physical characteristic of the representative zoomorphic figures. It could answer the multiplicity of stylistic resources employed by paleolithic populations during the Upper Paleolithic period.

Figure 5. Map shows the selected sites of the master 1. Escoural cave, 2. Maltrarvieso cave , 3. Mina de Ibor cave , 4. Guadiana river Molino Manzánez, The Moinhola rock no 30, Porto Portel (Hasnaa Askalany).

CHAPTER 2.MATERIALS AND METHODS

2.1. Material and Methods

2.1.1. Bibliographic Revision and literature review

The first important task is to select as much literature regarding the Spanish Extremadura region. The sites are Maltravieso cave, Mina de Ibor cave and Spanish Guadiana River Molino Manzánez. From Alentejo region is Escoural cave and Guadiana Portuguese side the Moinhola rock no 30, and Porto Portel. This literature is going to establish the basis of understanding the development that happen in the area regarding history of previous studies, the geological formation of the site, the paleolithic rock art.

The references diverse between museum library books, journals, and the online PDF articles of scientific research sites; https://www.academia.com, https://www. Research gate.net, https://www.sciencedirect.com, http://scholar.google.com, http://link.springer.com/, http://www.urv.net/bibliotheca/index. htm. The date range of this bibliography span from 1950 till 2020.

In order to understand the site, it was important to search for early authors such as Farinha dos Santos, who started to establish the first studies of Escoural cave of recognized human occupation (Santos, 1964). Later he cooperated with Abbee Glory, who gave a possible theory of relationship between Escoural, Maltravieso and La Pileta caves (Glory et al., 1965). Later Gomes ran some excavations in the Southeast part of the cave, but the materials were from early Neolithic-early Chalcolithic (Gomes, 1989). Later Marylise Lejeune, who was the first to catalogue include all the figures in Escoural cave in 1995 (Lejeune, 1995). Over the years other type of studies were done mainly in museology by Cristina Lopes and conservation such as Guilhem Mauran, 2016; Samantha Hruban, 2019 and never forget Silva for narrating the history of the cave ins his publications.

As for Maltravieso the researcher who did the early studies was D. Carlos Callejo Serrano in the cave in 1956 and discovered painted wall representations, mainly handprints, and publish them in 1962 (Ripoll et al., 1999). Later M. Almagro and F. Jordá did the study of documentation, and scientific publication of the artistic content (Angás et al., 2015). There were also studies on the human remains done by Ana Gracia Téllez, D. María Isabel Sauceda and Francisco Javier Cerrillo and more recently by D. Enrique Cerrillo (Collado,

2012). Hipólito Collado did also studies on the cave by using new digital methods such as 3D model and updated topography method (Angás et al., 2015).

As for Mina de Ibor when this cave was discovered in 1995, the documentation work was carried out in collaboration with the team of the Laboratory of Paleolithic Studies and Artistic Representations (L.E.P.R.A.) of the Department of Prehistoric and Ancient History (Collado, 1996).

In Spanish Giadiana river, Manzánez Mill; the motifs were first referenced in the scientific literature in 1900, after Roso de Luna in 1904 indicated the existence of rocks with engravings following Sir Rivett Karnac. Later the discovery of paleolithic engraved figures, technically the closest to those of the Manzánez Mill, did not occur until 1969, the discovery published ten years later 1979. The only written reference on riverbank engravings in Extremadura was a short article that deals with the complex of the Manzánez Mill itself done by Cerrato, F and Novillo, V. in 2000. Later in 2001 began the studies commencement Guadiana Spanish side. After study of the rock art of the site was done by Hipolito Collado (Collado et al., 2006). As for the Portuguese Giadiana river, there is a short article by António Martinho Baptista in which he confirms the existence of a set of engravings for the first time in 1979 (Baptista, 2009).

The second most important task is getting access to unpublish data, thanks to professor Hipolito Collado who gave me that permission to study Maltravieso cave unpublished data regarding the zoomorphic figure's description. The same for his amazing work in both Mina de Ibor cave and Guadiana River. His work in Guadiana was an inspiration to me to frame my thesis .Professor Sara Garcês, who gave me all the access to Escoural cave data. Her effort to guide me in how to organize the data for the thesis to put in right logical order to get the requested results of the study.

Once classification of literature is achieved, it became clear what are the main themes, opinions by various authors who studied the sites previously.

- Difficulties during the research work

The literature of research regarding the sites is scarce, and mostly is written in Portuguese, Spanish, French. For the research purpose it is an enormous task. This bibliography must be translated very accurately and in detail into English. It consumed

quite long time, but it is mandatory to understand the different opinions, arguments, the panels chronology and their interpretations, and methods

The lack in bibliography of some sites like Escoural, in terms of rock art, as the only catalogue that published the rock art of the entire cave was from 1995, by Araujo & Lejeune, that still consider one of the main references that used for Escoural.

To set chronology four the sites based on dating, as not all the sites have direct dating, and even for caves like Maltravieso has hand stencil dating. the method that is followed based on style even if it has some errors, but it was, he most convenient one and species.

2.1.2 Field work

The only Iberian rock art site that needed to be updated in terms of documentation to complete the analysis for this study was Escoural Cave. In 2021 a team formed to visit the cave from; Earth and Memory Institute, Mação, Portugal and Museum of Prehistoric Art and the Sacred Tagus Valley, Mação; Sara Garcês, Anabela Pereira, Hasnaa Askalany, Dionysios Danelatos, Levan Losaberidze, Felix Kisena, Rodrigo Santos, Isabella Queiroz. From University of Extremadura, Spain; Hipolito Collado, José Julio García Arranz, Celia Chavez Rodriguez, and Hugo Alberto.

The aim was to document, and study all the rock art in the cave, and update all the photos by using the latest digital documentation methods. The campaign was preceded by the inspection team Sara Garcês, Anabela Pereira, Rodrigo Santos, Felix Kisena, Dionysios Danelatos, Isabella Queiroz. For three Days to define all the engraving and painting panels in the cave. Then followed by the documentation team to photograph Hipolito Collado, Sara Garcês, José Julio García Arranz, Hugo Alberto, Celia Chavez Rodriguez, Hasnaa Askalany, Levan Losaberidze.

There are two important protocols followed during the days of documentation (Garcês et al., 2020).

❖ To have a better comprehensive identification of more figures by improving the improvement of the visualization of the paintings. This protocol will be carried out using the plug-in DStretch®. Nevertheless, the need to consider the previous analysis of each of the panels on all Escoural Cave since its discovery.

❖ A sampling protocol will be applied on collection of pigments samples from the cave paintings to obtain the first absolute dates if possible by using the uranium-thorium dating technique for the determination (or not) of Neanderthal authorship .

❖ Through the study of the eventual existence of DNA in the pigment samples, it will provide argumentative support to creat a chronological dating and the eventual determination of the presence of human DNA in its composition (in the case of Escoural) and to expand the debate about them in the case of Maltravieso (where recently the oldest rock art representation in the world, with more than 67. 000 years old, has been documented (Hoffman et al., 2018).

- Difficulties during the field work

With the current situation of Covid 19 and lockdown that usually continued for long time, the field visit was postponed many times, due to the movement restriction between countries as the team was Portugal and Spain, until the site was finally visited in the second half of June for 3 days of inspection and 3 days for documentation as the difficulty inside the cave like narrow galleries that hide the rock art figures. It was the most difficult parts of the cave that made it harder for the team, in finishing photos and photogrammetry to document the figures. It will indeed need other visits to continue work.

2.2. Materials and methods in the study of rock art.

In the last 25 years the rock art field became more advanced in terms of photography. Many of these processes are based mainly on photography: as it provides a high level of flexibility and precision to record, and various possibilities of data extraction assisted by efficient software programs. The objective is to present how these tools are used in decorated caves and how they can be helpful for scientific research, and to discover new figures (Robert et al., 2016).

The documenting of prehistoric art serves three purposes: (1) it is used as a study and research tool, (2) it creates documents that will help for further analyses and conservation interventions, (3) the facility of producing many replicas that will maintain the shape and materiality of the originals, which may deteriorate by time (Robert et al., 2016).

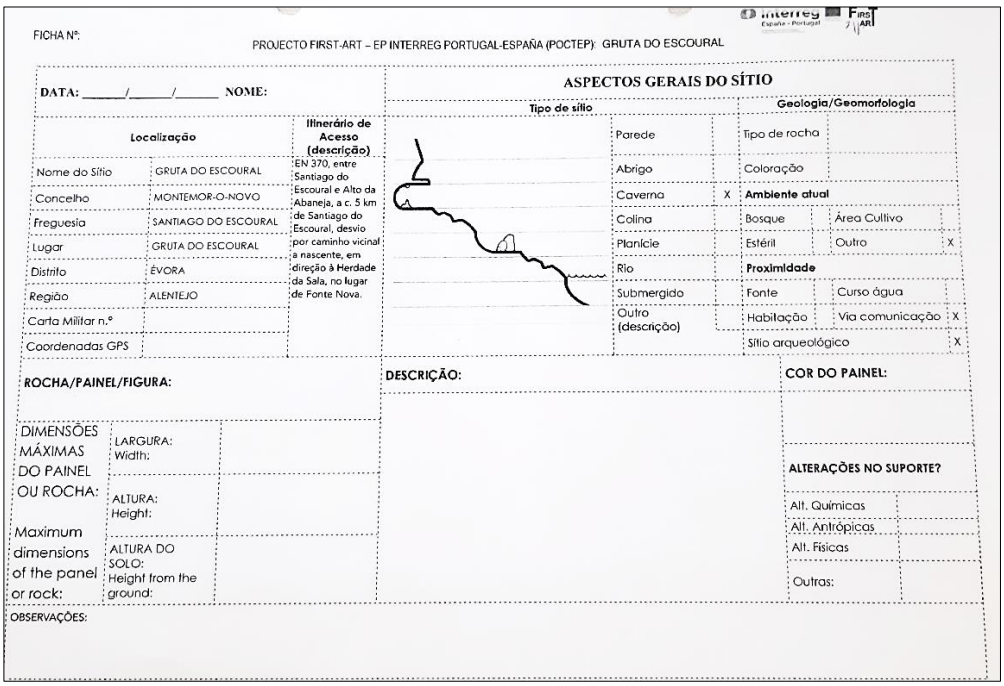
2.2.1. Materials

2.2.1. Field sheet

After locating rock art site, the important next step is to have datasheet to register all the required information about the site and its figures, either with the one is supported by the researcher organization or by the sheet that the researcher design After locating a rock art site (Figure 6 A, B) (Smith et al., 2017).

However, if the researcher has to design his own recording sheet, therefore it is better to follow an internationally/ standard data recording structure such as the International Core Data for Archaeological and Architectural Heritage. it will ensure that the records are accordant with many databases, like the longitude and latitude (and/or the UTM) of the site. This is generally identified using a portable GPS (Smith et al., 2017). It is also important to include information like the date of documentation, type of the site, type of the rock, how many rock art panels numbers, what is the techniques used (brush painted, daubed, incised engraved, pecked engraved), if any pigments used, size, overlays, just a positioning of images (intention to create scenes) (Smith et al., 2017).

A



FICHA Nº:

PROJECTO FIRST-ART – EP INTERREG PORTUGAL-ESPAÑA (POCTEP): GRUTA DO ESCOURAL

DATA: _____/_____/_____ NOME:

ASPECTOS GERAIS DO SÍTIO

Localização	
Nome do Sítio	GRUTA DO ESCOURAL
Concelho	MONTEMOR-O-NOVO
Freguesia	SANTIAGO DO ESCOURAL
Lugar	GRUTA DO ESCOURAL
Distrito	ÉVORA
Região	ALENTEJO
Carta Militar n.º	
Coordenadas GPS	

Itinerário de Acesso (descrição): EN 370, entre Santiago do Escoural e Alto da Abaneja, a c. 5 km de Santiago do Escoural, desvio por caminho vicinal a nascente, em direção à Herdade da Sala, no lugar de Fonte Nova.

Tipo de sítio		Geologia/Geomorfologia		
Parede		Tipo de rocha		
Abrigo		Coloração		
Caverna	X	**Ambiente atual**		
Colina		Bosque	Área Cultivo	
Planície		Estéril	Outro	X
Rio		**Proximidade**		
Submergido		Fonte	Curso água	
Outro (descrição)		Habitação	Via comunicação	X
		Sítio arqueológico		X

ROCHA/PAINEL/FIGURA:

DESCRIÇÃO:

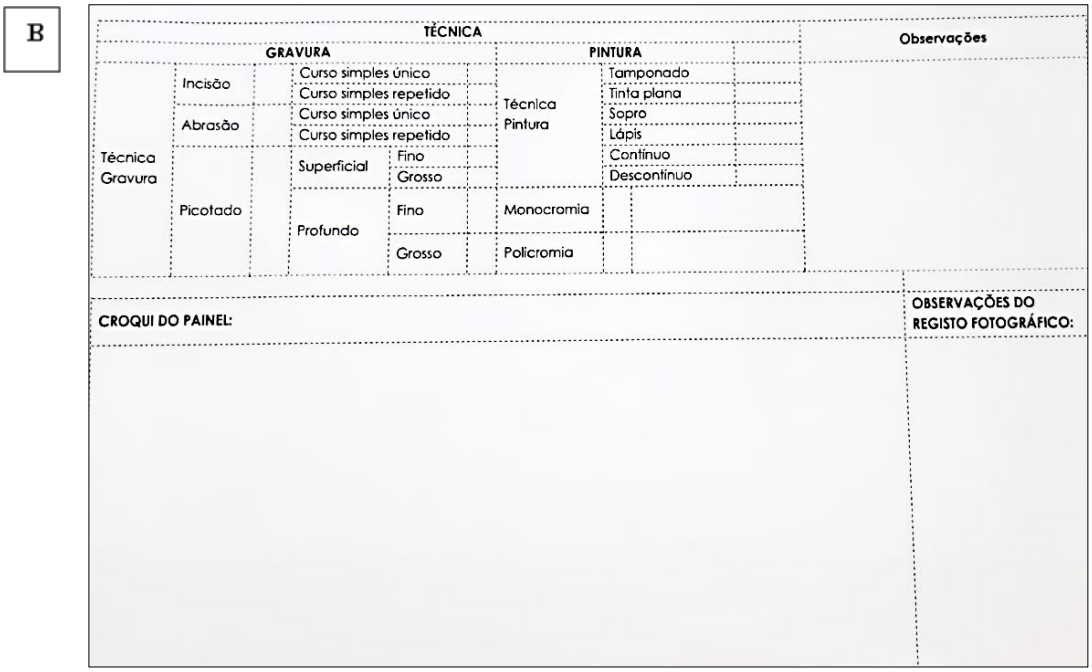
COR DO PAINEL:

DIMENSÕES MÁXIMAS DO PAINEL OU ROCHA: Maximum dimensions of the panel or rock:	
LARGURA: Width:	
ALTURA: Height:	
ALTURA DO SOLO: Height from the ground:	

ALTERAÇÕES NO SUPORTE?

Alt. Químicas	
Alt. Antrópicas	
Alt. Físicas	
Outras:	

OBSERVAÇÕES:


B

TÉCNICA

GRAVURA

PINTURA

Observações

Técnica Gravura

Incisão

Curso simples único

Curso simples repetido

Abrasão

Curso simples único

Curso simples repetido

Picotado

Superficial

Fino

Grosso

Profundo

Fino

Grosso

Técnica Pintura

Tamponado

Tinta plana

Sopro

Lápis

Contínuo

Descontínuo

Monocromia

Policromia

CROQUI DO PAINEL:

OBSERVAÇÕES DO REGISTO FOTOGRÁFICO:

Figure 6, A, B the field sheet of the documentation visit 2021 (designed by Sara Garcês)

2.2.2. Photographic and digital image processing

Digital photography is helpful in almost all the research activity, it is considered now days an integral part of many scientific reports and archaeologists projects. There are many visual documentation methods to document rock art such as digital photographing, 3D models, illustrations drawing or tracing. Digital documentation is very important as it is considered a tangible scientific record to have understanding the shape, color, technique, and it could help to get the spatial relations with the other motifs. It is also important in conservation terms, since rock art is a fragile heritage and unfortunately, it is progressively degrading, rock art digital recordings are helping to preserve this great heritage value (Meyer, 2008; Domingo, 2014).

The digital tools were in the beginning quite expensive, but by the arrival of the high-powered computers and getting the access to image processing is becoming more common and within reach of every researcher with the advent of low-cost. Therefore, this approach has high potential to study of rock art thanks to the broad range of tools that can improve analysis rock art. These techniques are helpful to extract information by computer that

provide the option of images manipulation, such as contrast enhancement selection, multiple image superimposition (Clogg et al., 2000).

In Escoural case, it was divided into panels to avoid the repetition in the documentation and for easier access in case of teamwork.

2.2.3. Quality of the Image

Quality of the image depend on the light, as it is considered the main factor to help in seeing better photo of rock art panels. If light was not adjusted some of problems may arise. These problems relate essentially to the base on which the pictographs are painted, the light and the condition of the painting itself. The natural variations in the color and the texture of the rock can interfere and cause problems in the definition of the image, which rise the appearance of a noise that impedes the digital treatment to the painted motifs. The light is an obvious problem in the manipulation of images, due to effect of the shadows (Clogg et al., 2000).

This why the campaign used LED Photography Light is important tool for good image. It is important to pay attention to raking light photography, as visible light photography is used during photographing rock art paintings, while raking light photography was used for photographing all engravings. The irregular surface can be detected by putting the camera in perpendicular position and the light in obtuse angle

The camera resolution, the main camera used to document the cave is Canon-EOS-6D-Mark-II, with flash Metz 32 Mz-3 (Figure 7 A, B, C). the more the resolution is higher the better the image quality became better as the final quality is important for post-field registration. It is recommended to bring hard drive to store the photos as the large volume of photographs generated in a survey of rock art can be an inconvenience at the time of storing.

A

B

C

Figure 7. A is Canon EOS-6D-Mark-II, B is the flash Metz 32 Mz-3, and C is the LED Photography Light (all photos adopted from google image)

2.2.4. X-Rite Color Checker ®

The use of a calibrated color scale allows to reconstitute colors, regardless the factors that have affected the original photograph. A digital correction of the images is possible if there is a color references and the scale covers a significant percentage (> 5%) of the image to allow calibration (Figure 8). The color scale of the International Federation deration of Rock Art Organizations (IFRAO) seems to have become a necessary tool in the registration and documentation of rock art (Garcia et al., 1996).

Their use in the research creates a certain homogeneous of the values for the comparison of intensities and color tones between different images. Obtaining improved images by means of a technique to photograph rock art by applying polarized light that highlights and differentiates pigments from its base and minimizes the effect of surface layers and vandalism suffered by painting (Garcia et al., 1996).

Figure 8, A is photo of color checker. B is José Arranz suing the color check in Escoural cave. (A is https://www.google.com/colorcheck , B is by Hasnaa Askalany)

2.2.5. Photogrammetry or 3D modeling

Photogrammetry is the process of creating an accurate three-dimensional depiction of any object that can be photographed by combining images taken from various angles, Images should overlap at least 50% from 3-5 different angles in order to produce 3D rock art panel as it helps to capture depth and the topography of the panel (Figure 9) (Zainuddin et al., 2019; Egels, 2011).

Photogrammetry has an important role in rock art studies. Thanks to the option of close-range photogrammetry (CRP), that helps when the camera is close to the subject can be used with or without tripod can be used or a hand-held (Robert et al., 2016).

Thanks to the revolution of digital images, that has been expanded with increased computer capacity and access to free software. The modeling process is carried out automatically by computing and calculating algorithms pre-established by various software programs, such as Photoscan®, Arc3D®, or 123D Catch®, This software builds a 3-dimensional model based on similar pixels in multiple images (Robert et al., 2016).

Figure 9. Escoural cave Hall 1, main corridor is the whole panel (Pl. 16, fig. 23) and (Pl. 16, fig. 24)3D modeling (Sara Garcês, 2021)

2.2.6. DStretch ®

Rock art specialists are using Decorrelation stretch (DStretch), which plug-in for ImageJ©. DStretch is digital images enhancement. It is used by the Jet Propulsion Laboratory in California, USA. It was used in 2004 to improve images taken by the Mars Rover. Jon Harman, a Rock Art expert, developed DStretch the following year in order to help him to analyze rock paintings. DStretch has been used in colorimetry to improve in the interpretation and identification of paintings and pigments. It is reproducible and operator-independent due to pre-recorded settings, that enhance objectivity. It is one of the most preferable method in the rock art field as it is easy and fast (Le Quellec et al., 2015; Robert et al., 2016; Evans & Mourad, 2018).

This program is very useful for the caves as it enhances the colorimetric parameters Tint, Saturation and Luminance (TSL). Different treatment of each pixel's colorimetric data is

used in this method, which is based on pre-configured filters. It draws attention to a certain color cast on the painting that the camera detects. The best results are achieved when the surface is lit uniformly and without shadows (for example, a good position of powerful flash or the LED panels as alternative of the flash) (Robert et al., 2016).

DStretch® achieve the following objectives: The YDS and LDS color spaces are preferred for general enhancement and faint yellow pigments, while YBR and LRE are recommended for red pigments, and YBK is suggested for blue and black pigments. One of the advantages of DStretch® is that it allows to customize the color spaces within each impact to serve better visualization (Figure 10 A, B) (Le Quellec et al., 2015).

2.2.7. Adobe Photoshop®

One of the foremost methods in rock art post-field documentation is producing individual records which consist of digital drawing or painting for each motif. This is done by conventional tools which are present in software such as Adobe Photoshop® (Domingo et al., 2015). The conventional tools are a digital manipulator and contain various options such as Saturation, Brightness, Contrast, which aids to enhance the faded paintings. It focusses more on the macro aspect of every motif in order to: Isolate the motif depicted from the rock surface on which it is present Pivot on the detailing Facilitate description and comparison with similar ones (Figure 10 A, B) (Domingo et al., 2013).

Figure 10, Hall 1, Gallery1, (P1.19, fig. 30) A is the original photo hindleg of Equid ? . B showes the photo after DStretch LDS where another figure on the top of the hind leg of the equid . (photos by Collado,2021, DStretch by Hasnaa Askalany).

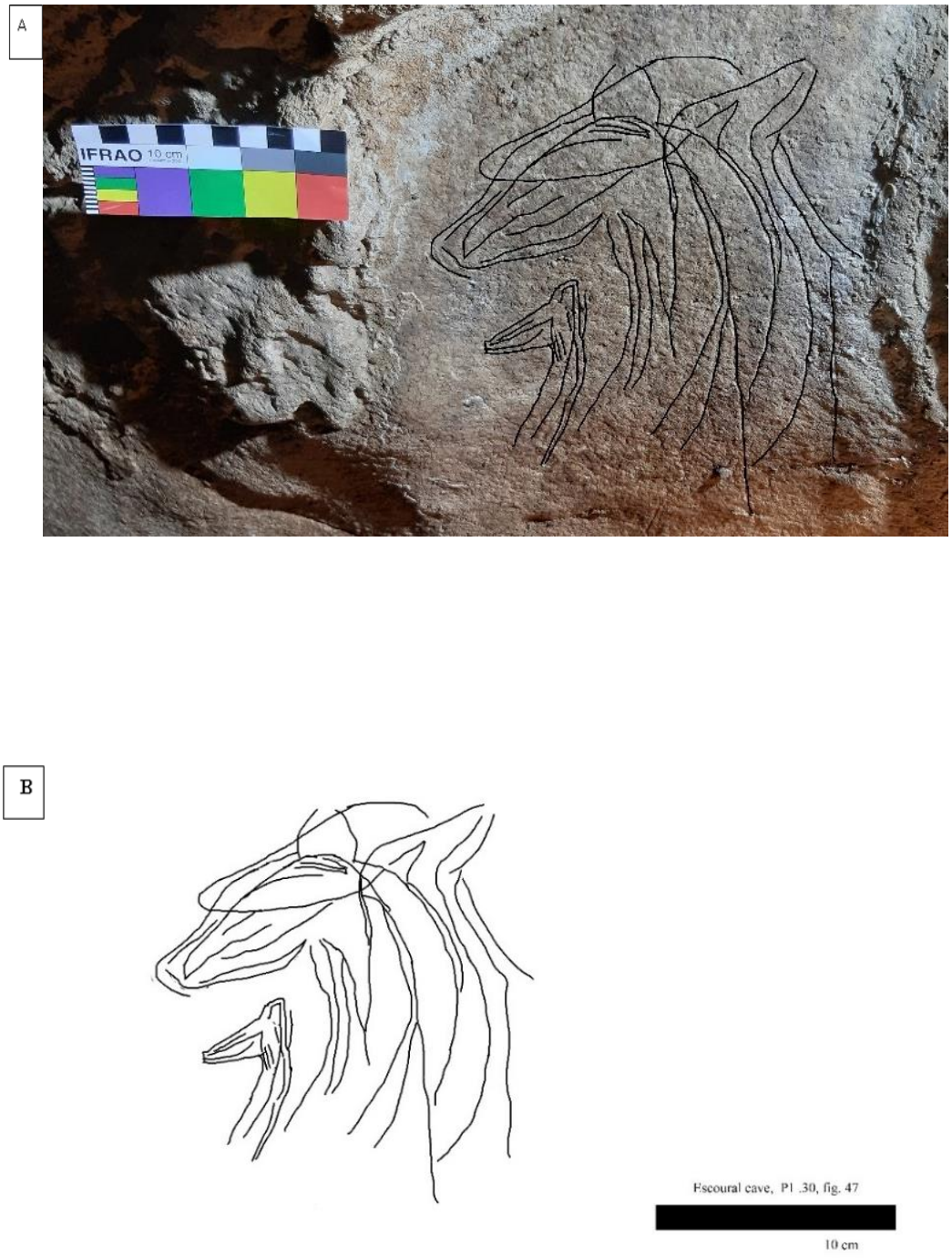


Figure 11 A.is two heads of equids (P1 .30, fig. 47) Hall 1, Gallery 1, the original photo. B. is the photoshop tracing (photos by Collado,2021, photoshop tracing by Hasnaa Askalany).

CHAPTER 3, THE STUDY AREA

FIRST CAVES

ESCOURAL CAVE

3.1. Location of Escoural cave

Escoural cave is a small but complex network of natural galleries formed by the circulation of groundwater in a crest of metamorphic limestones, embedded in an alignment of hills that surround Escoural by the northeast and constitute the so-called Serra do Monfurado, with Northwest-Southeast orientation, with altitudes that do not exceed 400 m (Araújo, 1995). These hills limit the hydrographic basin of Ribeira das Alcáçovas from the north, always a natural steep between the Alentejo peneplain and the Sado estuary (Figure 12 A, B) (Silva, 2011).

Figure 12, A is general photos for the land scape of the site. B is view of the cave main entrance from the outside (Hasnaa Askalany).

Although there are doubts about the location of its natural entrance, it is thought that the cave would open to the east through a large, "shelter" or "natural portico", but in the meanwhile it is collapsed (Silva, 2011). This place has conditions that are especially

attractive for a human presence in prehistoric periods (Araújo, 1995). Escoural is in the municipality of Montemor-o-Novo, a village which is roughly 2 km away. Access can be done through the Estrada Nacional no 370, which connects Santiago do Escoural to the junction with EN 114 (Figure13 A, B, C) (Montemor-o-Novo - Evora) (Araújo, 1995).

According to Stjerna et al., (2018), the site is within the landscape because it is the only karst system within the interior of Alentejo. It is located on the point of two areas for human occupation in west Iberian Peninsula, the Tagus and the Sado palaeoestuaries in the north and west. They are considered important regions of Mesolithic settlement in Iberia, also the Évora plains within the southeast, that is recognized for the Iberian megalithic landscapes. The site is also protected and strategically placed at the border of the Monfurado range of mountains with a unique view over the encompassing plains. It has quick access to water, that make it a convenient place for early settlement.

The discovery of the Escoural cave was due to occasional circumstances related to an old marble quarry at Herdade da Sala, located in Santiago do Escoural, parish of Montemor-o-Novo, which would eventually lend its name to this archaeological site (Santos, 1964).

It is thought that prehistoric people could discover Escoural while they were traveling inland on the rivers' natural pathways. (Silva, 2011). The area where the cave is located, is part of an area of Precambrian metamorphic formations, consisting of shales, mica schist, and amphibolic shales (Mauran, 2016).

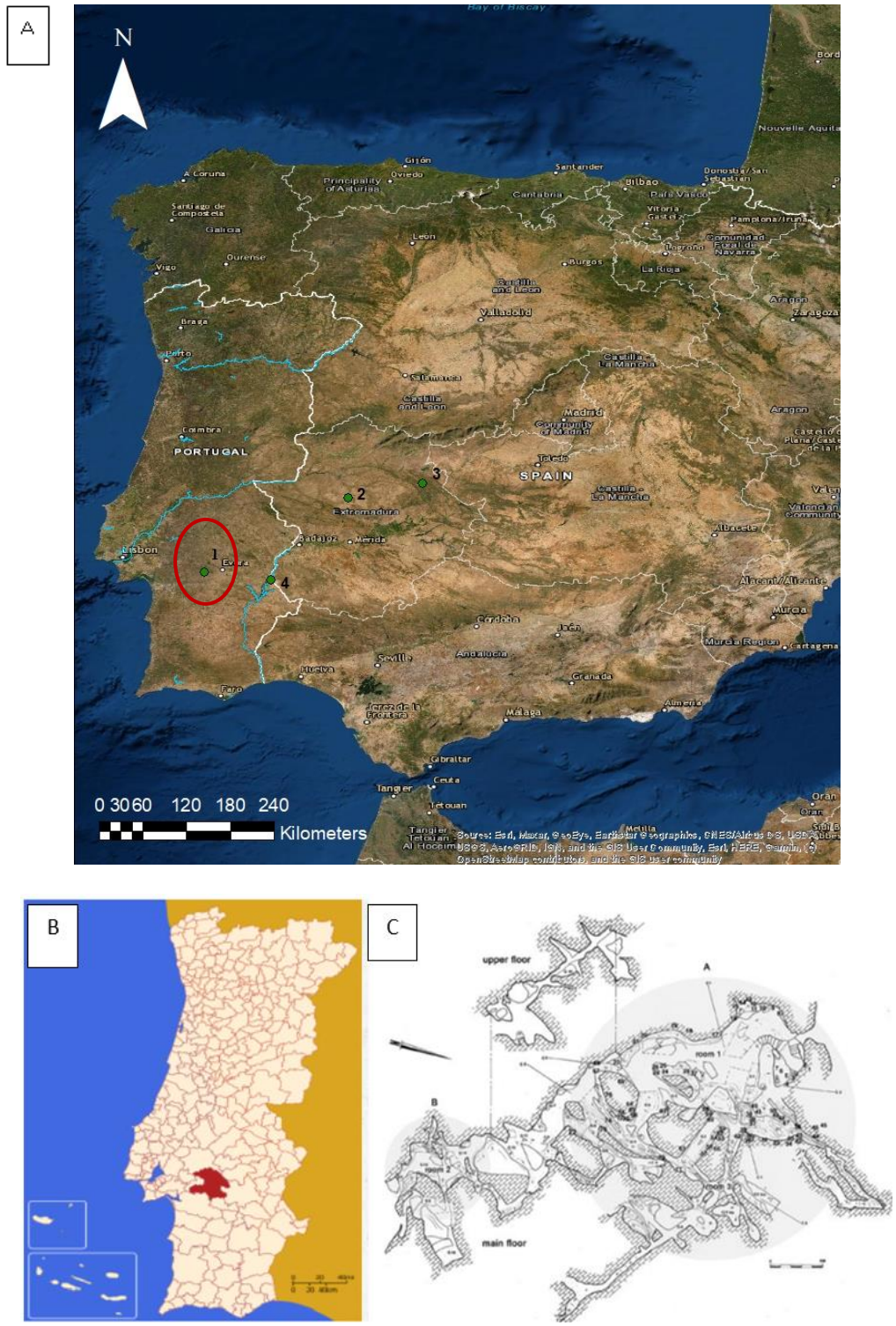


Figure 13 . A indecates to location of Escoural cave (number 1). B Map is locataion of Montemor-o-Novo in Purtogal. C is plan of Escoural cave and the entrance of the cave (A map by Hasnaa Askalany, B from http://pt.wikipedia.org/wiki/Montemor-o-Novo , C is the corpus of the cave by Lejeune, 1995).

3.2. Geological and geomorphological aspects of the area

3.2.1. Lithography

The geological formations that form the Serra de Monfurado, to the Ossa — Morena Zone (ZOM), internal to the Hercynian orogen (Figure 14 A, B) (Matte, 2001) (During the Upper Paleozoic the Varisco Orogen or Hercynian orogeny which is marked by the accumulation of the South Portuguese Zone (ZSP) to the Ossa-Morena Zone, which is formed as a consequence of the collision between Gondwana, Laurentia and Baltica, that contributed to form the continent Pangea (Stampfli et al., 2013). In the southern domains of the Iberian Terrain (Figure 15 A, B), the formations of the Basin Tejo — Sado Basin (that are Hercynian orogen) have rocks with ages between the Upper Precambrian, and the Pliocene (Encontro et al., 2017).

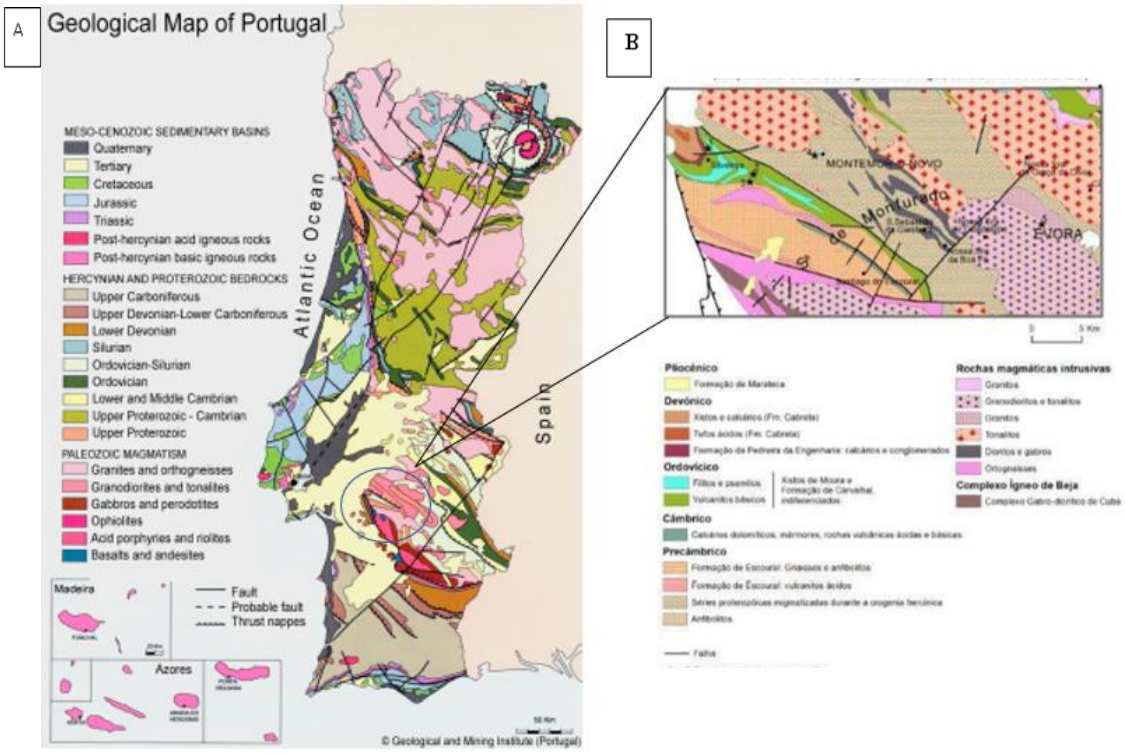


Figure 14. A is a geological map of Portugal, (Eggenkamp & Marques, 2010). B is geological map Serra de Monfurado, Montemro -o-Novo, and Evora. (Encontro et al., 2017).

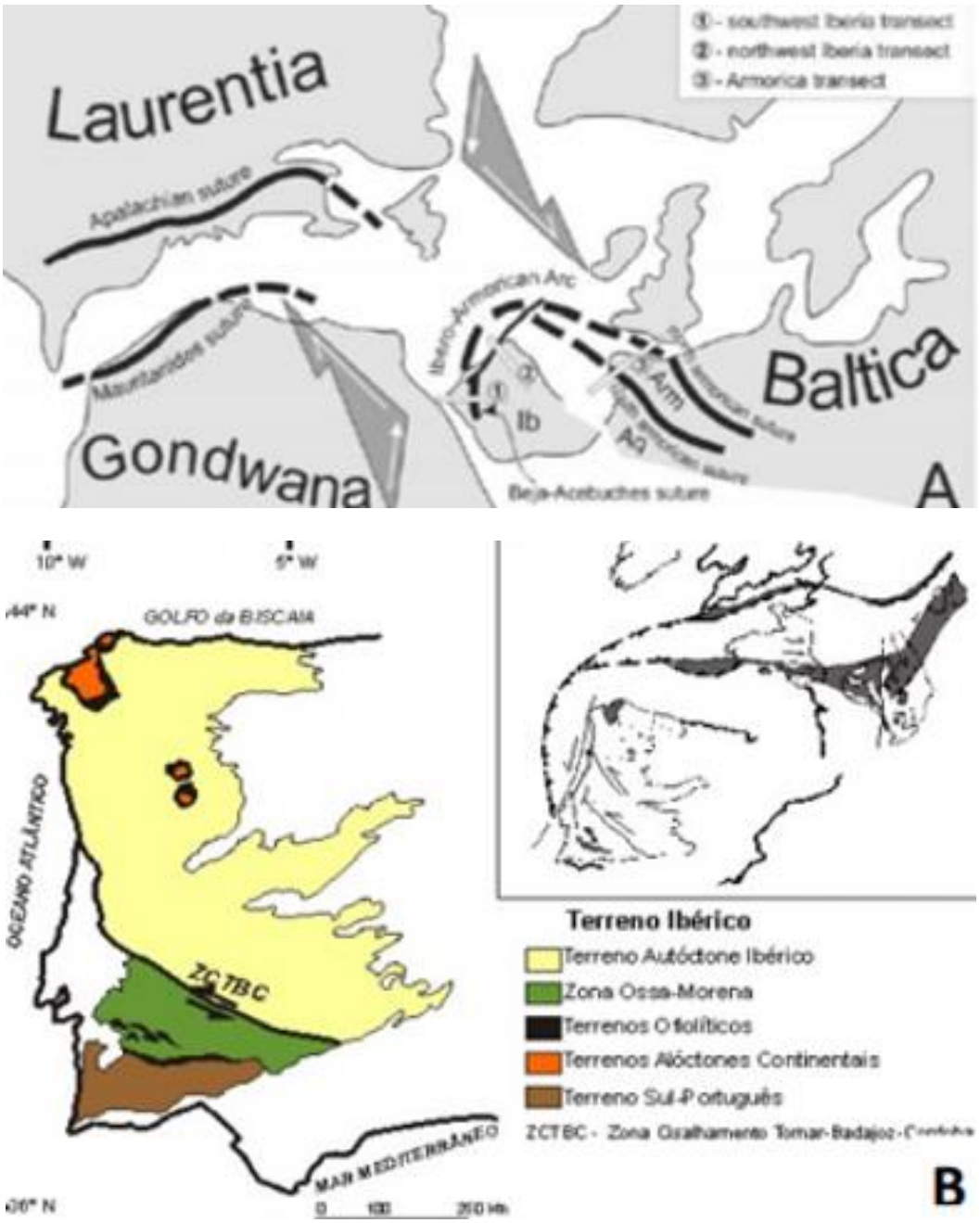


Figure 15. A is Continental masses involved in the Varisca Orogeny. B is structuring the Iberian Terrain. (Encontro et al., 2017).

According to Encontro et al., (2017), the NW sector of the Massif of Évora, five formations are defined (Figure 16):

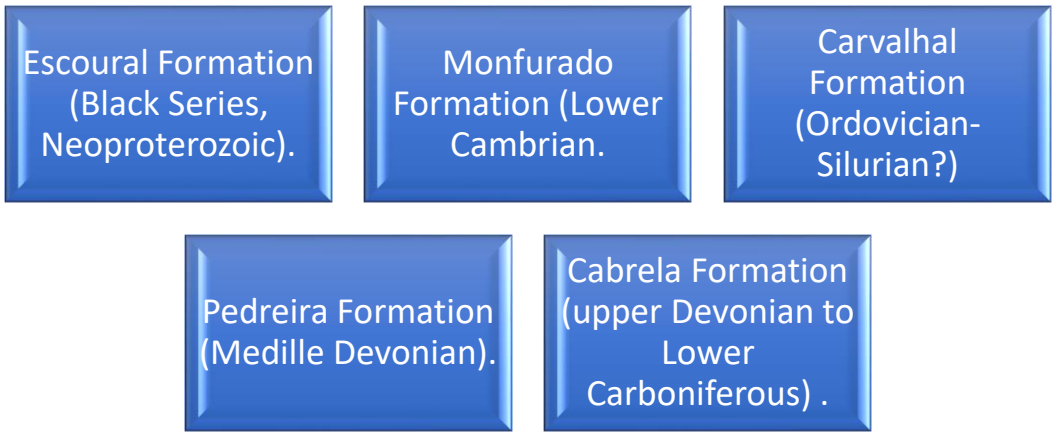


Figure 16. The Massif of Évora NW five formations (Hasnaa Askalany).

The base of the lithostratigraphic sequence of Iberrian Penninsula consists of granitic migmatites and orthogneisses (Orthogneiss is gneiss derived from igneous rock such as granite), as it has Hercynian Massif morpho structural unit, the oldest soils from upper proterozoic and composed of a mono metamorphic complex with varied lithologies. It is superimposed and called Black Series (Série Negra) (Encontro et al., 2017). The formation of Escoural consists of mica schist, paragnaisses, metallidites, liptinites and amphibolite is included in the Black Series. These amphibolites are part of the Carvalhal Formation (Evora region), being, therefore, ordovícian-silúrian (Araújo, 1995).

The Black Series overlaps the «Formation of Monfurado», (which follows the Formation of Carvalhl) considered from the Lower Cambrian, consisting of amphibolic gneisses and leptinites, amphibolites, mica schists and crystalline limestones and associated calcsilicate rocks (Araújo, 1995). These carbonated rocks emerge along two strips, the lithological difference between the southwestern alignment; where mineralized crystalline limestones; which constitute the mineralized strip of the mines of Monges Nogueirinha that have also been used for industrial purposes, a limestone quarry still in operation, close to the cave, and the northeastern alignment, constituted by banded crystalline limestones (Araújo, 1995).

3.2.2. Description of the cave

Escoural Cave composed of three rooms and small passages that connect the rooms and galleries in the small cave. The main room is the largest room and has numerous amounts of the cave's rock art (Araújo, 1995). According to the geologist José António Crispim, who, within the scope of the Luso-Belgian Project, had the opportunity to analyze in more detail the structure and genesis of this cavity (Silva, 2011).

Crispim, (1995) provided an overview of the cave's morphology. It is composed of a network of galleries that formed along a strip of Lower Cambrian white crystalline limestones on the northeast flank of the Monfurado formation.

This labyrinthine network has a maximum extension of 70 meters and is developed in a NW — SE direction, built from the widening of crisscrossed cracks, distributed over two main floors (Araújo, 1995), which corresponds to the direction of the limestone layers. The total length of the various sections of galleries exceeds 350 meters, with widths ranging from 0.5 to 2 meters and heights up to 3 meters. The spaces are wider in some coalescence points of galleries, forming rooms, the largest is situated next to the main entrance at the NW and is about 6 meters wide, 10 meters long and 5 meters high (Crispim, 1995).

Araújo, (1995) believe that despite being considered an artificial access, the disposition and inclination of sediments in this area they make it a possibility for the existence of an old entrance precisely in this place.

In 1993, Araújo & Santos, gave a description of the cave entrances. The main one, whose access is currently made to the interior of the cavity, is located at the NW end, as mentioned, discovered in 1963. It has largest part of the archaeological deposits, namely the remains of the great Neolithic necropolis.

A second entrance, located precisely on the opposite side of the cavity, is facing SE, with extremely difficult access. The galleries that lead from here to the central area of the necropolis are very narrow and low, and it is sometimes necessary to crawl from one gallery to another, as the rocky floor surfaces in many places on the surface. This makes it extremely difficult to imagine using this route to deposit the dead at the bottom of the cavity. This second entrance was exposed from the outside, as a result of the removal of the sediments that obstructed it, made in the course of the archaeological works that took place here in 1965 and 1966 (Araújo & Santos, 1993).

The third known entrance is approximately 20 meters to the SE of the second entrance, but at a lower elevation. It leads to the northern sector of the cave corresponding to the space occupied by the necropolis (Araújo, 1995).

3.3. Escoural Chronology.

3.3.1. Escoural during the Paleolithic

Santos published in 1964 a Paleolithic chronology for the remains of rock paintings that he had discovered in Escoural cave. He had not enough archaeological data, moreover the presence of a translucent layer of calcite on the walls of the cave, which made it difficult for him. In the beginning Santos, Glory and Vaultier, placed them in the Aurignacian period. Later Glory put them in two phases, one integrable in the style II of Leroi-Gourhan (25 000 -18 000) and another in his style III (recent Solutrean - early Magdalenian) (18 000 - 13 000) (Santos, 1964; Silva, 2011).

Glory mentioned that the two caves of Maltravieso and Escoural are part of the same hydrological basin. He concluded also that they could be part of the French-Cantabrian culture (Aurignacio-Perigordian). He also considered they are older than the famous paintings of bulls in the caves of Altamira in Spain which are classified as 13,000 years old. They may be older than the Lascaux cave paintings in France, which are placed at 17,000 years. (Silva, 2011). Then Gomes et al., (1995), published that the figures are basically in styles II (Upper Perigordian - Old Solutrean) (27 000 - 20 000 B.P.) and III (recent Solutrean and Early Magdalenian) (20,000-15,000).

Silva, (2011) mentioned that in 1989-1992, an excavation run by Luso-Belga towards the entrance as there were lithic artifacts and middle paleolithic fauna. He believed that there is a possible occupation of the Middle Paleolithic is evidenced through the presence of a level with fossilized fauna, but later it was found out that the strata provided the lithic artefacts, and the typical Middle Paleolithic fauna were not already in primary position and corresponded to colluvial deposits and redeposited.Nevertheless, some conclusions were given to lithic artifacts, such as the dominant raw material in the manufacture of artifacts is quartz of local origin, on the contrary, flint, despite being present, is extremely rare, yet it reveals contacts with distant regions (Silva, 2011).

Although quartz is a difficult raw material for the knapping, the numerous materials collected show a reasonable capacity to adapt to the common technical standards of Mousterian, the material culture normally associated with the Neanderthal Man. Though the rarity in this lithic assemblage some samples reveal the use of the "Levallois" technique. Finally, the great abundance of small chips and quartz squares proves that the process of cutting the blocks of raw material took place somewhere nearby (Silva, 2011).

Hence, the recovered animal remains, allows us to assume that the entrance to the cave may have served as a place for temporary camping and hunting tackle, which are periodically utilized for by small groups of Neanderthal hunters during their expeditions. unfortunately, due to the sedimentation conditions indicated, it is not easy to distinguish the natural fauna introduced by large carnivorous predators, such as the hyena or lynx, from those that would be the result of our human hunting activity. However, it is believed that the equid, cervid, and bull, this last was the main prey of the Neanderthal hunters who camped at Escoural (Silva, 2011).

3.3.2. Escoural during Neolithic

The cave was abandoned by the end of Paleolithic. (Stjerna et al, 2018). The site was visited sporadically during the Early Neolithic, as some ceramic remains were found near the original entrance, but the site was deserted by the time of the Middle Neolithic communities (Silva, 2011) .

In the Upper Neolithic the site turned into a collective burial, where they deposited corpses at the entrance of the cavity. The Neolithic Escoural Cave stands out as exceptional because the preservation of articulated human remains (which are exceptionally well preserved in a Karstic environment because soil acidic prevents preservation) in conjunction with material culture, such as completed vessels, providing a distinctive opportunity to study Neolithic funerary practices (Araújo, 1995; Stjerna et al., 2018).

The last occupation of the Escoural cave, as a necropolis, began in the late Neolithic period, in the middle of the 4th millennium BC., And lasted during the Chalcolithic, by the end of the fourth millennium BC and beginning of the. where there was evidence of the plow, associated with bucrânios and integrating a stratigraphic succession well defined in cultural terms, constitute important contributions to the technical, socio-economic, and cultural knowledge of the populations of the late Neolithic-early Chalcolithic of that area

of Alto-Alentejo (Gomes, 1989). Then the cave remained isolated from the outside world since its closure until its discovery in 1963 (Gomes, 1989).

3.4. Discovery of the cave and previous studies.

The discovery of Escoural cave in 1963. It was the first time paleolithic art had been discovered on Portuguese territory (Figure 17). After shooting a quarry that worked in the area, the cave was discovered by chance in 1963 at Herdade da Sala (Montemor-o-Novo), in the heart of Alentejo, by the workers who were working there. The cave was visited a few days later by archeologist Farinha dos Santos, who recognized trace of human occupation, he found some ceramics and microlithic in the first room (Santos, 1964; Silva, 2011).

In what concerns documentation of the rock motifs, shortly after their discovery, Farinha dos Santos records and publishes 9 painted figures (Santos, 1964). The identification of the paintings was dated from the Paleolithic period, considering the particularity of being covered with layers and veins of calcite ancient formation, which immediately attested to its antiquity. In 1964 excavation work was focused on the first room 1 (Figure 18) During that, already with the collaboration of the French specialist Abbee Glory, one of the greatest scholars of Lascaux (Vaultier et al., 1965). He noticed that the location of the cave fits the paleogeographic context of the extreme western tip of Iberia, and the two closest decorated caves are La Pileta, to the east, the Cave of Maltravieso of Cáceres, at a distance of 185 km (Vaultier et al., 1965).

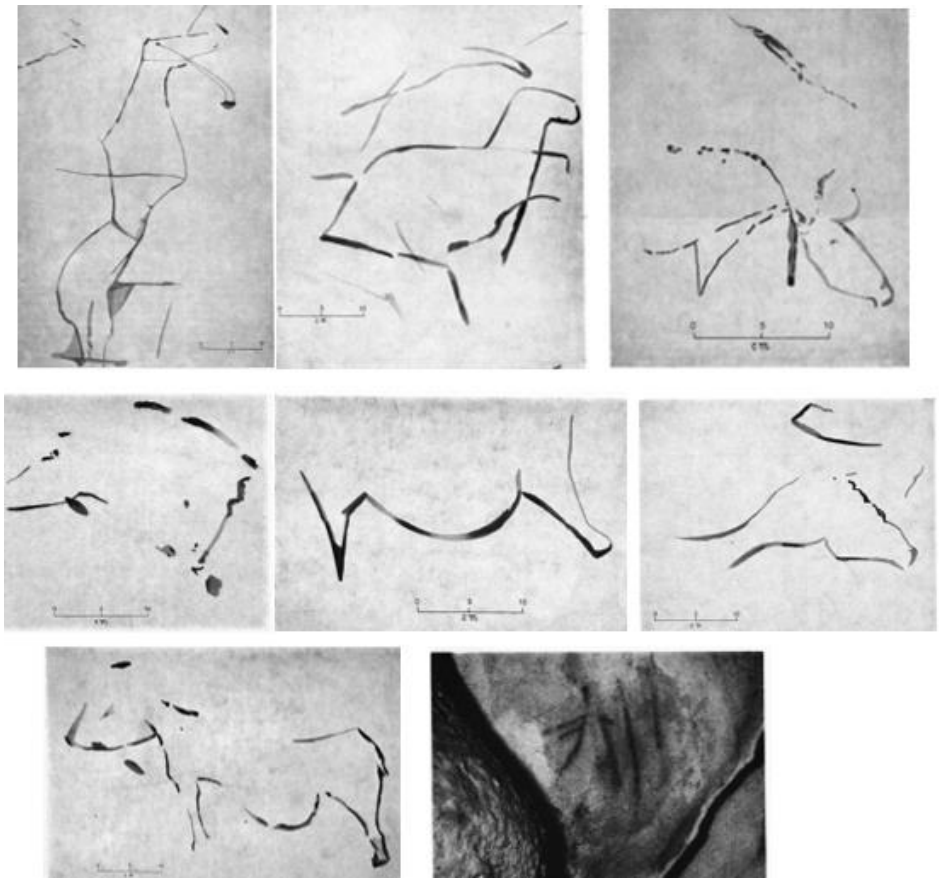


Figure 17.The figures that published by Santos (Santos, 1964).

Figure 18. Ol map of the cave during 1965 (Vaultier et al., 1965).

In 1966 the excavation campaign was run in the south of the cave, where Santos believed that the south could the primitive entrance of the cave might have been divided the cave into zones. In 1967, the first engravings of the Escoural cave were published (Figure 19) (Santos, 1967).

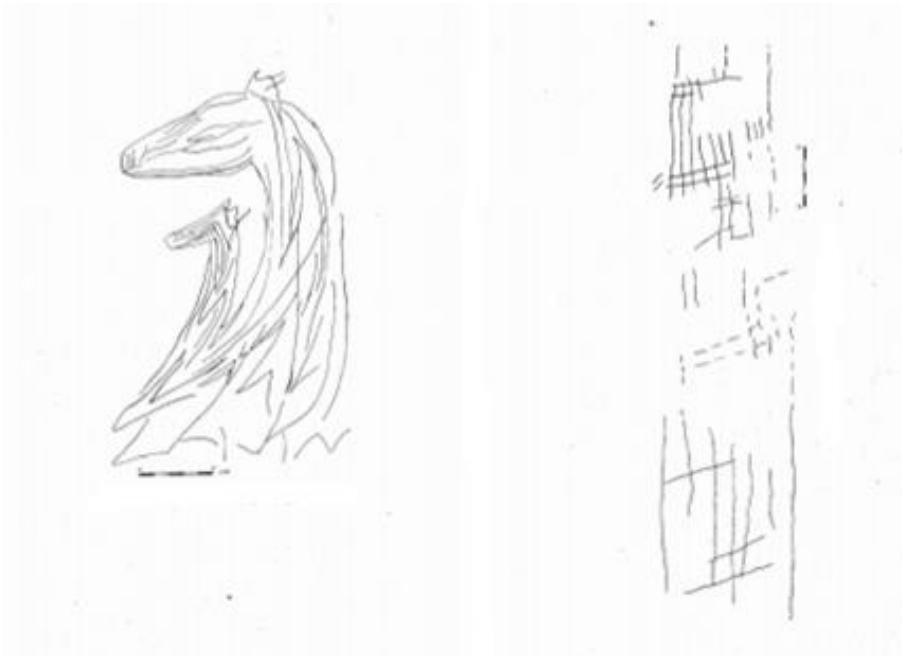


Figure 19. A. First engraving in Escoural representing two equids, B the geometric shape in 1966 (Santos, 1967).

At the end of the 1970s Farinha dos Santos, with the special collaboration of Jorge Pinho Monteiro and Varela Gomes (Santos et al., 1980) would resume the systematic study of the cave (Garcês et al., 2020) .

It was concluded that it was a set of schematic rock engravings, unequivocally post-paleolithic, with the presence of stylized representations of bovine heads. His discovery reinforced the recognition of the long-lasting phenomena of human activity in the cave and surrounding area. There are remains of a Chalcolithic settlement were found (Silva, 2011).

In 1989 the Southeast part of the cave, led not only to a re-evaluation of the extension and distribution of symbolic manifestations, but also to the expansion of this figurative repertoire. In this one stands out a possible representation of a plow, associated with that of a very schematic bovid, which are included in what it suggests being an enclosure (Gomes et al., 1995). It was culturally contributed to the technical, socio-economic, and cultural knowledge of the populations of the early Neolithic-early Chalcolithic (late IV, early III millennium) of that area of Alto-Alentejo (Gomes, 1989).

The first attempt to build an exhaustive corpus the Escoural cave resulted from the Luso-Belgian project between 1989-1992, at the initiative of the Regional Service of Southern Archeology and in collaboration with the University of Liege (Belgium), as part of a global review project of the different occupations registered in this cave (Silva, 2011). It was the first time to make a topographic survey, then sondage in the north and the east entrance (Silva & Araújo, 1995).

Marylise Lejeune the collaborator from University of Liège, would take care of attempt to do the first inventory in the Parietal Art of the Escoural cave, published in 1995 in Portugal and in 1996 in a slightly larger version, in Belgium (Silva, 2011).

Four missions were therefore organized, allowing them to examine and control in successive stages the surveys, descriptions and photographic documents established for the study of the figures. A Map indicating the painting and engravings in the cave was made which is still used until today (Figure 20). Lejeune documents the many problems that she encounters in a cave whose walls have suffered greatly, their state of conservation is often altered by concretion or decalcification and physicochemical actions have caused the appearance of natural accidents (cracks, chips) after the execution of the figures (Lejeune, 1995).

However, Silva, (2011) and Arnaud, (2002) criticized the work of Lejeune alleging the poor quality of some of the surveys produced and the conclusions in terms of the archaeological context and chronological integration of the Parietal Art of the Escoural.

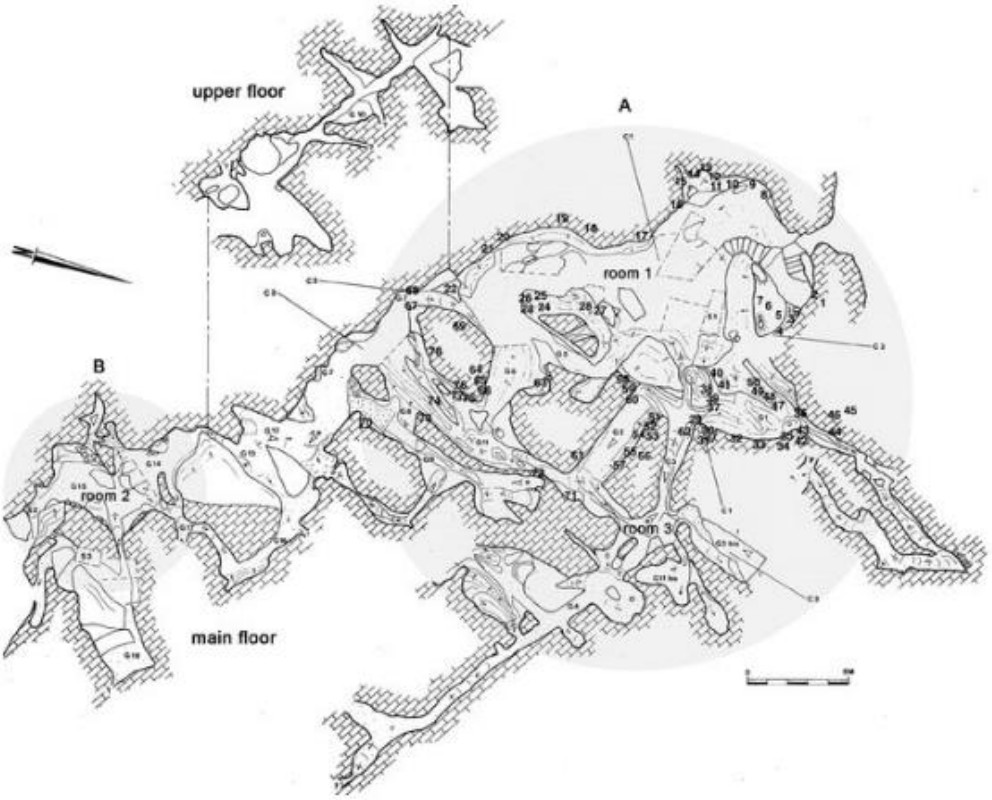


Figure 20.Plan of main and upper floors Escoural Cave. (A) the section of paleolithic rock art figures, and early and late Neolithic findings, (B) the section of middle paleolithic, and early Neolithic findings. G: is abbreviation of gallery. Numbers 1-77: represent the location of rock art panel (Lejeune, 1995; Stjerna et al., 2018).

In the year 2000, in the conditions for the conservation of rock art, study was established, based on the systematic observation of the decorated surfaces and the continued registration of a number of parameters environmental effects inside and outside the cave during a complete climatic cycle.This study allowed to characterize the different types of deposition of calcite formations, which serve as support and overlap with cave motifs, confirming that the calcium deposition activity was never regular, and it is threatening the degradation of the respective supports and the consequent loss of the rock remains.

Another problem which was relative humidity rate or the air temperature, directly related to the external changes. This situation, which is not common in cave environments, usually characterized by a high stability of humidity and temperature levels, seems to happen in Escoural due to two main factors (Barquín, 2015). Firstly, due to the circumstance of the cave, namely its large room, because of the dismantling activity of the old quarry, it is

practically located on the surface and this, in turn, is very fissured, facilitating the direct infiltration of the rain that flows in several walls. Secondly, due to the existence of a direct connection between the large room and the outside, enhancing aggressive thermal and gaseous exchanges, whenever the Cave is accessed by visitors (Barquín, 2015).

- Recent studies later by

Lopes, (2012) did museology studies on Escoural cave as a cultural heritage at the service of the society such as educational activities with local entities establishing action plans for these activities according to age groups and types of target audience. Also, to carry out didactic workshops on "rock painting in the 21st century", workshops with natural pigments.

In 2016 there was study in Escoural cave regarding the pigments and painting technique infrared reflectography and pigment microsamples were of the method that was used during the published studies on Mauran, 2016 master. They took eight red and eight black samples from six separate panels to ensure that conservation and comprehension of the artwork were not affected. Then a micro-sample were made to perform the following analyses: FTIR, Raman spectroscopy, SEM and XRD (Figure 21) (Mauran, 2016)

Mauran, 2016 conclusions for Black pigments were. The results of Raman spectroscopy show presence of two different kinds of black pigments: one including manganese oxides and the other one has carbonaceous composition. The results of Scanning electron microscopy show presence of three different paintings samples: the first is from manganese oxides, the second is from wood charcoal and the third is from bone black covering a clay layer containing some siliceous features identified as marine fossils.

As for Red pigments, the presence of traces of clay, hematite, and gypsum in some samples over a calcite substrate was revealed by infrared and Raman spectra for red pigments. Further analyses were carried out with SEM-EDS and XRD, that detect limit of the mineral presence of calcite and hematite for all the red samples analyzed.

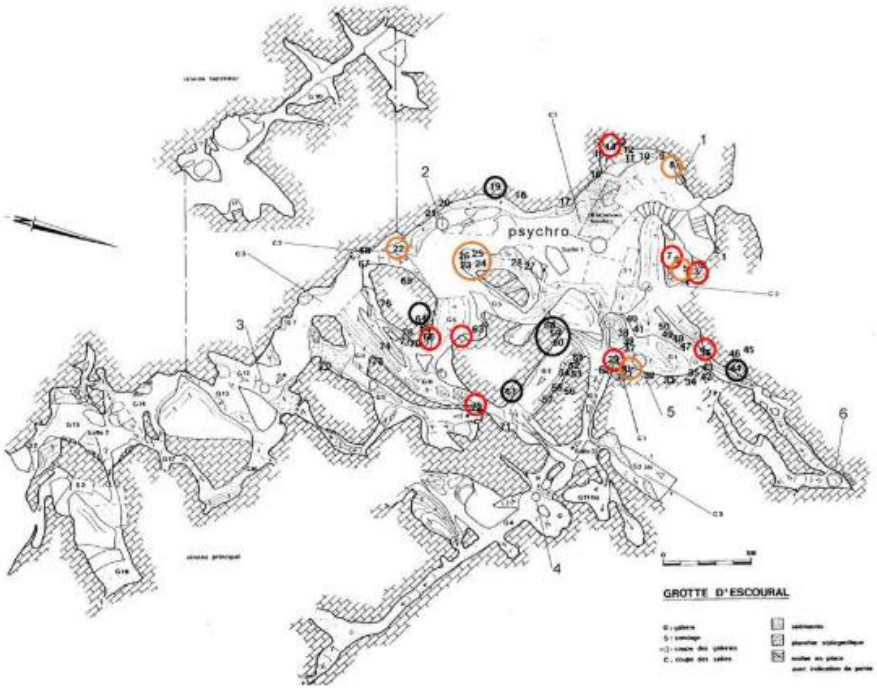


Figure 21 Plan of the Escoural Cave with the distribution of the engravings that correspond to not circled number, red circles indcates to red paintings, black circle indcates balck figures, Orange: red and black figures together (Mauran, 2016 map adapted from Lejeune, 1995).

In 2019 Samantha Hruban, used recorded some rock art panels and the near by area and document the preservation condition by using non-invasive analytical methods. The outcomes of this study were important to understand the deterioration and damage the rock art in Escoural Cave is facing.

Microbial analyses conducted in Escoural Cave. From different locations of the cave a total of 8 samples were taken to run biofilms and microbial growth for species identification of Bacteria growth in the cave (Figure 22). Results from the microbiological analyses indicate, Enterobacter cloacae which is a microbe can cause human infections like pneumonia. She also gave some cautious procedures during visiting the cave like a limitation of hand contact to any objects inside the cave, not touching the face and mouth, and finally wash hands after each visit. A protective face masks is also required, for those who have problems with immune systems and respiratory problems. The research focus in the rock figures in room 1 (Hurban, 2019).

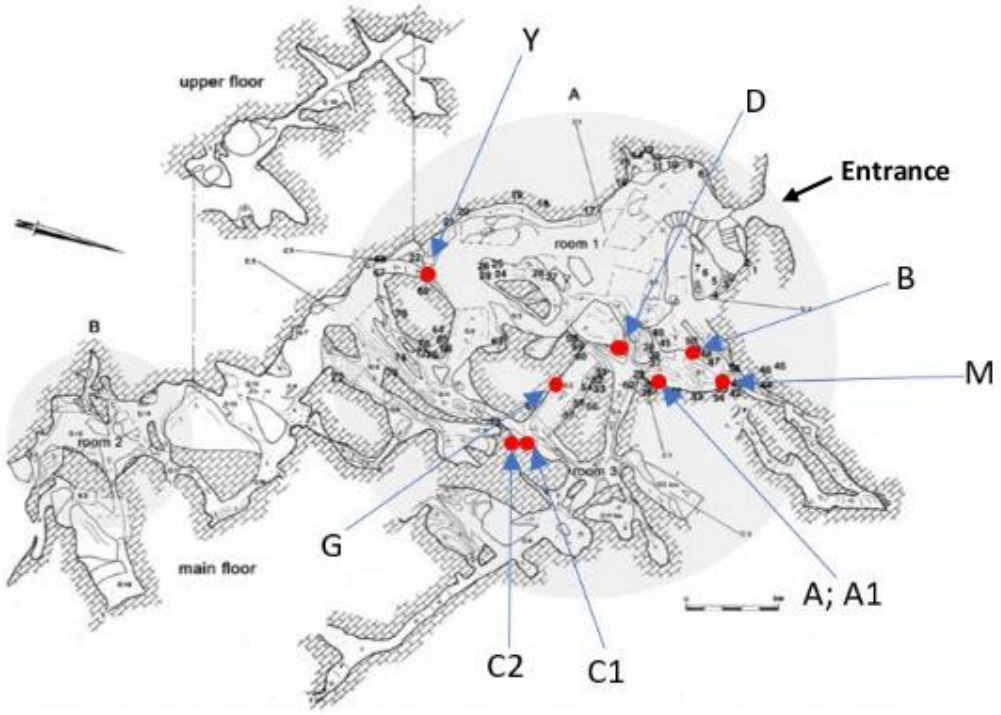


Figure 22.Map of Escoural Cave marking locations of microbial sampling by Hurban, 2019. (map adapted from Araújo , Lejeune , 1995).

In 2021 a team from Earth and Memory Institute, Mação, Portugal and Museum of Prehistoric Art and the Sacred Tagus Valley, Mação and From University of Extremadura, Spain visit the cave .

The aim of this study was framed into the FIRST-ART project (a European POCTEP financed project and accepted by Portuguese National Direction of Cultural Heritage). It is to document, and study all the rock art in the cave, and update all the photos by using the latest digital documentation methods, and carrying sampling protocol, that will be applied on collection of pigments samples from the cave paintings to obtain the first absolute dates if possible (Figure 23).

The site will need another visit to complete the last section of the work and have a better interpretation of the photos after process of digital analyzing. The following map will show the sample's position (Pl. 16, fig. 23) (Pl.35, fig. 57) (Figure 24).

Figure 23. Photo of the documentation team inside the cave (Hasnaa Askalany)

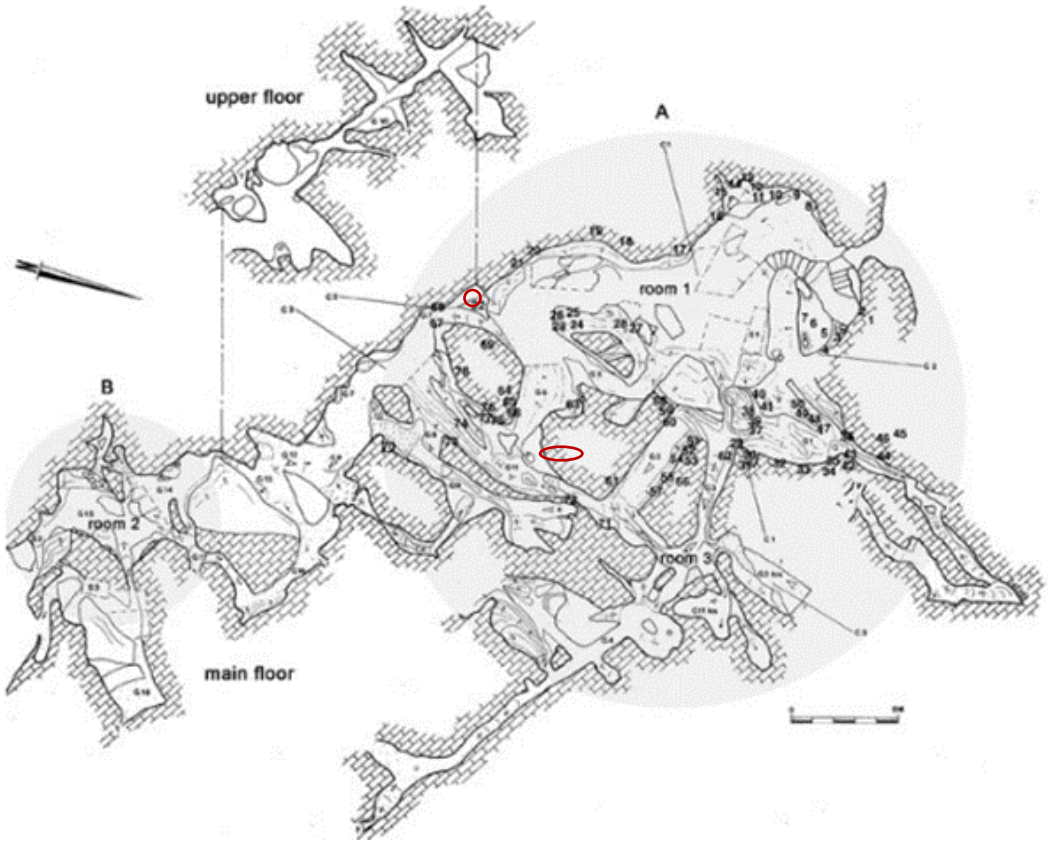


Figure 24. Map shows the samples position from 2021 campaign (Map addopted from Lejeune, 1995).

3.5. Description of the zoomorphic figures

3.5.1. Hall 1, Entrance

1. Unidentified figure / Bovid? (pl.2 fig. 2)

The figure is located to the right of the entrance with a small calcite drapery. There is a sinuous engraved line about 20cm long and 1.5 mm deep. It is extended by two subparallel lines; one is longer than the other. They are surmounted by an oval bearing three small erect lines. The set of these engraved features could evoke the cervical-dorsal line, the head, and the neck. Lejeune believed it could be a schematic representation of a bovid (Figure 25 A, B) (Lejeune, 1995).

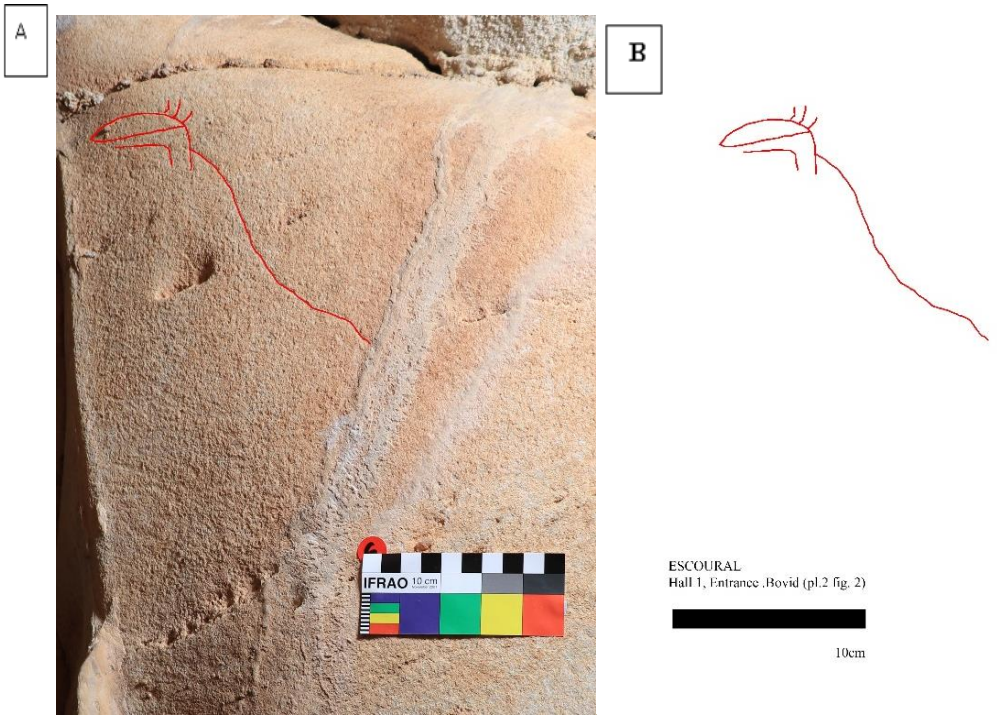


Figure 25. Escoural cave, Hall 1, entrance, unidentified figure / Bovid? A is original photo. B is Photoshop treatment (pl.2 fig. 2) (Hasnaa Askalany).

2.Head of equid (P1.4, fig. 5)

The head of equid figure is in the right of the entrance. It is oriented to the left. It is made by means of multiple Line to fill the head and the neck. The lines are 1 to 2 mm wide. From the ear, neck, there are small parallel lines and two converging curved lines. The head measures 31 cm for the height, and for a maximum width of 11 cm. (Figure 26) (Lejeune, 1995).

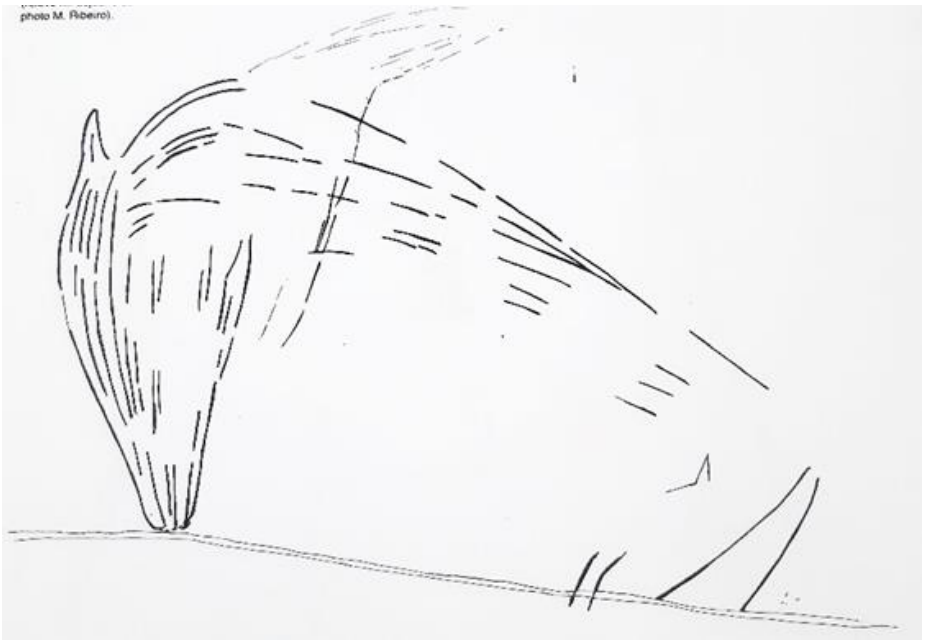


Figure 26. Escoural cave , Hall 1 ,entrance figure head of equid, (pl.4 fig. 5) (Lejeune, 1995).

3.Two heads of equid (Pl.5, fig. 6).

They look similar to figure 5 with filling of lines parallel to the muzzle, small ear, and long curved neck. However, that of the upper animal does not exhibit linear filling and that of the lower animal is extended by a draft of the dorsal line. Face the head of the latter, there is a presence of an oval and a set of parallel lines. These two heads, whose very worn engraved lines have an average width of 2 mm, have a total height of about 35 cm (Figure 27) (Lejeune, 1995).

Figure 27. Escoural cave, Hall 1 entrance. Two heads of equid (Pl.5, fig. 6), (Lejeune, 1995).

4. Unidentified figure (Pl. 6, fig. 7)

The first figure is A lower part of an animal could be (bovid ??) rectilinear shape and has a similar linear filling parallel to the long sides the one encountered in the heads of equids. The second figure is oriented to the right, A sort of headless animal, with partial cervical dorsal line and front leg. There is partial ventral line and hind leg. The third figure below it a horn shaped. It is visible between the hind leg and the belly of the bovid (Figure 28) (Lejeune, 1995).

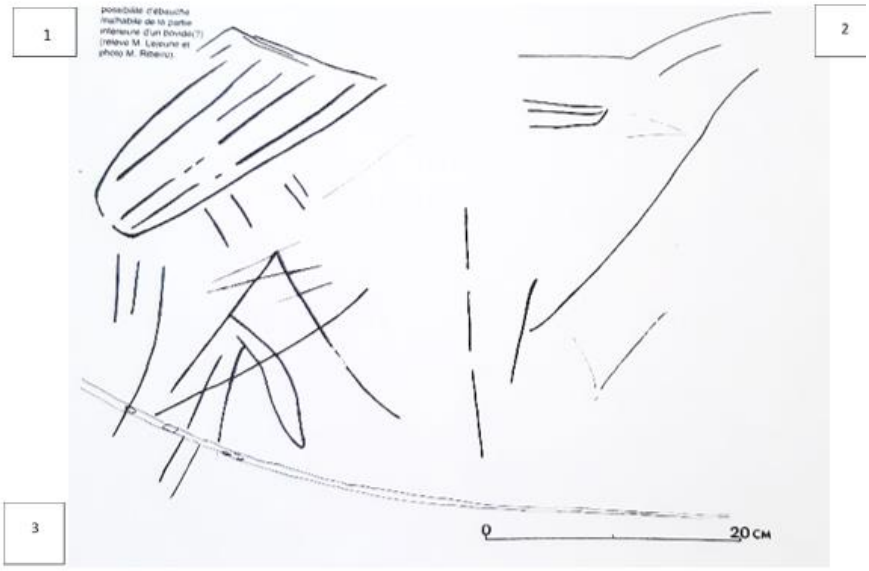


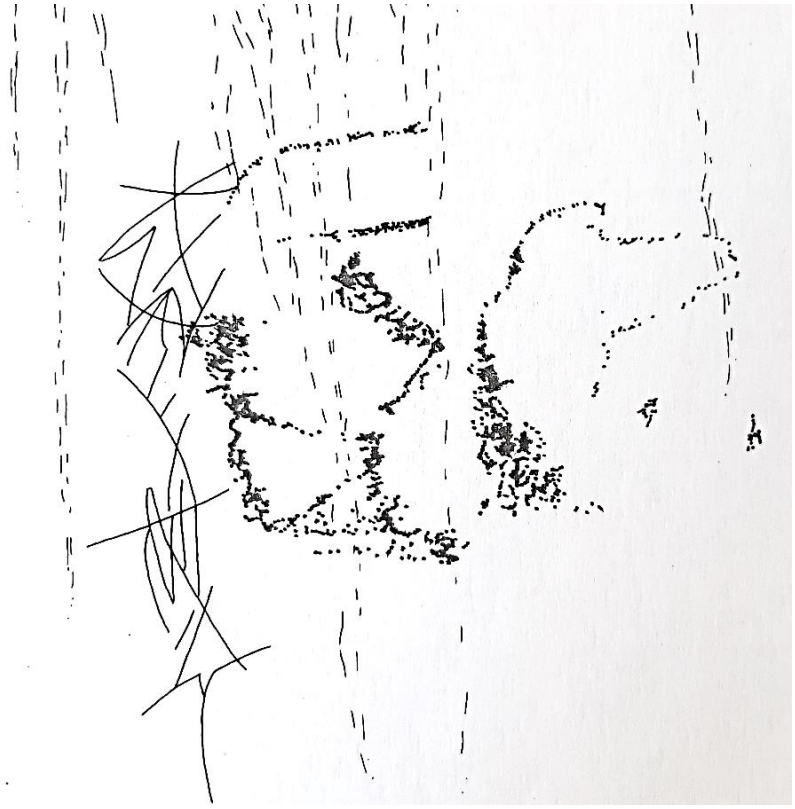
Figure 28. Escoural cave, Hall 1, entrance, unidentified figure (Pl. 6, fig. 7) (Lejeune, 1995).

5. Equid (pl.8 fig. 10)

The head of the Equid is paintied with red pigement. It is about about 30 cm. long (Lejeune, 1995).

In 2021 documentation campign, the rest of the equid become more visiable by using DStretch YRD fillter. The filter shows the dorsal cervical line, the ventral line, and the front leg. There are also two intense dots of red pigments above the cervical dorsal line of the equid. The new measurements are now, the width is now 215 cm, and the height is 143cm. (Figure 29 A, B, C).

A



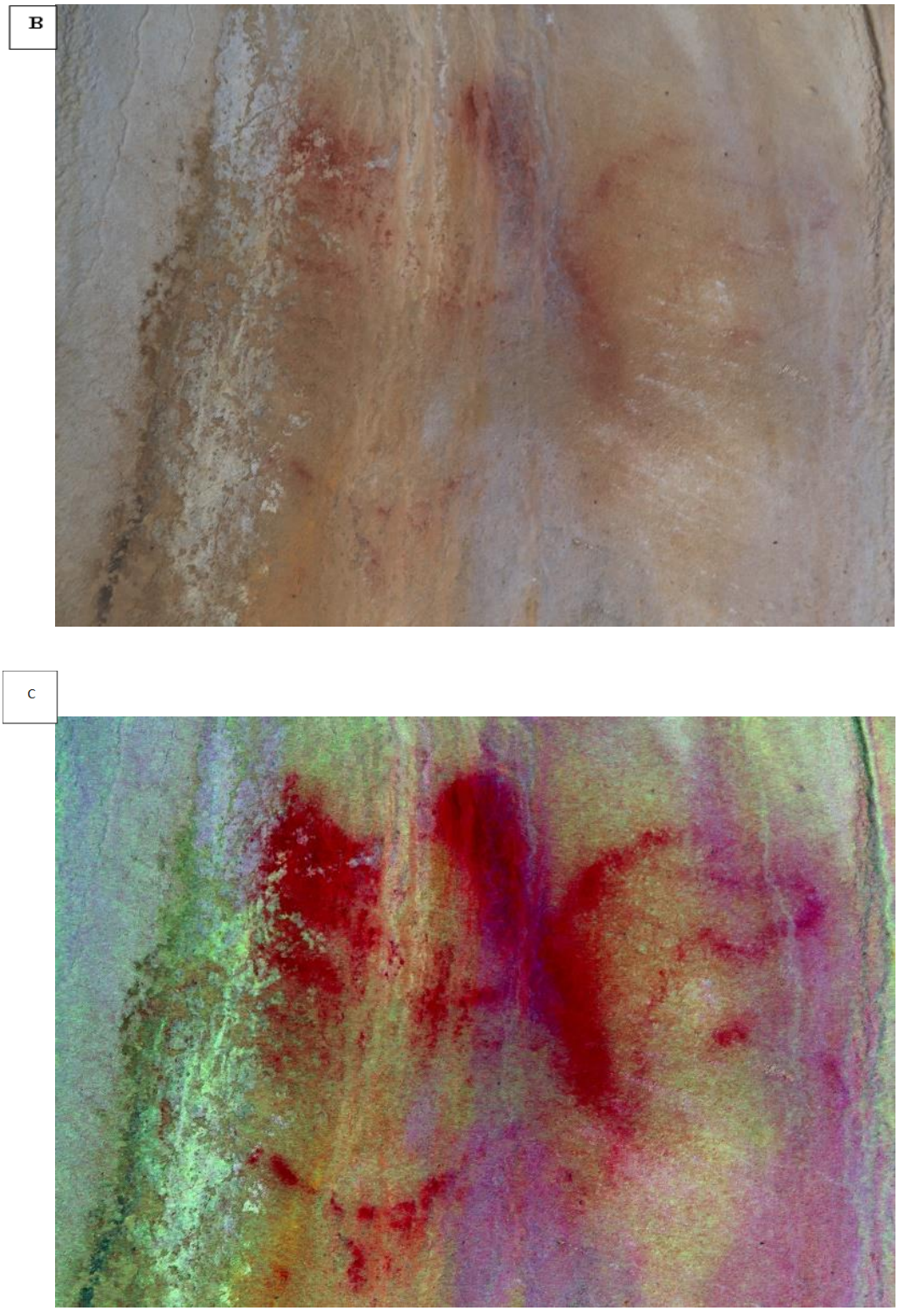


Figure 29. Escoural cave, Hall 1, entrance (pl.8 fig. 10). A is the old figure of the equid by (Lejeune, 1995). B is the new orginal photo of the equid (Collado, 2021) , C is the image that present the rest of equid body by using DStretch YRD filter (Hasnaa Askalany).

3.5.2. Hall 1, main corridor

6. Unidentified figure (PI.12, fig. 19)

The unidentified figure is painted in black pigment. The ventral line, both front and hind leg are present. The figure is oriented to the right.The front leg is presented massive, while the hind leg presented in V-shape. (Figure 30 A, B) (Lejeune, 1995). In 2021 campaign, after using DStretch YBK filter. There is a trace of possible neckline and head.

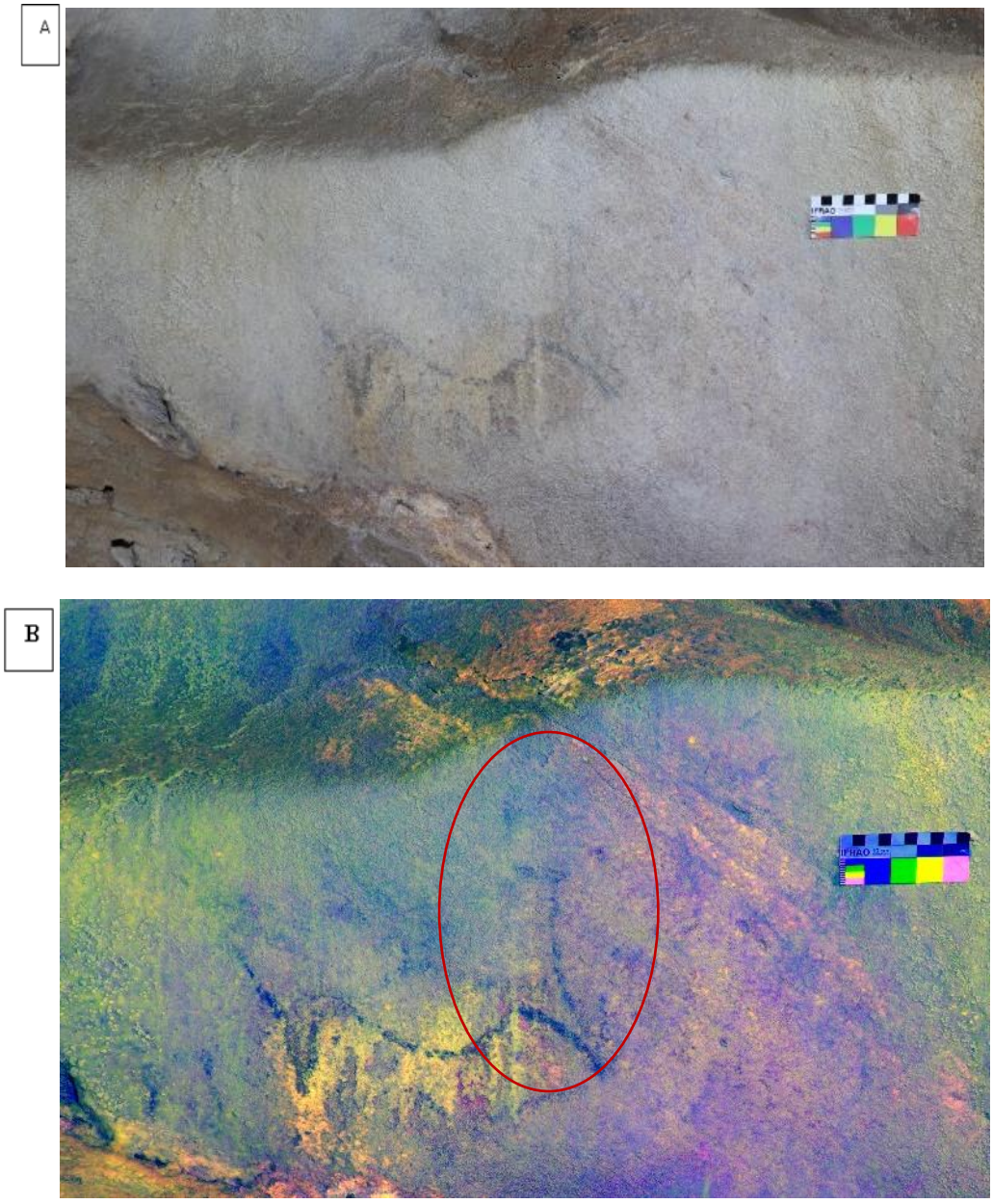


Figure 30. Escoural cave Hall 1, main corridor (PI.12, fig. 19) A the orginal photo (Collado, 2021), B the photo by using DStretch YBK filter (Hasnaa Askalany).

7. Unidentified (hybrid) figure (Pl. 16, fig. 23).

The upper part could be an equid head. It is painted with black pigment and oriented to the right. It has irregular lines, without any defined characteristic elements. Only general two discontinuous lines, with rectilinear sections, are connected in the middle by a perpendicular line which can suggest a posterior part of a human character. It measures 60 cm long and 20 cm wide (Lejeune, 1995). In 2021 documentation campaign, it is believed that the figure could be two equids in opposite direction (Figure 31A, B).

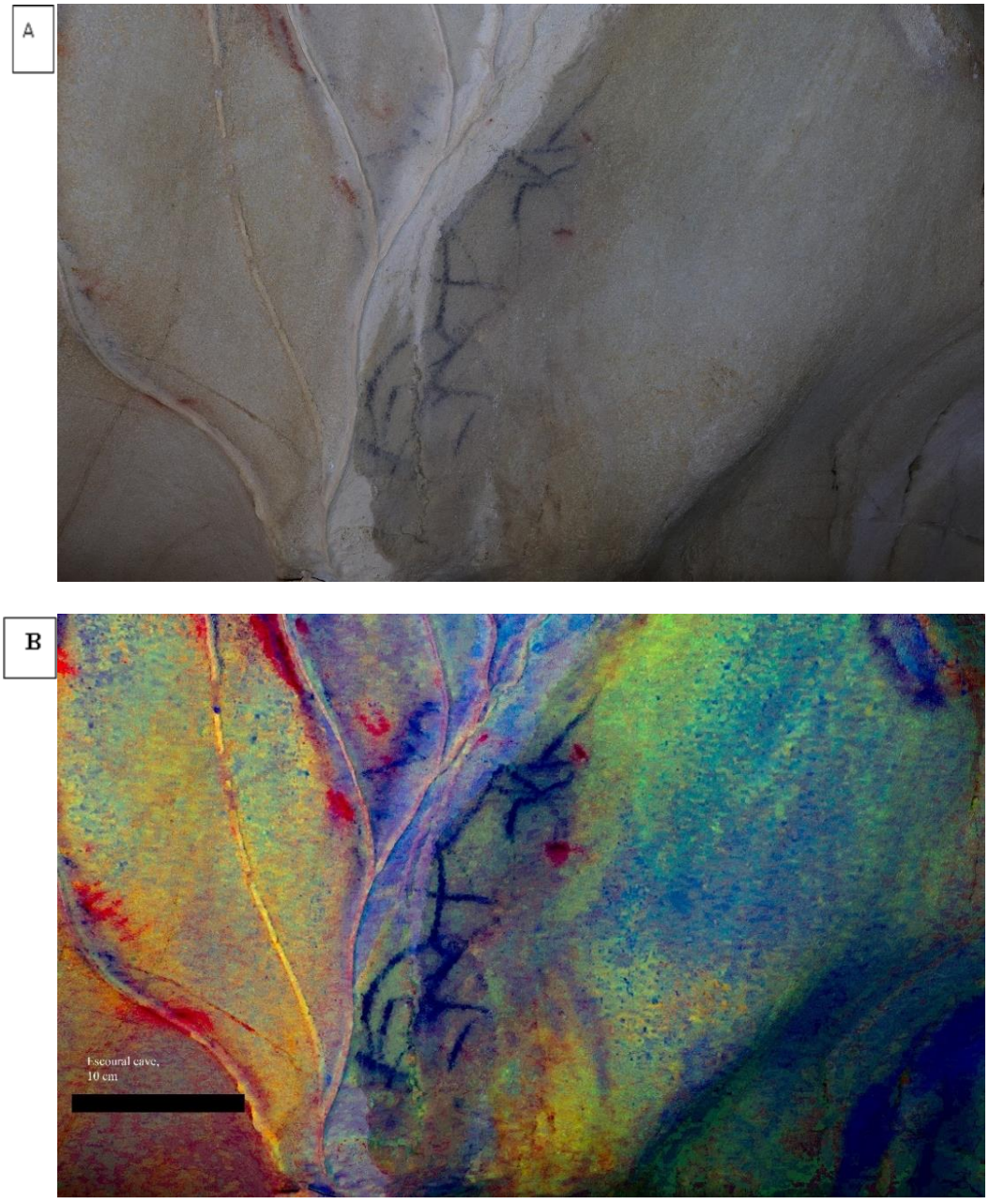


Figure 31. Escoural cave, Hall 1, main corridor (Pl. 16, fig. 23). A is the orginal photo (Collado, 2021). B is the photo after DStretch LDS filter (Hasnaa Askalany).

8. Bovid Figure? (Pl. 16, fig. 24).

It could be (bovid?) 32 cm long and 20 cm high, trace in absolute profile, oriented to the left, without internal detail and whose general appearance resemble figure (PI.12, fig. 19). The limbs are incomplete despite some black lines (Figure 32 A, B) (Lejeune, 1995).

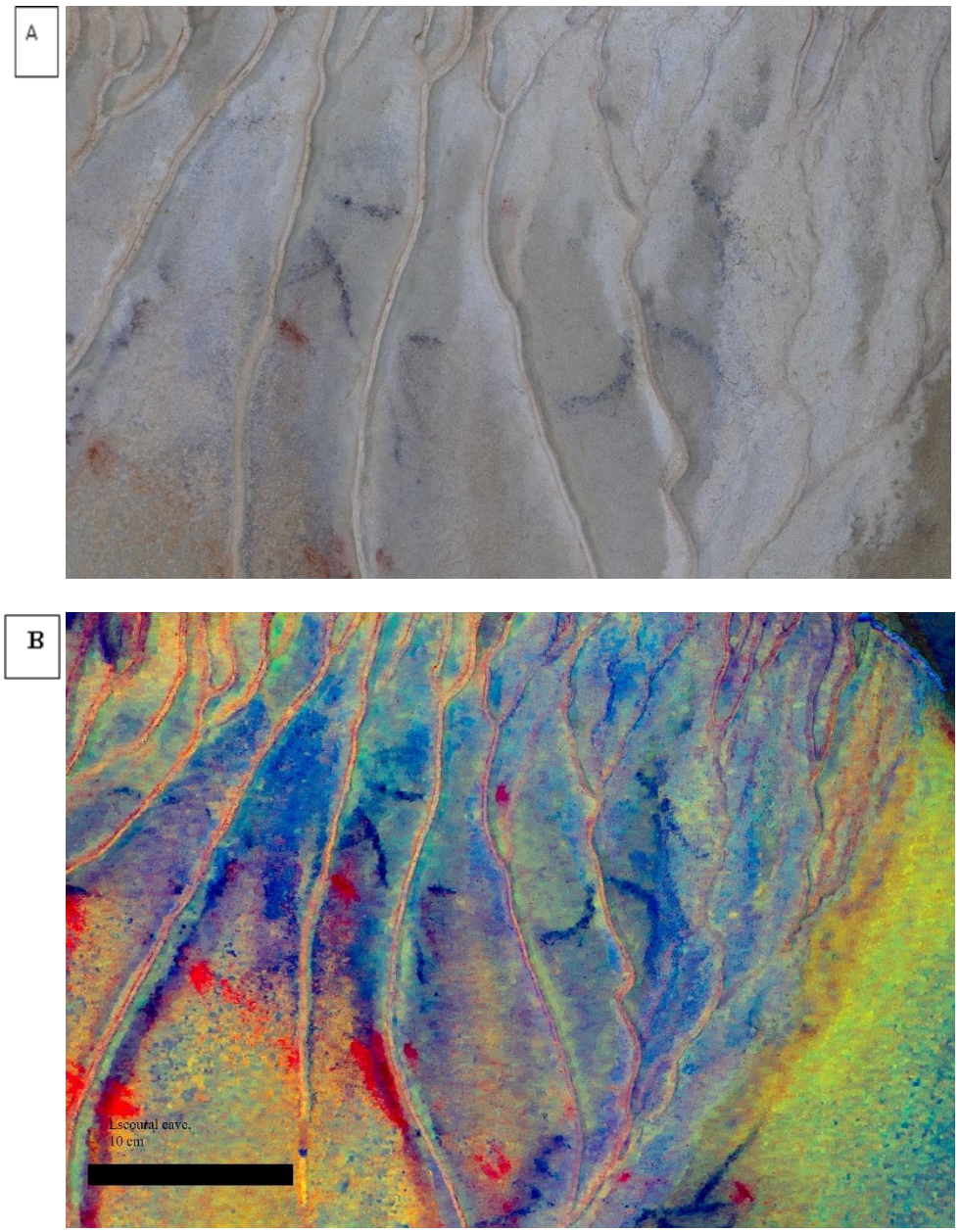


Figure 32. Escoural cave, Hall 1, main corridor (Pl. 16, fig. 24) bovid. *A is the original photo (Collado, 2021), B is the photo after DStretch LDS filter (Hasnaa Askalany).*

9. Unidentified figure (PI.16, fig. 25)

It is a remain of figure, also in black pigment, and oriented to the left. It could be a equid? without detail (Figure 33 A, B) (Lejeune, 1995).

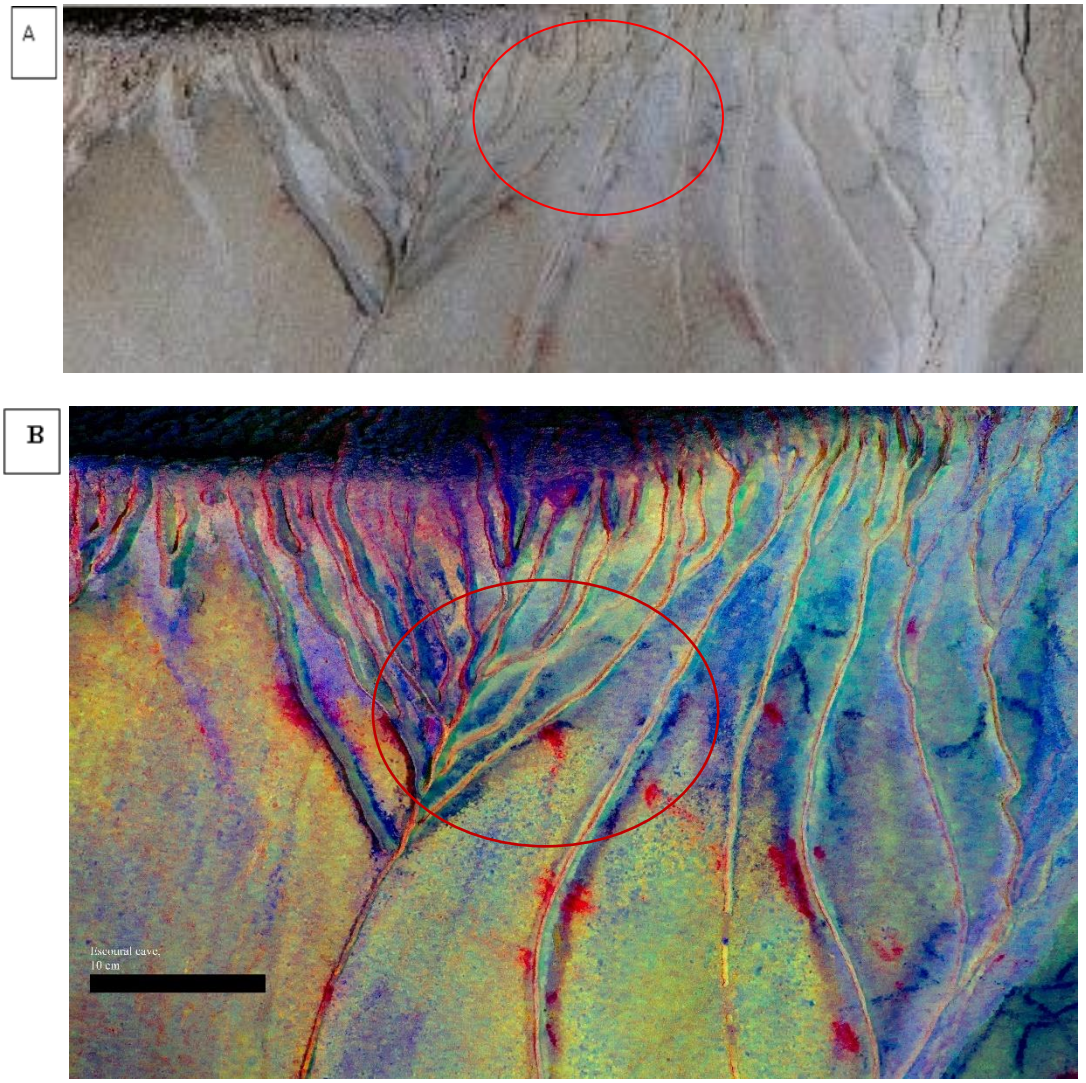


Figure 33. Escoural cave, Hall 1, main corridor. A is the original photo (PI.16, fig. 25). B is the photo after DStretch LDS filter (photo Collado, 2021, DStretch Hasnaa Askalany).

3.5.3.Gallery 1

10.Hind leg of probably Equid? (P1.19, fig. 30).

The figures is only representing the rear end that includes the hind leg. It is painted with black pigment. It is probably an "equid", given the rounded shape of the rump and saddle. The measurements are 23 cm long and 21 cm high figure. It is veiled partially by calcite. The hind leg is unfinished and it has a triangular shape. A red line about 7 cm long cuts the stage perpendicularly of the rump. About 10 centimeters above this figure (Figure34 A, B,) (Lejeune, 1995).

Farinha dos Santos found a head of bovid above the rear end, but Lejeune did not find any trace on the wall. But Hruban, (2019) after photos treatment found the head above the hind leg the equid. The campaign 2021 did the photo treatment and found the figure but it is not identified (Figure 35).

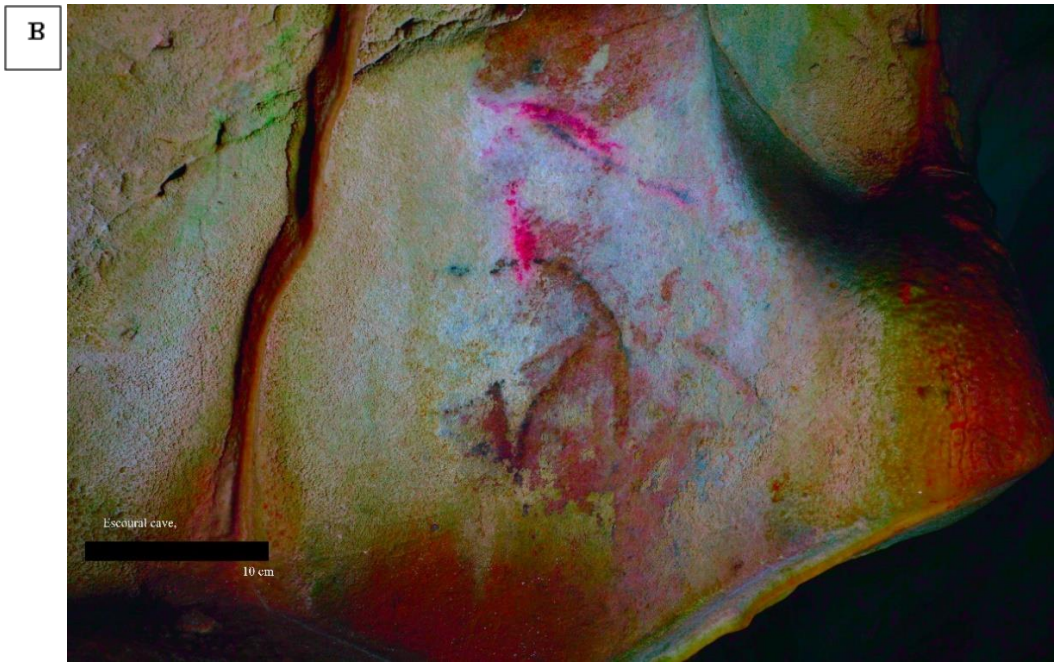


Figure34 . Escoural cave, Hall 1, Gallery 1, (P1.19, fig. 30). A is the original photo (Collado, 2021). B is the photo after DStretch LDS filter (Hasnaa Askalany).

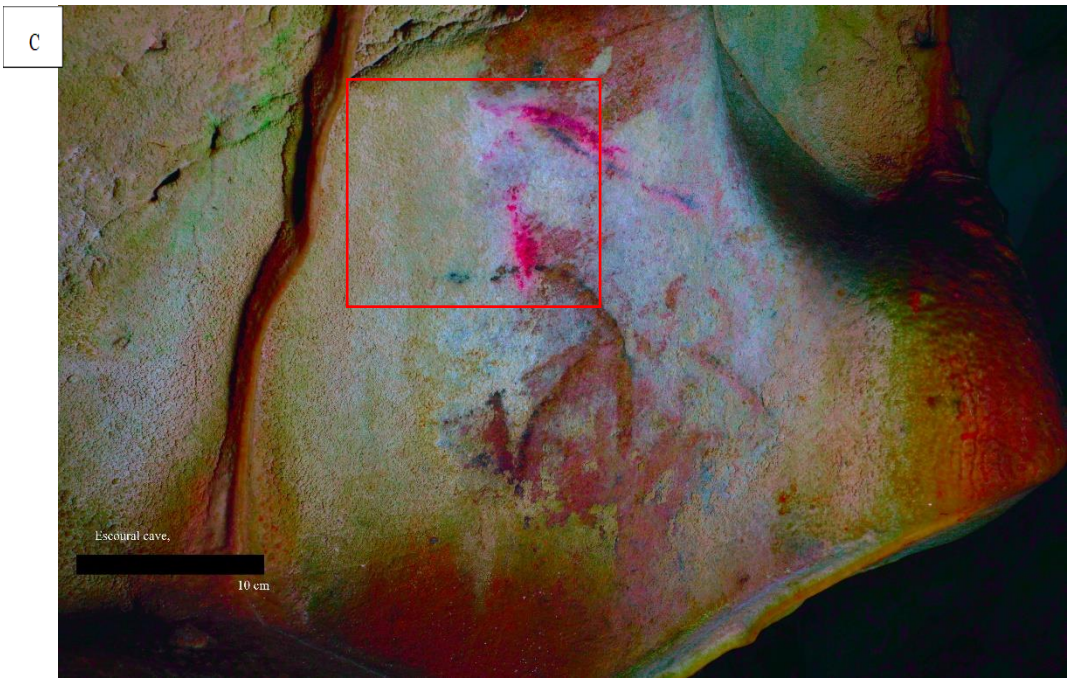


Figure 35. Escoural cave, Hall 1, Gallery1, (P1.19, fig. 30) hindleg of Equid ? showes the after DStretch LDS filter another figure (Hasnaa Askalany).

11. Head of Equid (PI.24, fig. 37)

The head of the equid has V head shape. It is oriented to the left. the head has fillings with some liner lines. It is a similar figure of the equine heads (fig. 5 and 6) . There are three or four parallel lines on the head. It is cut in the middle of the neck by fifth straight lines (Figure 36 A, B) (Lejeune, 1995).

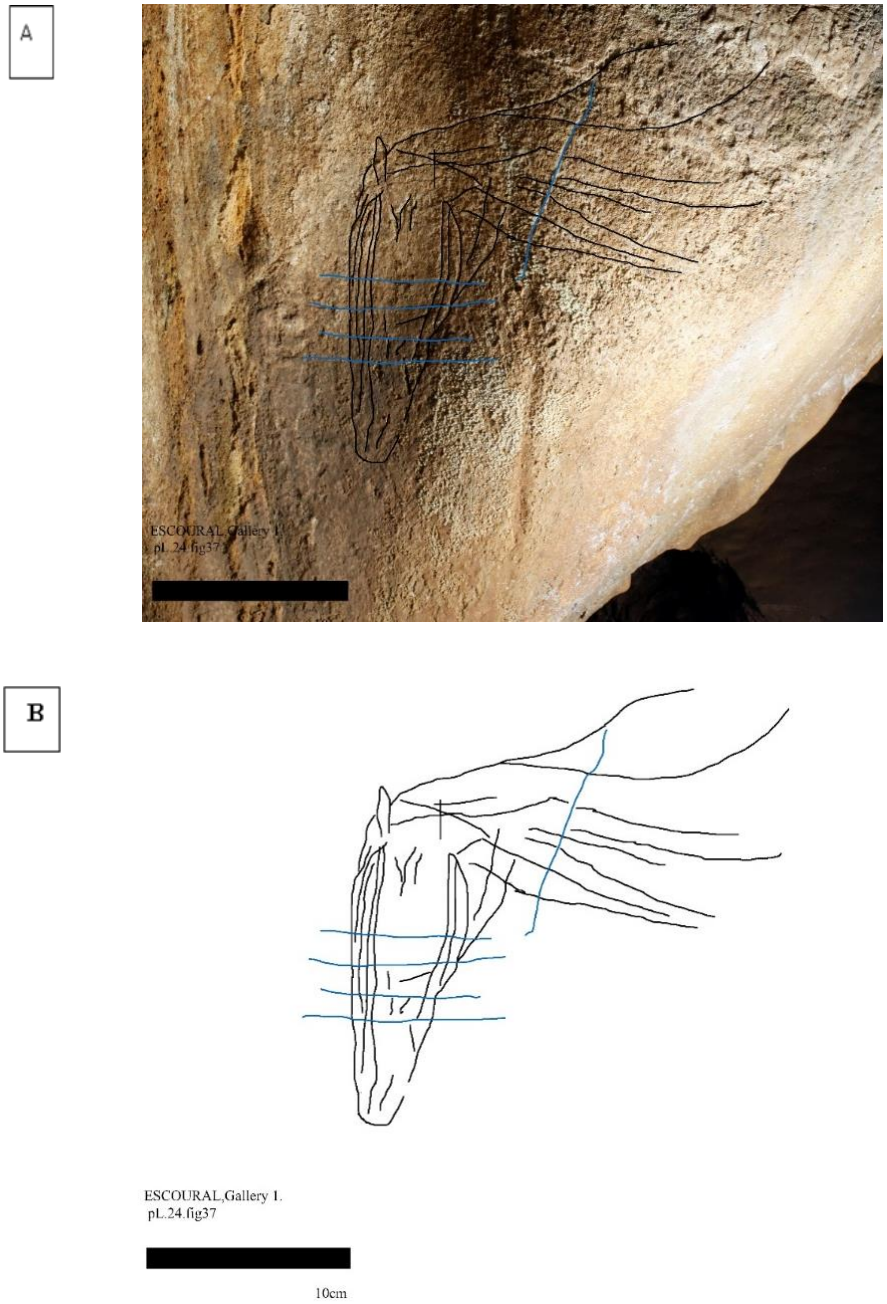


Figure 36. Escoural cave, Hall 1, Gallery1 (PI.24, fig. 37) head of an equid. A is the original photo with tracing. B is the photoshop tracing (photo by Collado, 2021, photoshop tracing by Hasnaa Askalany).

12. Head of equid (PI.26, fig. 39)

Head of Equid is represented with parallel engraved lines. it resembles figure 6, the head is oriented to right. The ear has rectangular shape. The interest of this figure lies, especially in the neck, as it has filling of clearly visible parallel lines (Figure 37) (Lejeune, 1995).

Figure 37. Hall 1, Gallery 1 (PI.26, fig. 39) a head of equid. A is original photo with tracing. B is the photoshop tracing (photo by Collado, 2021, photoshop tracing by Hasnaa Askalany).

13. Head of equid (PI.27, fig.40)

A shape of a head it resembles the other equid figures which have fillings that decorated the head and the neck. The head is oriented left . The figure is not clear enough to give more detail due to the lines that cover the whole figure (Figurer 38) (Lejeune, 1995).

Figurer 38. Escoural cave, Hall 1, Gallery 1 (Pl.27. fig. 40). Head of equid (Lejeune, 1995).

14. Head of Equid (P1.28, fig. 42)

It is oriented to the left, with linear filling are the rather worn lines. The head is about 3.5cm wide, would be 7 cm long. It does not have ears (Figure 39) (Lejeune, 1995).

Figure 39. Escoural cave, Hall 1, Galery1(P1.28, fig. 42). Head of Equid (Lejeune, 1995).

15. Head of Equid (P1.29, fig. 44).

Head of an equid painted with black pigment. It is oriented to the right (Lejeune, 1995). After the photo has treatment with DStretch IBK filter, some details of the head are more clear such as , the forehead, muzzle that has the duck bill shape and part of the neck (Figure 40 A,B).

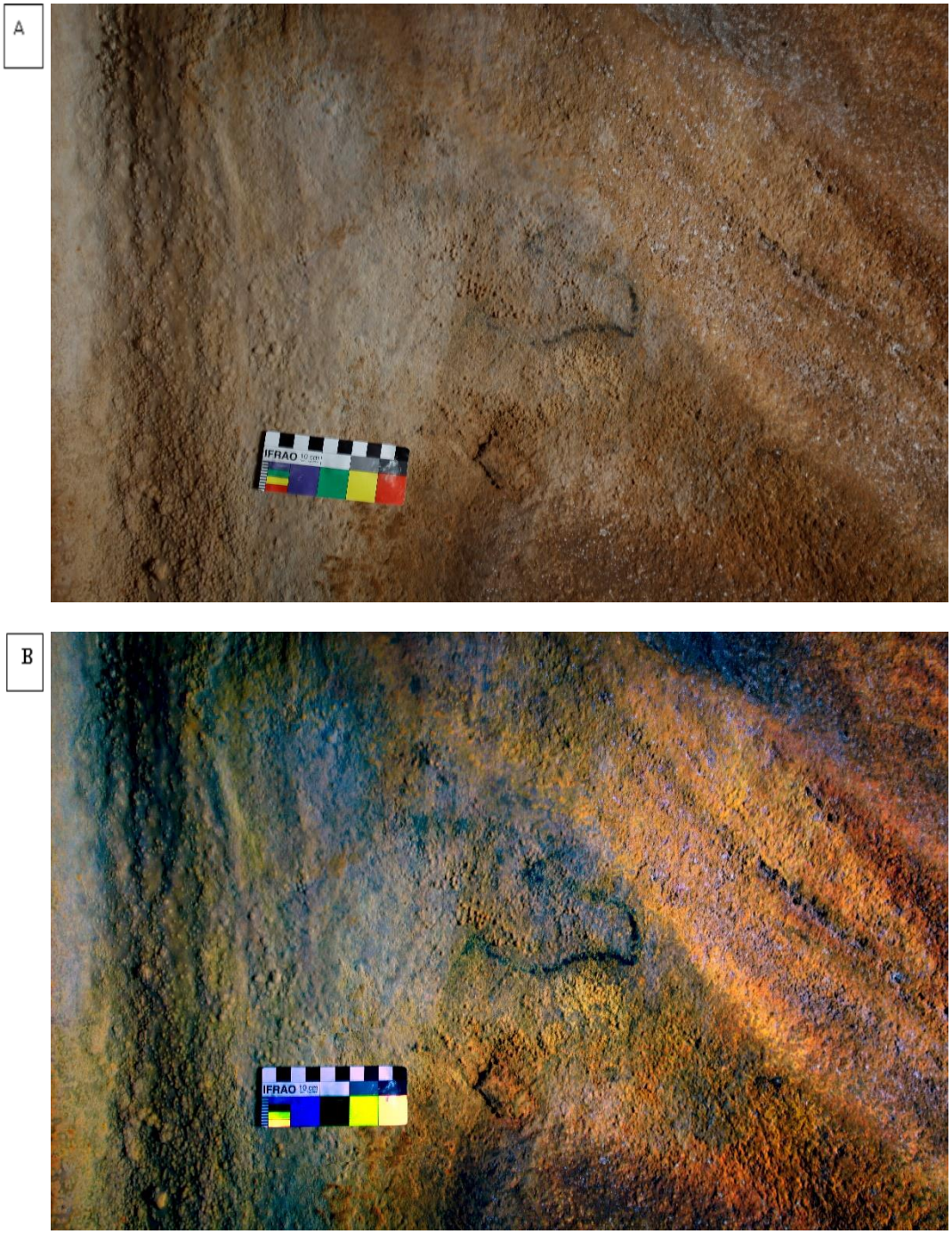


Figure 40. Escoural cave, Hall 1, Galery1 (P1.29, fig. 44) A Remains of head of Equid. A is original (Collado, 2021), B. left is after DStretch IBK filter (Hasnaa Askalany)

16. Two heads of Equid (P1 .30, fig. 47).

The Equid heads are executed by engraving technique, about 1 mm wide.The two heads are oriented to the left. The inner head is much smaller than the exterior head. There are parallel linear fillings in the heads and the necks. The ears are the only detail indicated. The both ears have a triangular ear - shape. The theme, style and technique of these figures resemble to those of the heads of equids (fig. 5 and 6). The maximum dimensions of the set are 30 cm for the height and 18 cm for the width (Figure 41) (Lejeune, 1995).

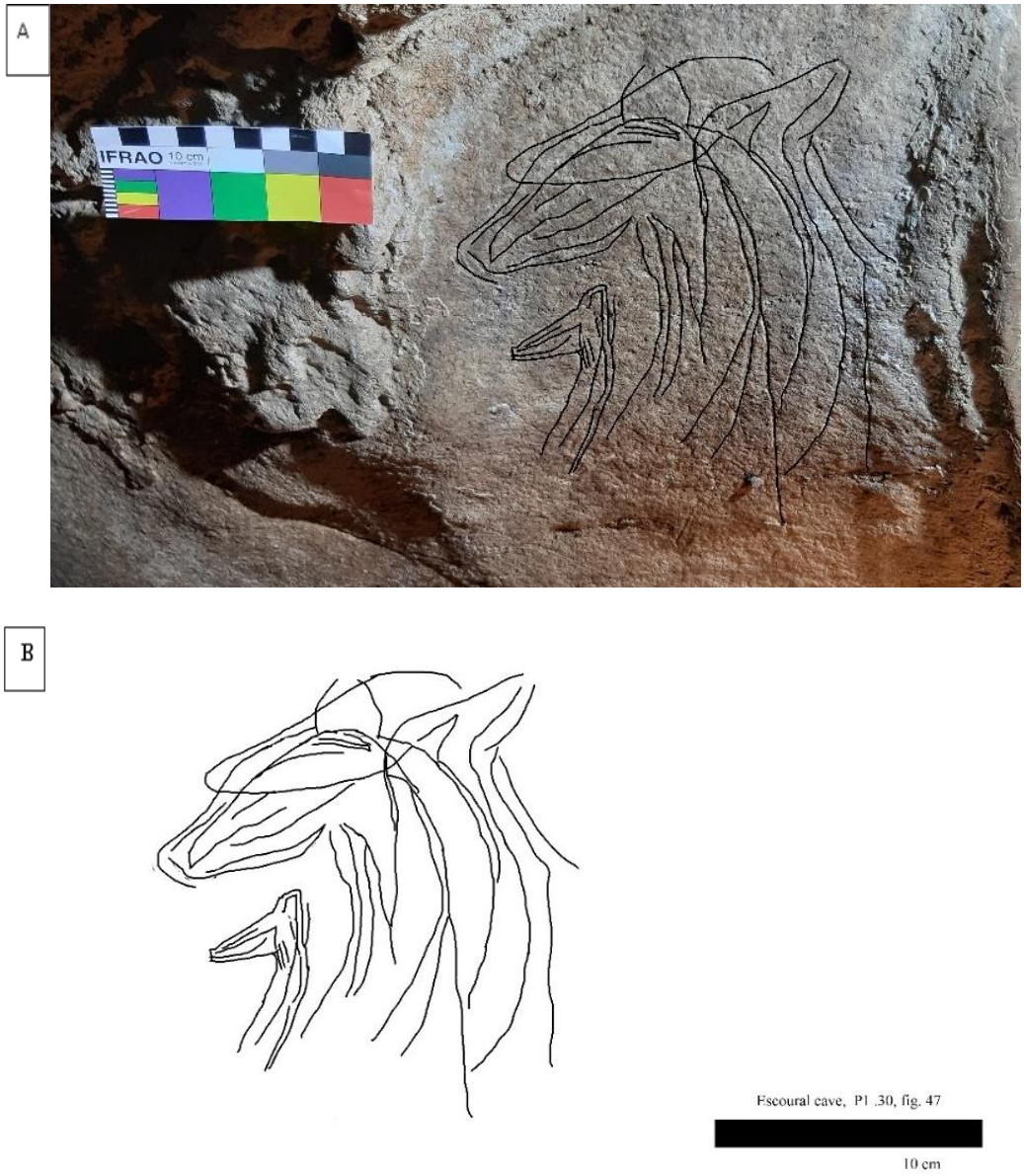


Figure 41. Hall 1, Gallery 1, Two heads of equids (P1 .30, fig. 47). A is the original B. is the photoshop tracing (photo by Collado, 2021, photoshop tracing by Hasnaa Askalany).

3.5.4 Hall 1, Gallery 2

17- Bovid (Pl.34, fig. 55).

It is a continuous engraved line executed in a very schematic way. It is oriented to the right. It is probably a bovid since a curved line starting from the top of the head could represent a horn. The lines, clearly incised, are 1 mm to 2 mm wide. The whole figure is approximately 50cm in length and 22cm in height (Figure 42) (Lejeune, 1995).

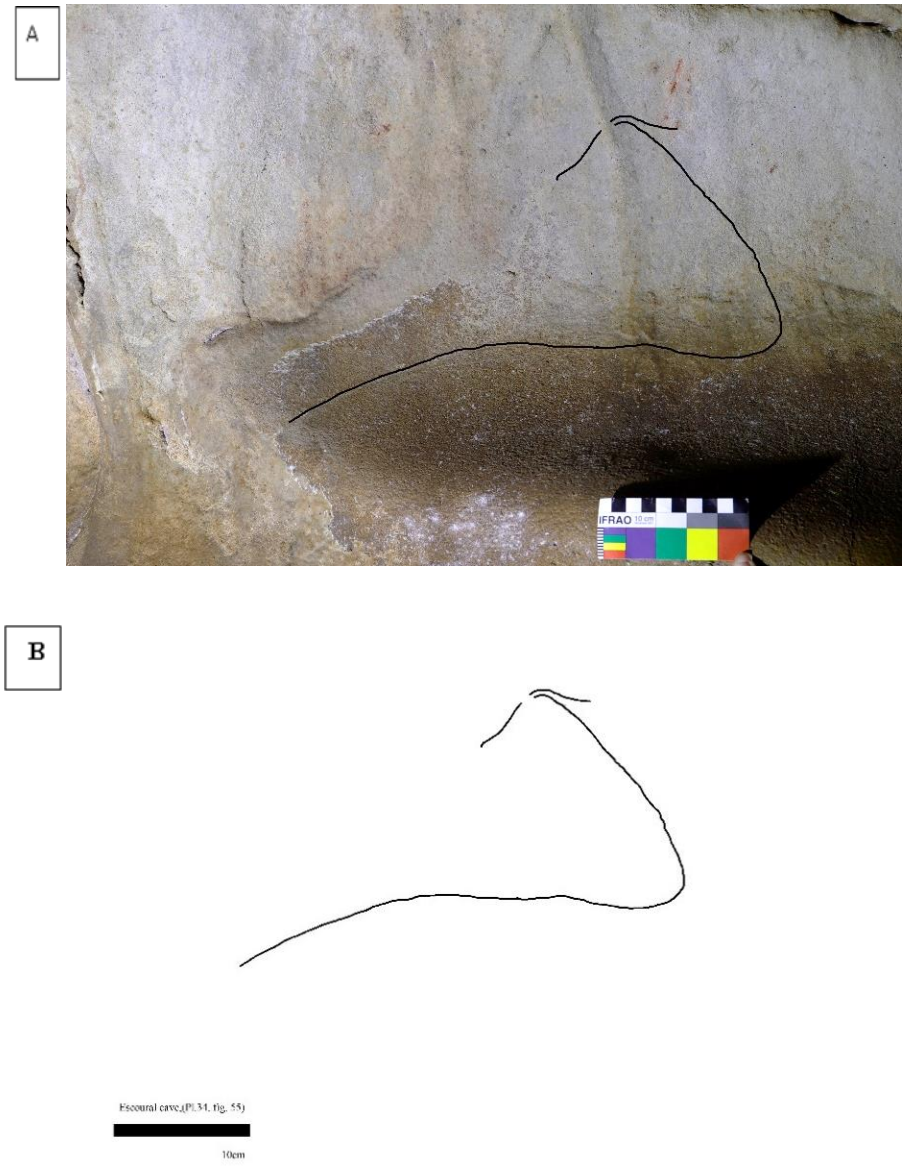


Figure 42 . Escoural cave, Hall 1, Gallery 2, Bovid (Pl.34, fig. 55). A is the original B is the photoshop treatment (photo by Collado, 2021, photoshop tracing by Hasnaa Askalany).

18. Equid hind quarter (Pl.35, fig. 57)

The figure is done by engraving technique. It is oriented to the right. The tail has five curved lines converging at the top of the thigh while the hind leg is quite slender and the ventral line draws a bloated belly. There is calcite cut the figure in the cervil dorsal lline and ventral line. No other element is shown. The measures are 40 cm in length and 23 cm in height (Figure 43) (Lejeune, 1995).

Figure 43. Escoural cave, Hall 1, Gallery 2. An equid hindquarter (Pl.35, fig. 57), A is the original B. is the photoshop tracing (photo by Collado, 2021, photoshop tracing by Hasnaa Askalany).

19. Unidentified animal (Pl.36, fig. 59).

The figure is painted with black pigment. It is oriented to the right. It has a rectangular head with muzzle resemble the duck bill, massive neck, short body, and front leg. The measurements are 30 cm length and 20 cm height (Figure 44) (Lejeune, 1995).

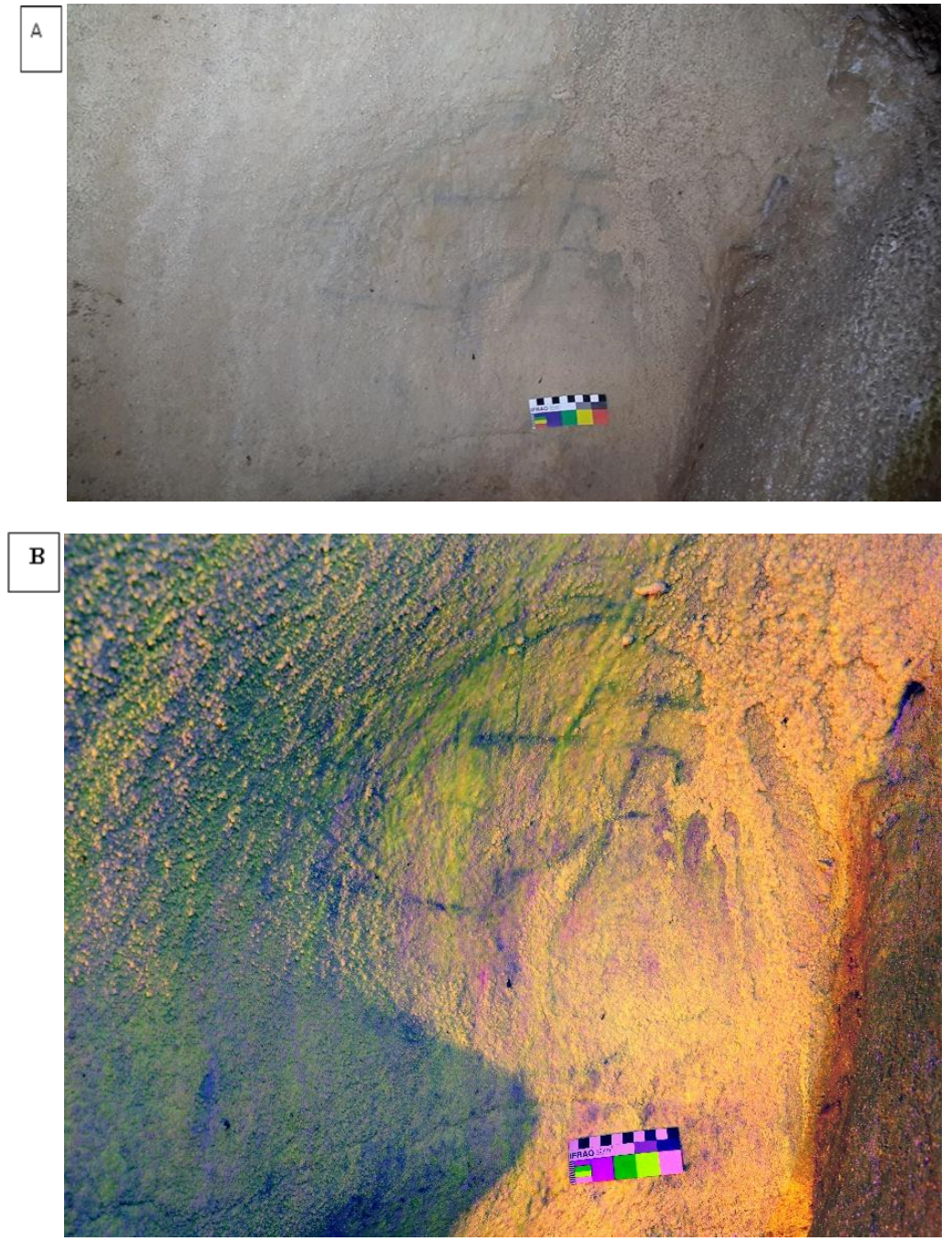


Figure 44, Escoural cave, Hall 1, Gallery 2 unidentified animal (Pl.36, fig59). A is original photo of the equids (Collado, 2021), B the image with DStretch YRD filter (Hasnaa Askalany).

20. Head of Equid? (P1.36, fig. 60)

The head is oriented to the right with an extremely diffuse and surmounted trace, above a natural crack, with a strongly arched line possibly is suggesting horns. The measurements are about 20cm long and about 15 cm high (Figure 45) (Lejeune, 1995).

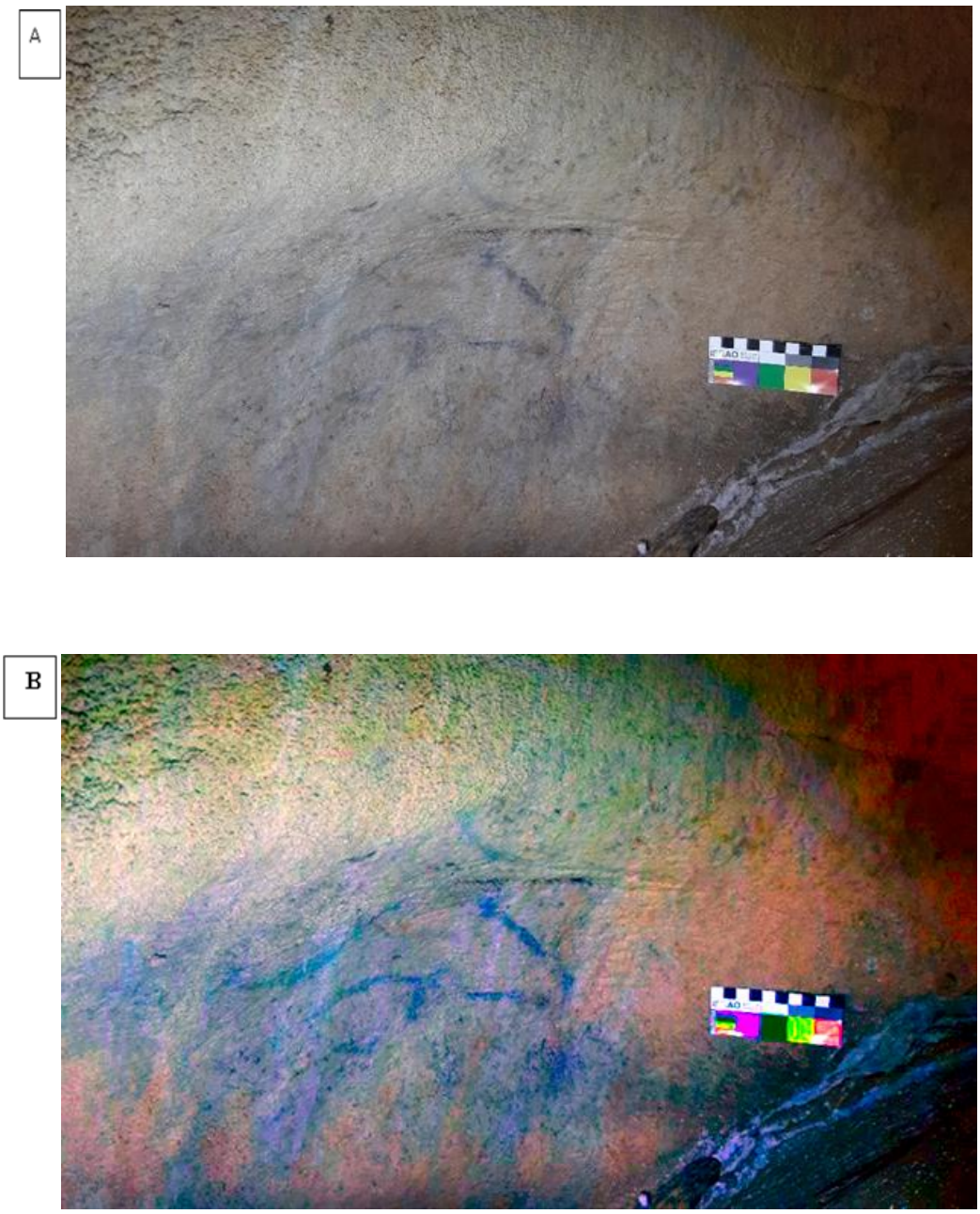


Figure 45. Escoural cave, Hall 1, Gallery 1, Equid (P1.36, fig. 60). A The original photo (Collado, 2021), B is the photo by using DStretch YBK filter (Hasnaa Askalany).

3.5.5. Hall 3, Gallery 11

21. A bovid head (or a caprid) (P1.44, fig. 71).

The figure is done by engraving. It is clearly distinguished with a pair arched horns in absolute profile to the right. The head and the neck have incised linear fillings. The muzzle area is rectangular. The measurements are 17 cm for the width and 30 cm for the height. The width of the engraved lines varies from1 mm to 1.5 mm (Figure 46) (Lejeune, 1995).

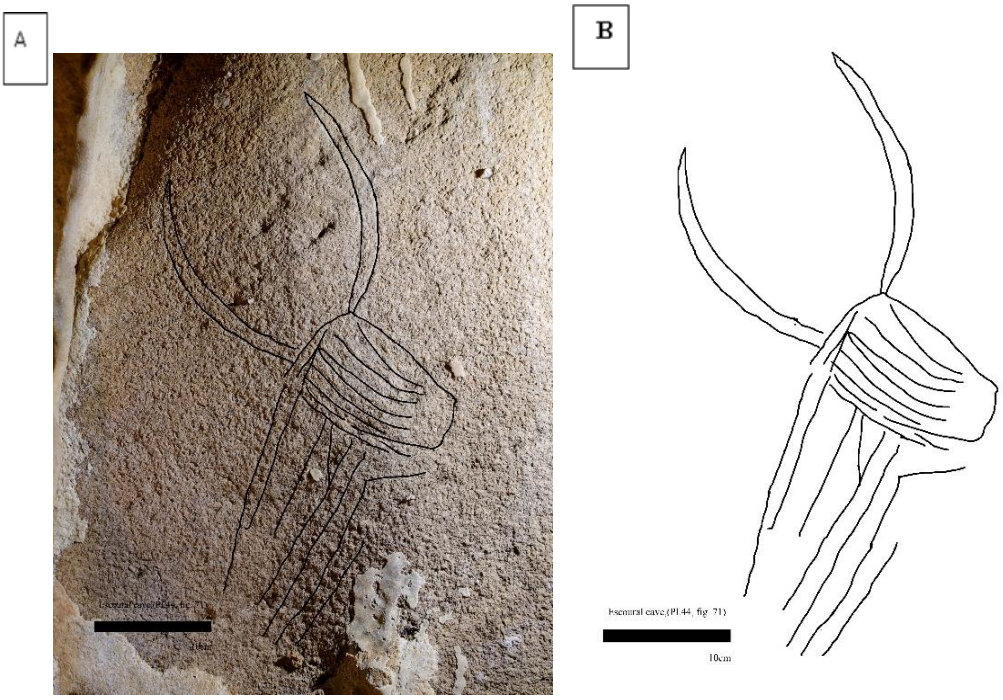


Figure 46. Escoural cave, Gallery 11, A bovid head (or a caprid) (P1.44, fig. 71). A is the original photo. B is photoshop tracing (photo by Collado, 2021, photoshop tracing by Hasnaa Askalany).

22. An equid head (P1.45, fig. 72) .

The head is painted with red pigment. It is located to the right of figure 71. The head is oriented to the right. The forehead of the figure is not noticed only muzzle area can be seen, and two lines represent the neck. The measurements are 28 cm for the width and 17 cm for the height. In the upper left corner of the panel, remains red line about 10cm long and about 1.5 cm wide (Figure 47) (Lejeune, 1995).

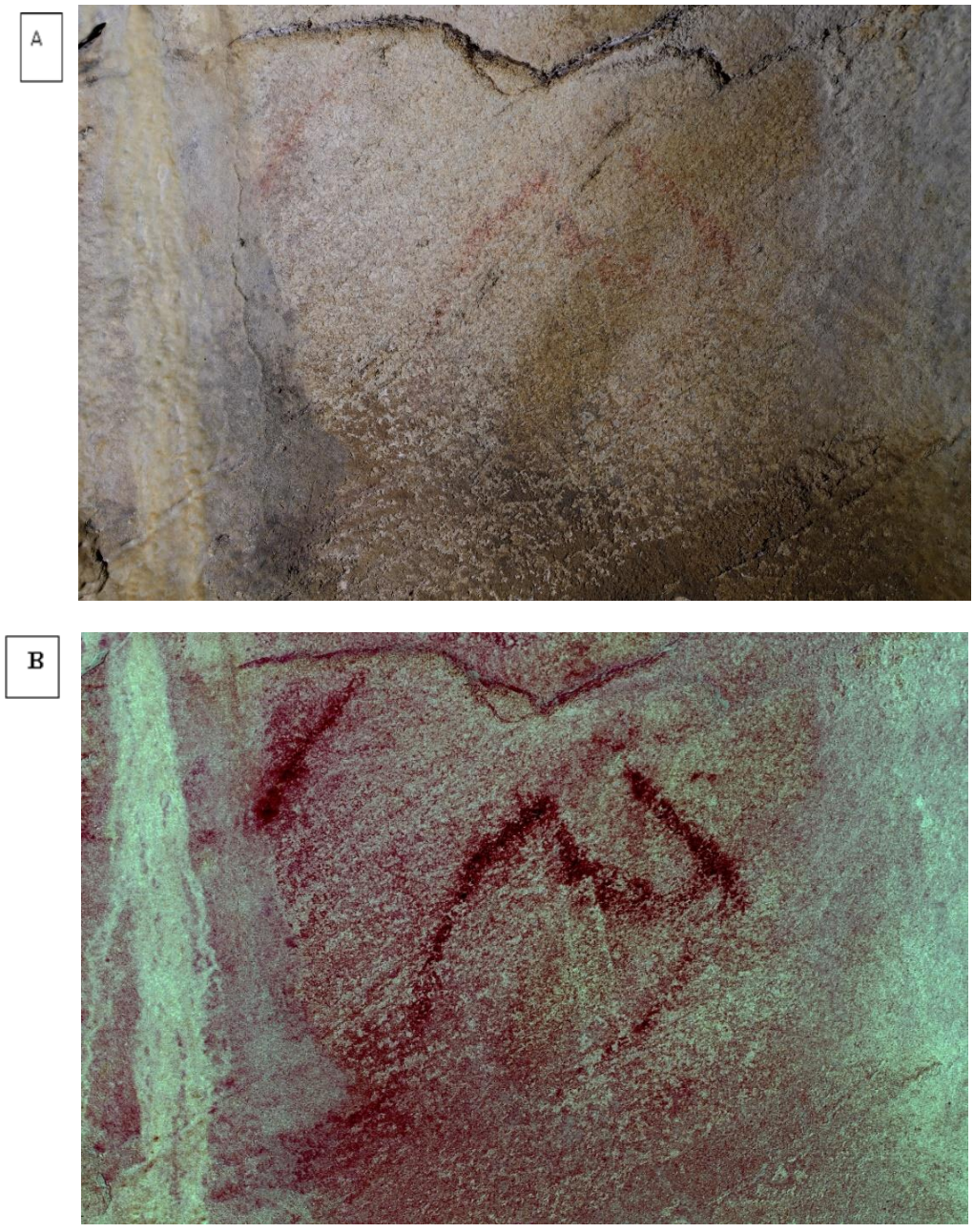


Figure 47. Escoural cave, Gallery 11 is trace of an equid head (P1.45, fig. 72). A is original photo (Collado, 2021), B is the photo by using DStretch YBK filter (Hasnaa Askalany).

3.5.6. Hall 3, Gallery 6

23-Headless equid (P1.46, fig. 75)

The figure is done with engraving and is oriented to the right. The outlines of the neck, the cervical-dorsal, the front leg, and the ventral line are present. The rear part that includes the tail and the hind leg are missing. The measurements are 25 cm long and 23 cm high. It is covered with a light layer of calcite (Figure 48) (Lejeune, 1995).

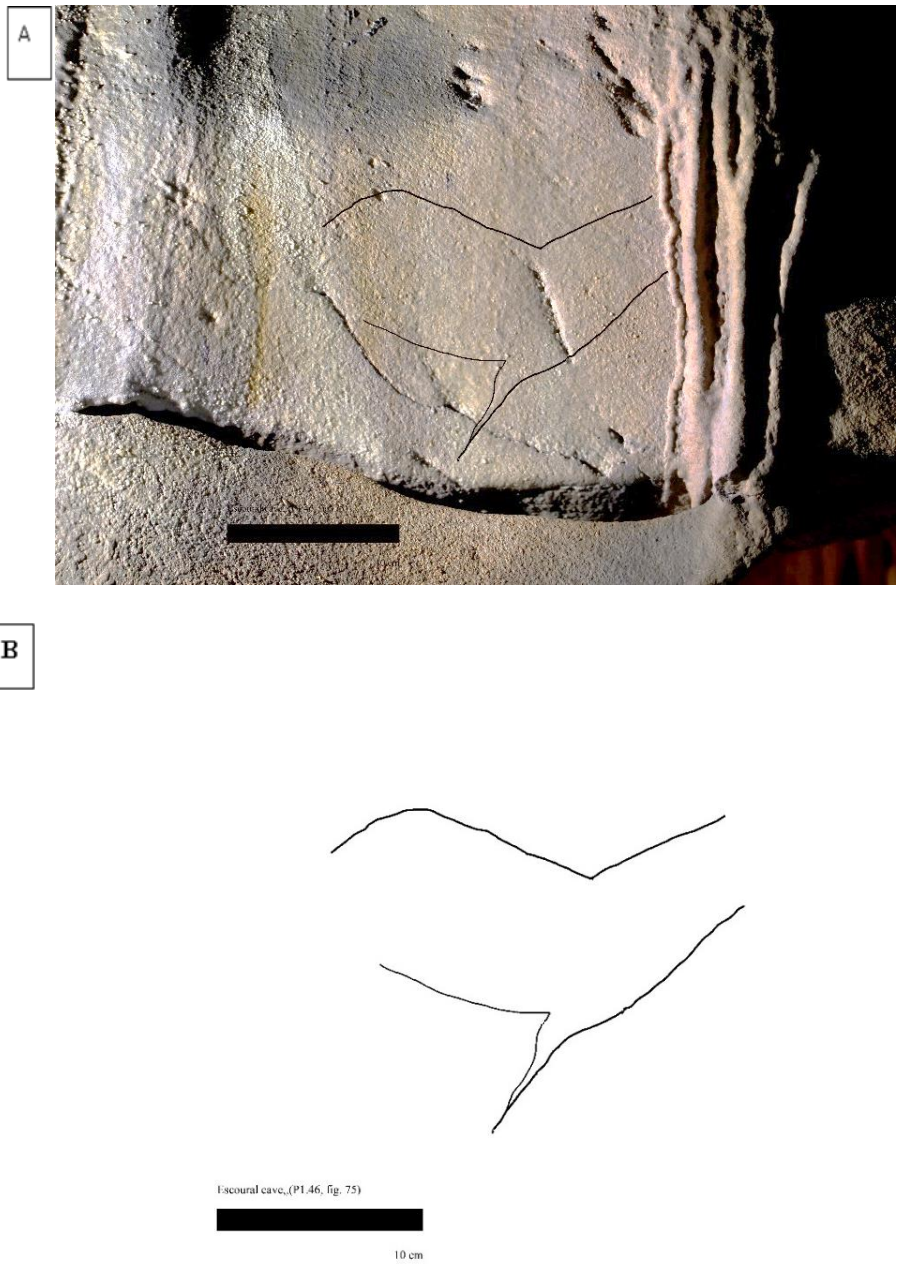


Figure 48. Escoural cave, Hall 3, Gallery 6. Headless equid (P1.46, fig. 75) A is the original photo. B is photoshop tracing (photo by Collado, 2021, photoshop tracing by Hasnaa Askalany).

3.6. Summary of chapter 3

❖ Escoural cave is considered now the only Karstic cave that carries paleolithic rock art in all of Portugal.

❖ Half century of studying the cave started from Santos, who ran many studies with some publications through 60s,70s and 80s, with Gomes and Glory.

❖ In 90s it can be considered the first time to have an inventory to document the rock art in Escoural cave by Lejeune (Lejene, 1995).

❖ Later, some studies were made for conservation condition, analysis pigments, and museology studies (Lopes, 2012; Mauran, 2016; Hurban, 2019).

❖ In 2021 the documentation campaign visit Escoural cave. The aim is to document, and study all the rock art in the cave, and update all the photos by using the latest digital documentation methods.

❖ There are two new more motifs are discovered in the cave, a bull (pl.64 A) (Figure49 A, B). It is still in the process of interpreting, but the main character description is that it is painted with red pigment. The head, and the muzzle are represented. It seems also that there is a small red dot inside the head. It could refer to the eye. In this case it will be the only figure that represented the eye in Escoural cave so far. The horns are also represented, and a small part of the cervical dorsal line appears.

❖ Another motif was discovered. It is a bull also, but it was an engraving technique was used. It is a simple continuous line for the head and the muzzle area, with the horns on the forehead. They give the curvy horn shape (Figure 50 A, B).

❖ In terms of technique and characteristic features of the zoomorphic figures in Escoural cave, it will be more detail in the analysis chapter. The colors used were black and red pigments. As for the engravings, they were incised with fine lines and almost continuous lines.

❖ Even though the number of painted motifs is very small, some observations can be made. For Bovids, the constant is the use of a trapezoidal morpho-somatic scheme, where the muzzle area tends to be rectilinear. The horns represented by means of curved lines.

❖ The equids that made in black and red pigment. The painting was mainly counter with simple single, slightly larger lines in the red in some figure as in (pl.8 fig. 10). The head was the most representative part.

❖ While in engraving, the majority of the equid's head had linear decoration lines. Some of them were similar in the representing especially the figures, (Pl.4, fig. 5), two (Pl.5, fig. 6) (PI.24, fig. 37), (PI.26, fig. 39), (P1.28, fig. 42), (P1 .30, fig. 47).

❖ The physical characteristics that is present in both painting and engravings; the front and hind legs are depicted by two non-convergent lines that tend to become parallel or closed as V-shape in (P1.19, fig. 30). The bellies are outlined using a markedly concave line. The cervical-dorsal lines, which are prolonged in some cases configuring the tail end, show a sinuous path (Pl.35, fig. 57).

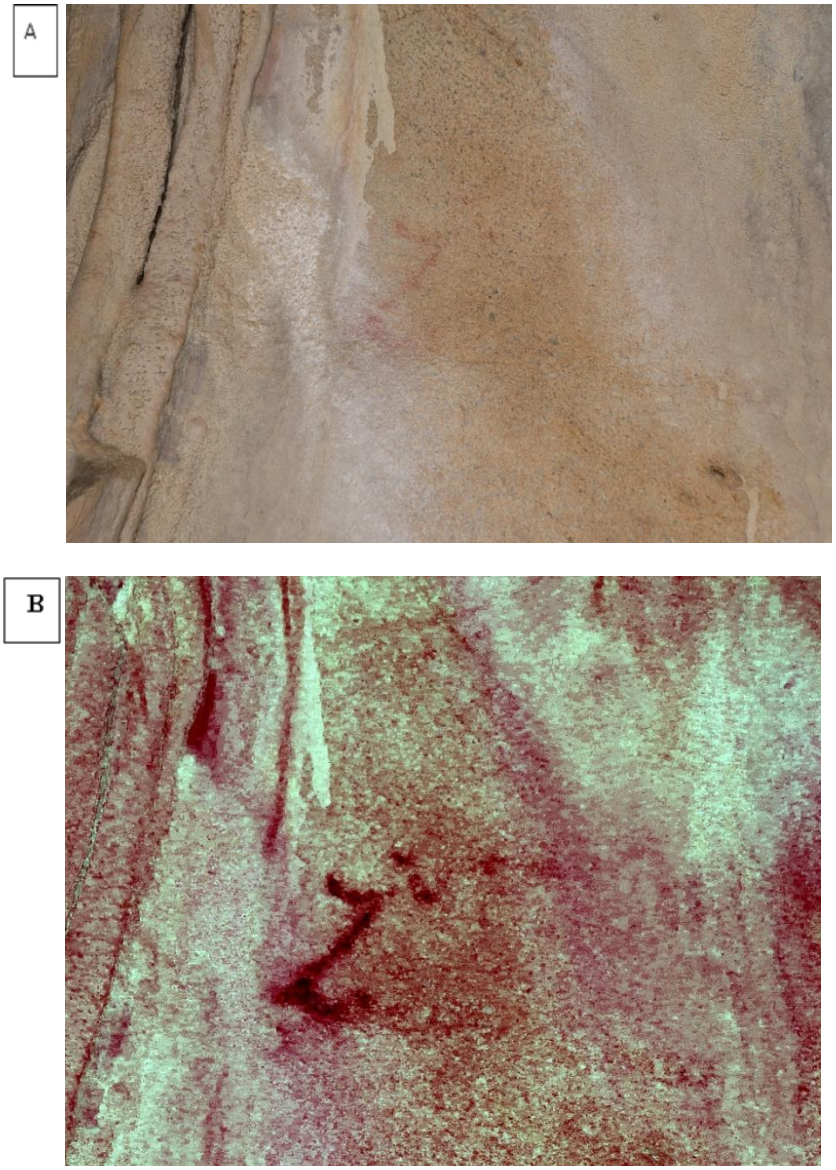


Figure49. Gallery 11 A trace of a bull head (P1.64A). A is the original photo (Collado, 2021), B is the photo after using DStretch YRE filter (Hasnaa Askalany).

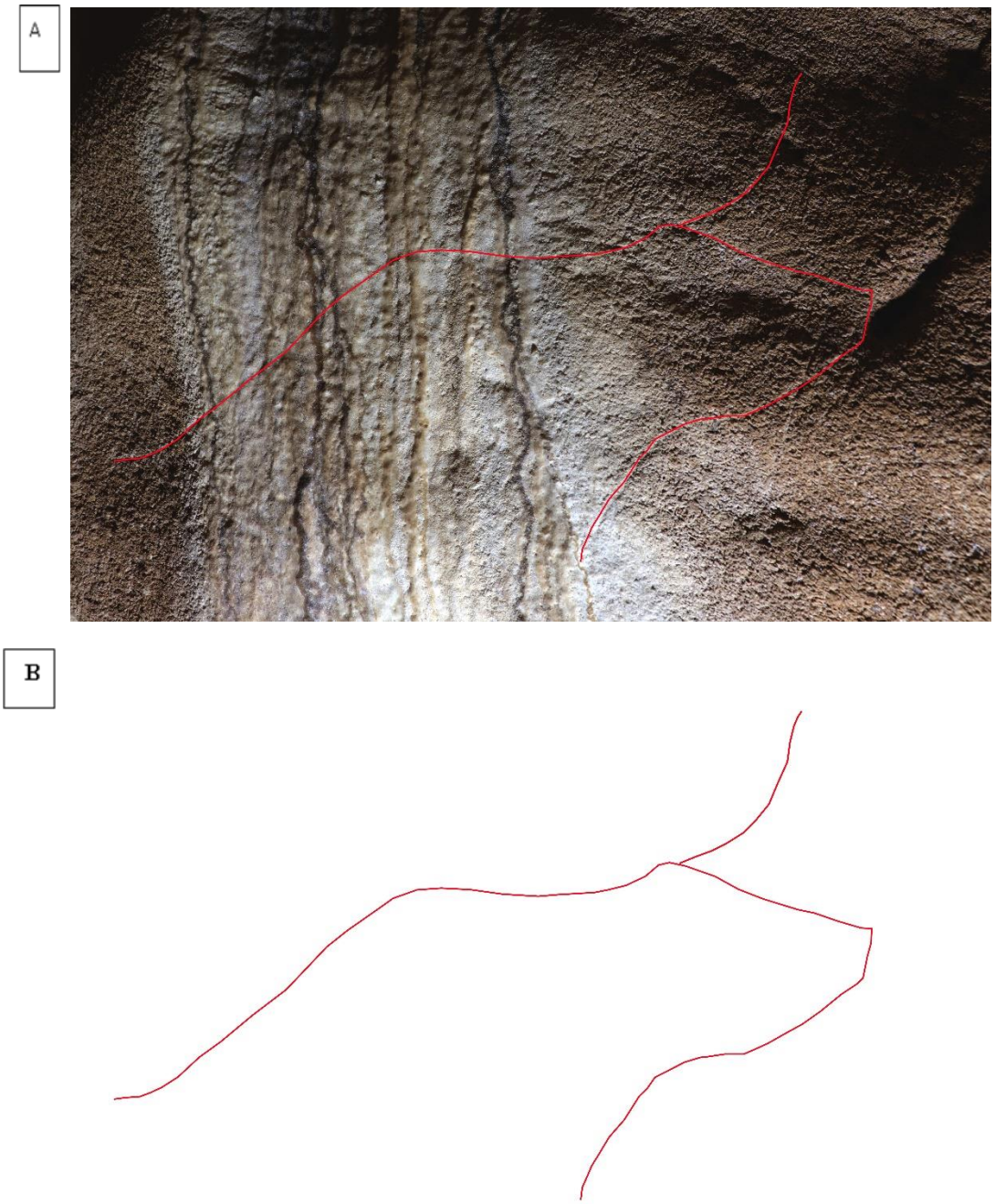


Figure 50. Bull new motif (Pl.70 A.) A is the original photo. B is the photoshop tracing (photo and tracing photoshop by Collado, 2021)

CHAPTER 4, MALTRAVIESO CAVE

4.1. Discovery of Maltravieso cave

In 1951, The cave was discovered during limestone quarry work in the south of Cáceres, Spain (Figure 51). It was noticed that the cave contained archaeological materials (Angás et al., 2015). The area is now turned in urban park that takes advantage of the old limestone quarry front as the entrance of the cave (Collado, 2012). Maltravieso cave has negative hands, with incomplete fingers (Angás et al., 2015). It has the same geological characterization as well as Escoural cave. It has sedimentary rocks of the Paleozoic age, and consists of Lower Ordovician, that has an alternation of quartzites and shales. During the Lower Carboniferous limestone and dolomites are deposited interspersed between shales and volcanic tuff (Collado, 2018).

D. Carlos Callejo Serrano was the first who did the study in the cave the in late of the 50s beginning of the 60s. He also suggested that the original Maltravieso cave entrance during the Upper Paleolithic was located in the already destroyed area of the quarry work. It is also similar to the Escoural cave discovery with suggestions regarding the entrance (Collado, 2018). In 1956, Callejo discovered inside the Maltravieso cave a series of painted wall representations, mainly handprints, which were published in 1958, later expanded in 1962 (Collado, 1997). In the interval of time between the discovery of the cave (1951) and the discovery of the paintings (1956) the quarry continued in operation, demolishing rooms A and B (Collado, 2012).

Later the cave was studied by M. Almagro and F. Jordá, who did documentation and scientific publication of the artistic content (Angás et al., 2015). Over the years there were many studies of the cave until Hipólito Collado applied new technologies such as three-dimensional model. He opened the cave, albeit virtually, for its visit to the public (Angás et al., 2015). Until 2018 when his project has carried out a new arrangement of the panels and the set of the cave's paintings (Collado, 2018). Hoffmann et al., 2018 used uranium-thorium (U-Th) dating of carbonate crusts to demonstrate that the cave paintings from three different sites in Spain to provide minimum wages for a red linear motif in La Pasiega (Cantabria) 64.8 ka, a hand stencil in Maltravieso cave (Extremadura) 66.7, which gave the oldest date provides a minimum age of 66.7 ka in Ardales (Andalucía) from a hand stencil., and a red-painted speleothems.

These results show that cave art in Iberia is older than 64.8 ka, and predates, by at least 20 ka., the arrival of modern humans in Europe, which implies that Neandertal produced art (Hoffmann et al., 2018).

4.2. Geology of the area

Extremadura belongs to the Iberian or Hesperian Massif formation. It is the oldest in the Iberian Peninsula and corresponds to several fragments of the Gondwana Plate. It also contains the largest known record of the effects of the Hercynian Orogeny (370-280 Ma) (Flores, 2011). The formation of this Massif was the consequence of the subductive destruction of an Ocean that until the Carboniferous separated Laurasia from Gondwana (Flores, 2011). According to the division of the Iberian Massif, Extremadura would be located within the areas of Ossa-Morena and Centro Ibérica, the latter being where the Maltravieso Cave is located (Flores, 2011).

4.3. Description of the cave

The cave is a 130-meter-long cavity created by karstic activity in carboniferous limestone. Geologically the cave is integrated into a narrow horizon of carbonate rocks of the Lower Carboniferous extended to the south of the city with a NW / SE direction immersed in the nucleus of a synclinal structure of Paleozoic age (Collado, 2012). The Paleozoic series, the basin of detrital and chemical facies, begins in the Lower Ordovician and consists mainly of an alternation of quartzite and slate, including sandstones and ampelites. In the Lower Carboniferous, limestones and dolomites are deposited intercalated between shales and volcanic tuffs. The limestone contains algal fossils, corallaria and crinoids indicating that it was deposited in a shallow shelf reef environment. (Collado & García, 2013).

Later it was folded and fractured by the Hercynian orogeny which have been highlighted on the Precambrian series of the Trujillano-Cacereña peneplain (Collado, 2012). Geomorphologically it is located in the Southern Hesperian Massif and more specifically, in the central part of the so-called Extremadura peninsula, between the Tagus Depression to the north and the Guadiana Depression to the south (Figure 52) (Collado, 2012).

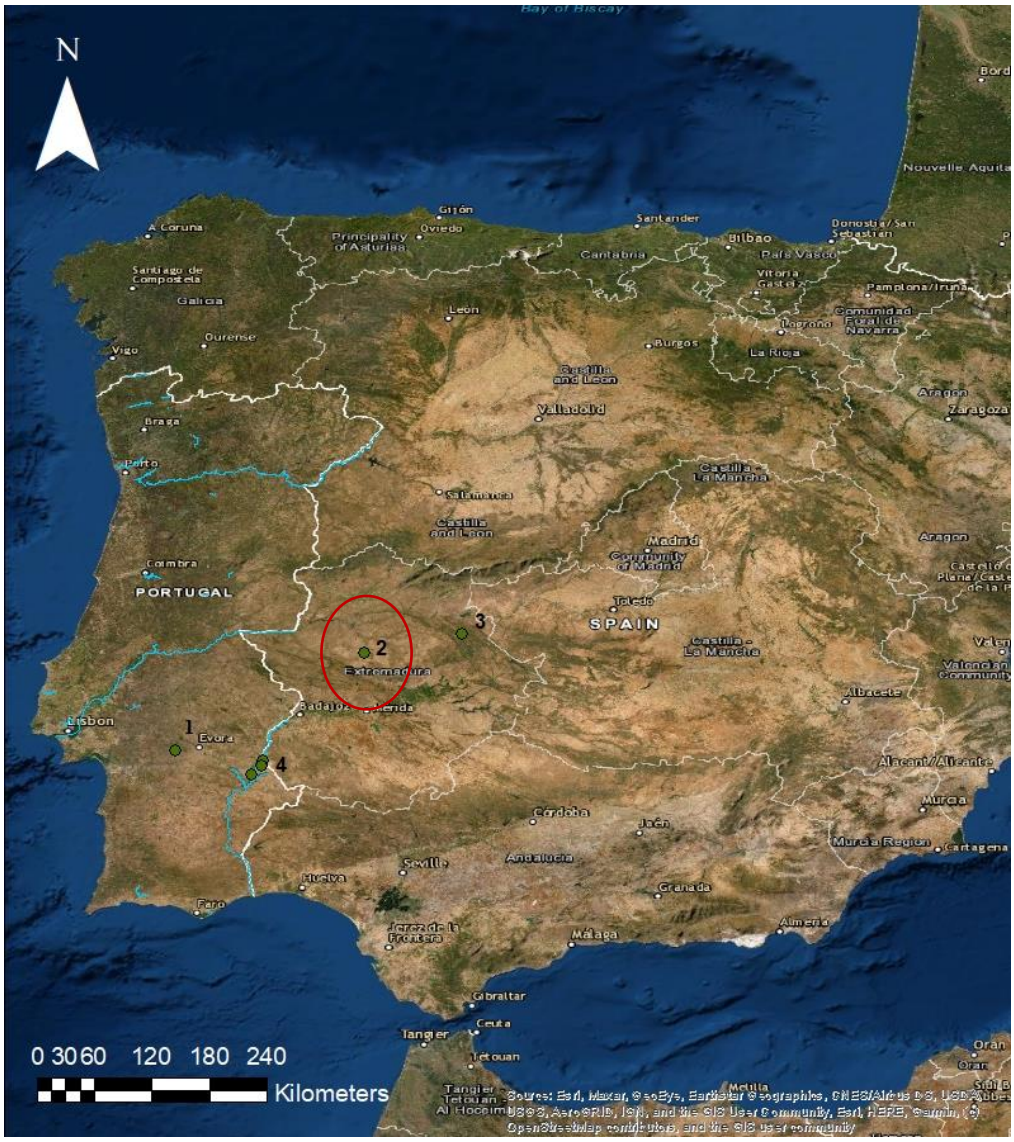


Figure 51. Map indecates the location of Maltravieso cave (number 2)(map by Hasnaa Askalany)

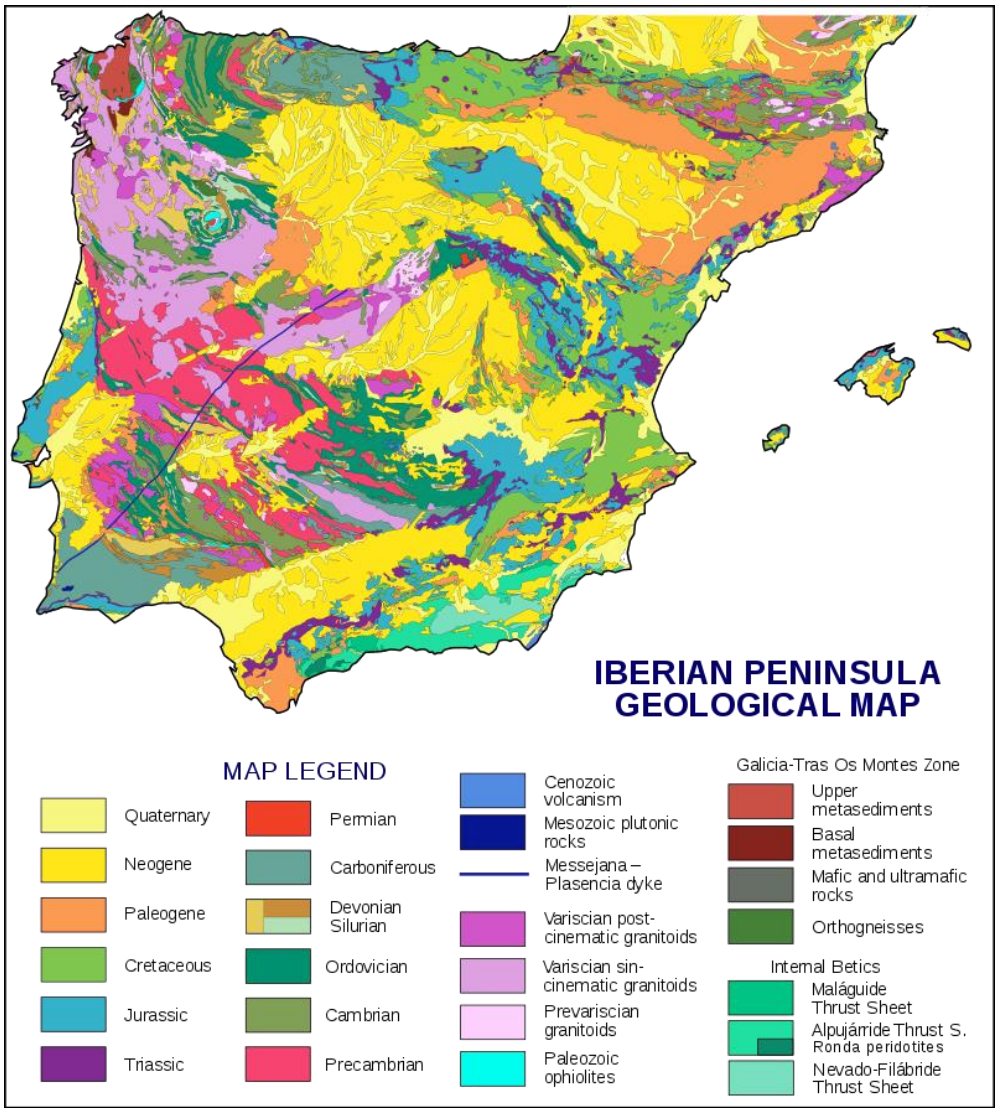


Figure 52. Iberian Peninsula geological map. (Vera, 2004)

4.4. Description of the cave art

The cave is decorated by paintings from the Middle Auriginacian. The cave is accessed through a small opening that is sealed by a metal door. The Columns Room, Paintings Room, and Shafts Room are all accessible through an irregular slope (Ripoll et al., 1999). The latter two have the most paintings, and several experts have assigned dates to them: Almagro Basch believes they are from the Auriginacian or Ancient Perigordian period. Jorda Cerda believes they are from the Magdalenian period, roughly 12 000 years BC. (Collado, 1997).

In terms of iconography, most of them are negative handprints created by spewing paint around a hand on the wall. The little finger is mutilated on almost all hands (Gray, 2010).

The technique that has been used preferentially has been painting in which different pigments are used mainly red and to a lesser extent black with white buffering and airbrushing used to obtain the silhouette of the hands in negative, except in one of the cases (Collado, 1997). The hands of the Hall of Paintings, in which a mixed procedure was detected: firstly, the hand, impregnated with white pigment, leaned against the wall to obtain a positive representation of it. Then it was airbrushed in red. The result was the obtaining of a negative hand like the rest of those known in the cavity, but with a white background instead of the brownish tone of the cave wall (Collado, 1997).

The rest of the representations in the Maltravieso cave are zoomorphic representations (cervid, equid, bovid, caprids and an unidentified headless animal), and symbolic elements (series of dots, triangles, quadrangular, wavy motifs, paired fingerings, bars) (Collado, 2012).

There are three phases detected in the execution of the paintings. The first would be made up of the engravings underlain by the hands of the Sala de las Pinturas, the second would correspond to most of the representations of the cavity (signs, animals, and hands) and the third the series of points in black that are superimposed over some of the hands in the main panel of the Hall of Paintings (Collado, 1997).

4.5. Description of the zoomorphic figures.

Much had been discussed about where the original Maltravieso cave entrance location was, basically pointing out two options. The first one located the access in the already destroyed area, while the second positioned it on the opposite side, behind a cone that closes the west side of the Sala de las Chimeneas which is currently the final area of the route (Figure 53) (Collado, 2012).

The cave has a unidirectional layout on a single level, except in the area closest to the current entrance that has an Upper Floor, that is located above the entrance room and can be accessed through a narrow side duct.

The rest of the cave can be considered practically as a sub-horizontal gallery with a minimum slope from the entrance to the bottom and that periodically widens, forming the so-called “Rooms” that have received different names (Entrance Hall, Columns Hall, Hall Table, Room of Paintings, Room of Chimneys) (Collado, 2012).

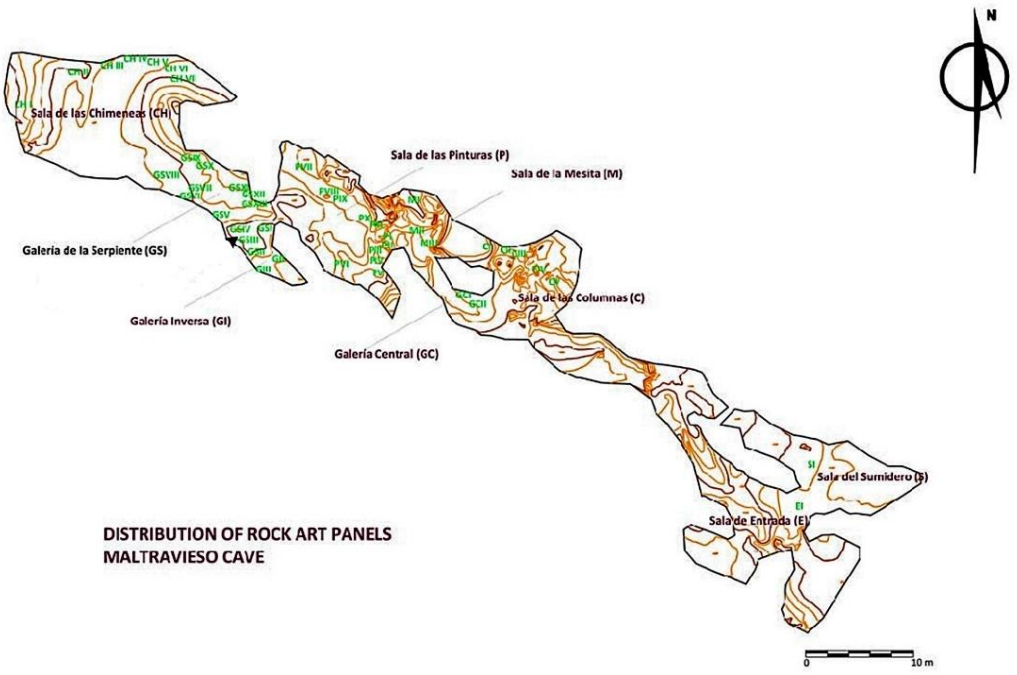


Figure 53. A general view of the Rock Art Panels Identification in Maltravieso cave (Martínez-Ramírez et al., 2015)

4.5.1. Hall of Columns (C)

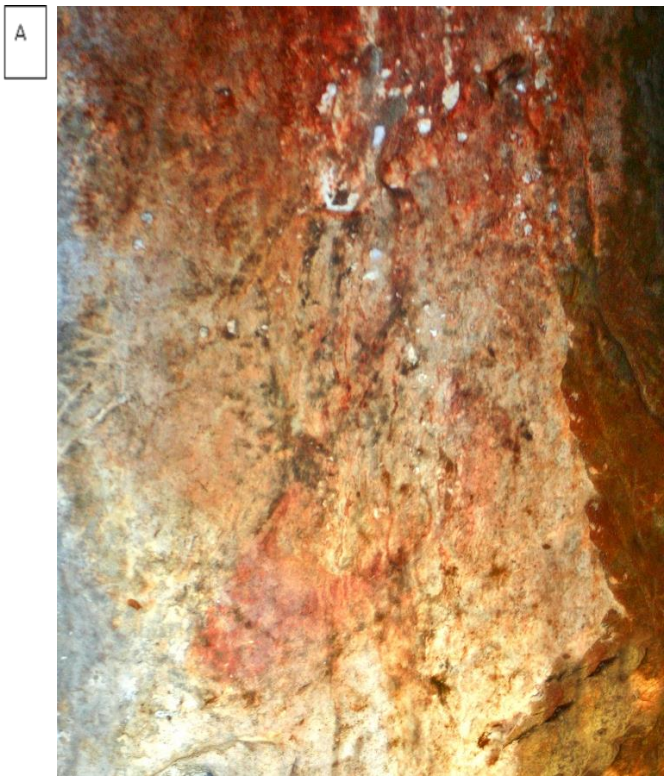
This hall is accessed through a small corridor that starts from the hall of the Entrance. It is a cave space with an approximate area of 74 m^2, which responds to an elliptical trend morphology in its practicable area, with a generally low ceiling that does not exceed 1.70 m in height. There are five panels located on the NE wall of the room - or right wall in the direction of the route from the entrance to the bottom. Its description will be carried out starting with the one located at the extreme left (north), to continue with those located progressively to the right (south) (Collado, 2021 unpublished).

A.Panel C III

It is located on the NE wall of the Hall of Columns, approximately 130 cm, and 170 cm from the floor. This panel appears in the first catalog that Carlos Callejo carried out as “panel number 1” He described it “the contour of the head of an animal”. Martín Almagro, in the 1960 guide, considers that it could be the head of a cervid or an equid. José Luis Sanchidrián points out two opinions, it could be a cervid or a profile of a human foot. Finally, Ripoll and Collado in 1999 for the first time commented on the figure painted in black that is superimposed on the previous red one and which they interpret as the representation of a cervid (Figure 54 A, B, C), (Collado, 2021 unpublished).

1.Equid C III-1

The first figure that was represented chronologically on this surface is an equid's head (Figure 54 C, D, E), painted in red and oriented to the left. A continuous linear line describes a very elongated head, with the jaw well marked at the bottom that bends at the point of contact with the line of the neck, the latter represented very briefly (Collado, 2021 Unpublished).



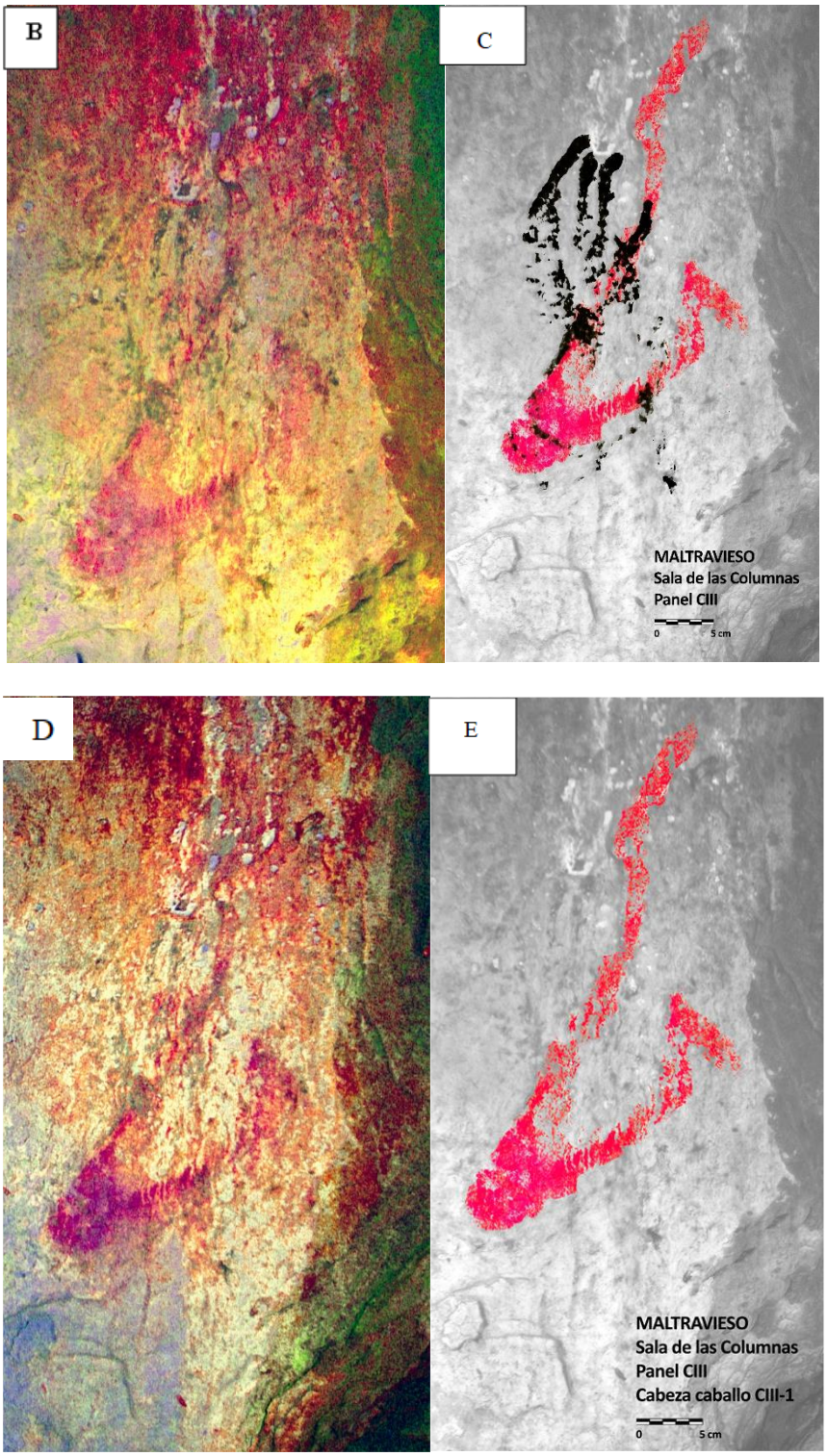


Figure 54. Maltravieso cave, Hall of Columns. Panel C III. A is the original photo. B is the photos after DStretch LDS fillter that shows the superimposed of Equid and cervid. C is photoshop tracing. D is detail of the equid C III -1 with DStretch LDS fillter. E is photoshop tracing (A, B, C, D and E by Collado, 2012, Unpublished, B photo treatment by Hasnaa Askalany).

2.Cervid C III-2

It was superimposed on the previous figure (Figure 54 A, B, C). It is the head of a cervid in blackish pigment, and oriented to the left. This representation shows in its lower part, the start of the front part of the vertical neck, which extends in the jaw to the nose. The forehead is topped by a small spot like an eye. A series of divergent lines extend towards the upper area to recreate the antlers of the animal in a detailed way (Figure 55 A, B) (Collado, 2021 Unpublished).

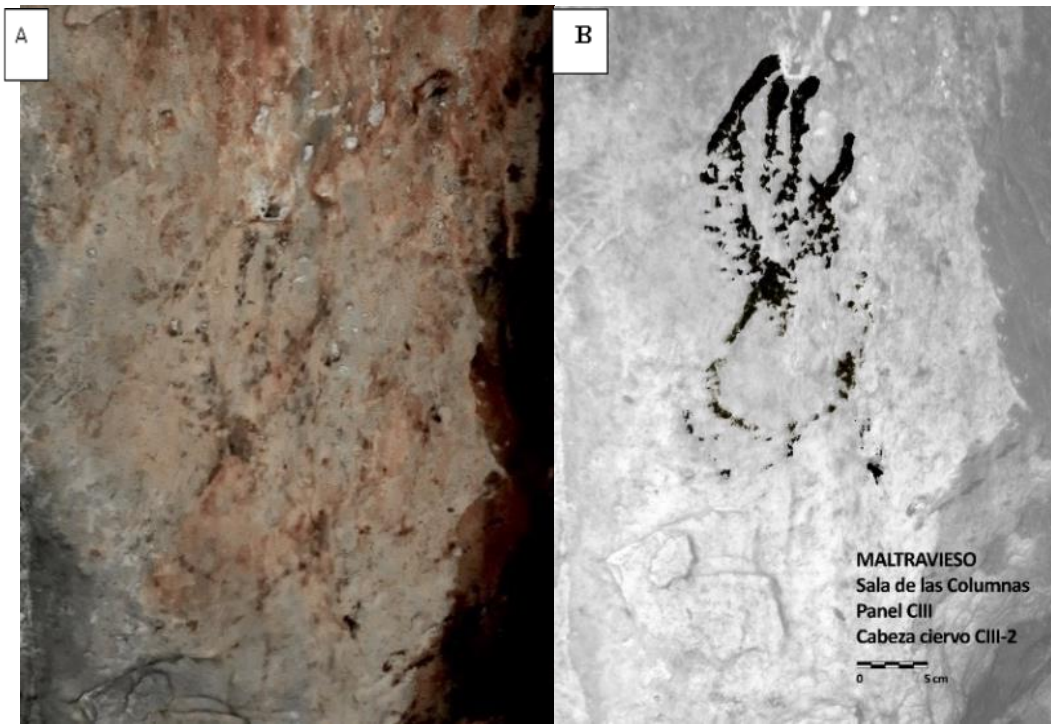


Figure 55. Maltravieso cave, Hall of Columns. Panel C III-2. A is detail of the painted cervid.B. Tracing of the painted cervid (Collado, 2012 Unpublished).

B. Panel C IV

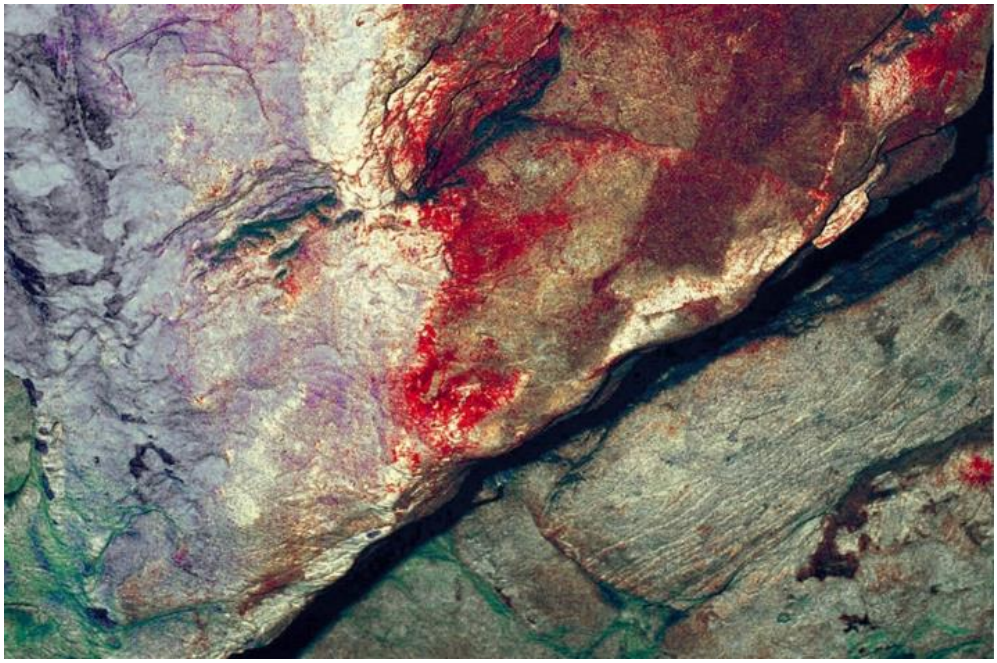
It is located about 50 cm vertically lower from the previous panel. It is located about 124 cm from the current floor, and its dimensions are 57 cm high by 76 cm wide. Only in the Ripoll and Collado monograph is reference made to the only figure recorded on this panel (Collado, 2021 Unpublished).

3.Unidentified zoomorphic figure C IV-1

It is a kind of zoomorphic head oriented to the left and looking slightly downwards. This figure is unique, as it is done with airbrushed technique by adding red pigment, and filling with special intensity the areas corresponding to the eye, snout and mouth of the animal, to configure with this procedure the possible representation of the head of a bovid or an equid (Figure *56* A, B, C) (Collado, 2021, Unpublished).

A

B



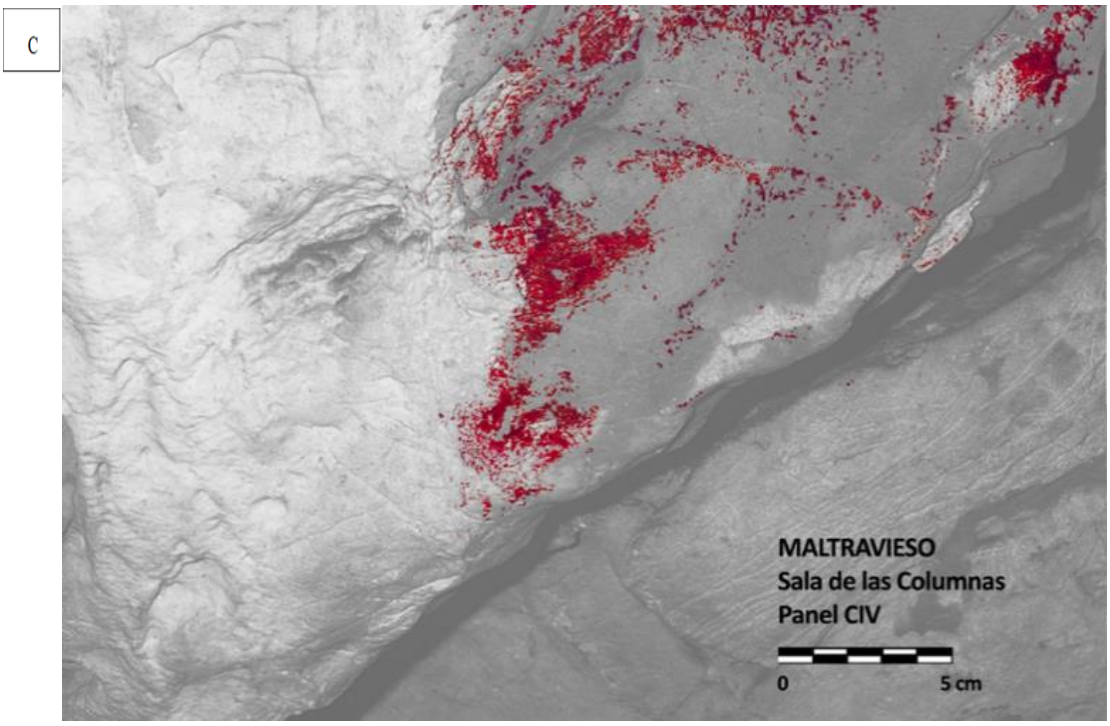


Figure 56. Maltravieso cave, Hall of Columns. Panel C IV. Unidentified zoomorphic figure C IV-1. A. is the original photo. B is a detail of the unidentified zoomorph with DStretch LDS fillter. C is photoshop tracing (Collado, 2017, Unpublished).

C.Panel C V

It is located to the right from panel C IV . In the work of Ripoll and Collado the remains an interesting figure of a bovid painted in black that is preserved on this surface are fully noticed (Ripoll et al., 1999).

4.Bovid C V-1

It is located in the central area of the panel and has the figure of a bovid painted in black, represented in a profile. The head is indicated in the lowest part, oriented to the left. It has a rounded snout, with a slightly open mouth and application of shading in the nose area. The jaw is pratially lost, while shading in the eye area, presenting a morphology very similar to that seen in the figure on the panel. C IV. The horn, is represented as single wavy line that projects towards the front. There is also a partial representation of the hindquarters and the tail (Figure 57, A, B) (Collado, 2021 Unpublished)

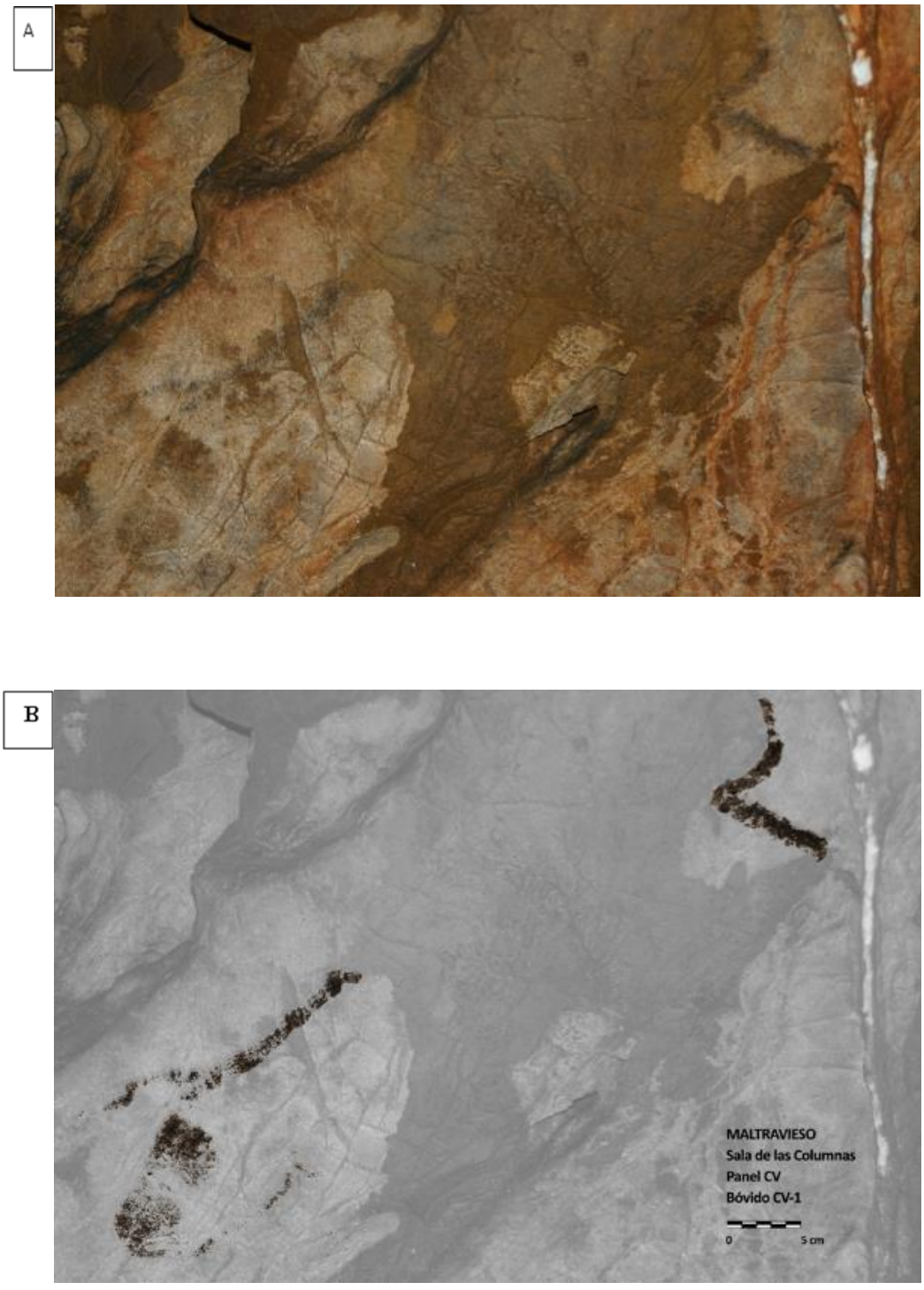


Figure 57. Maltravieso cave, Hall of Columns. Panel C V painted bovid figure CV-1. A.is the original photo. B is Photoshop tracing (Collado, 2006, Unpublished).

4.5.2. Hall of Paintings (P)

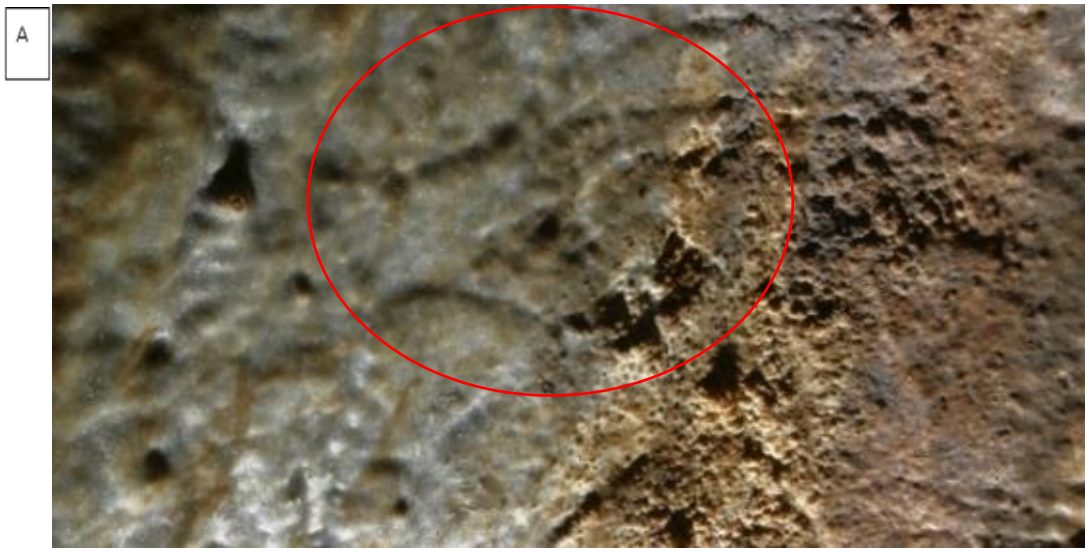
This is the room in which Carlos Callejo discovered Maltravieso's first four paintings at the time of the discovery. Later, in 1970, Sanchidrián catalogs in this room another eight decorated panels. Then a study by Ripoll and Collado from 1999 identifies nine panels (Figure 58 A, B) (Collado, 2021 Unpublished).

A. PIV panel

Located to the right of panel PIII. It is located about 170 cm. from the current floor of the cave. The graphic space measures 110 cm. high by 40 cm. of width. It was discovered in the first explorations Callejo, 1958. Ripoll and Collado in 1999 add for the first time the existence of a goat's head and two engraved triangles (Collado, 2021 Unpublished).

5. Engraved goat head

A small engraving goat head is covered by the calcitie. It is oriented to the left; the muzzle area has a concave line. The snout and the forehead have a rectangular structure. from the rear part of the forehead, there are two lines curved in V start backwards that serve to represent, in a very summary way, the antlers of the animal. there is no other anatomical detail is indicated inside the head (Figure 58 A, B) (Collado, 2021 Unpublished).



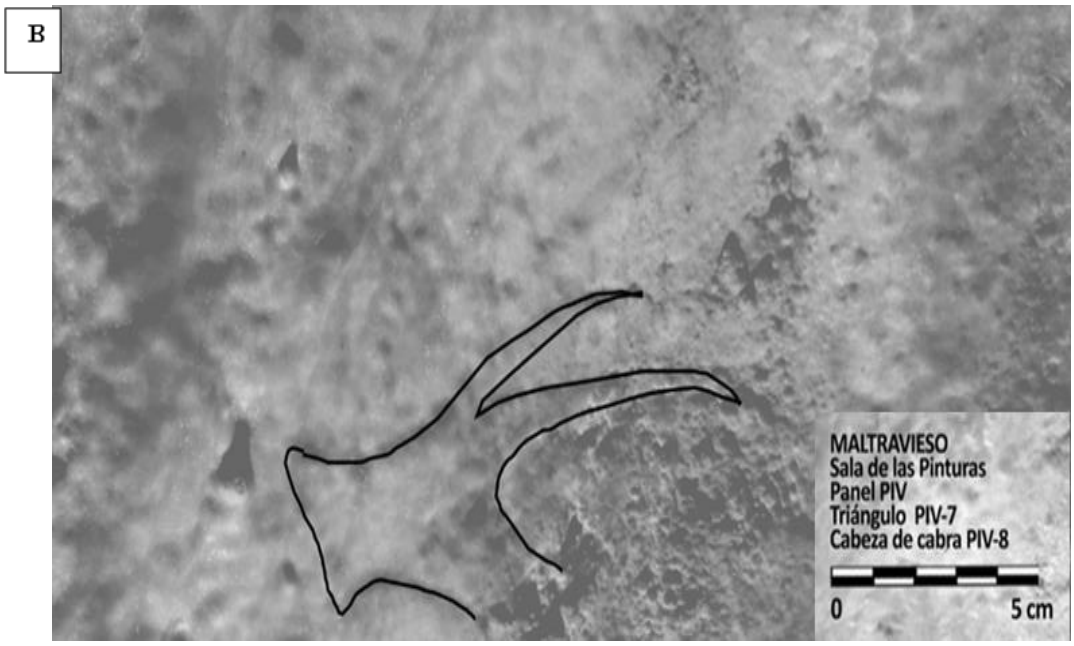


Figure 58. Maltravieso cave, Hall of paintings PIV panel the engraved goat. A is the original photos. B is the photoshop tracing (Collado, 2006, Unpublished).

4.5.3. Gallery of the Serpent (GS)

It extends approximately 15 meters, with a maximum width of approximately 4.70 meters. It is the last of the transit spaces. Prior to arrival into the largest cave space in Maltravieso cave: The Hall of Chimeneas where the tour of the cavity ends (Collado, 2021 Unpublished).

The poor state of conservation of the figures, makes it difficult with the naked eye to observe and recognize. Also, the figures are made in inconspicuous areas or hidden from the viewer. That give explanation, that the intentional concealment of the motifs represented not to be seen by those who walked through the cave (Collado, 2021 Unpublished).

For the first-time presence of engraved zoomorphic motifs that, until that moment, were only present in the Hall of the Chimneys and in the Hall of Paintings (Collado, 2021 Unpublished).

A. GSVII panel

Located in a small pressure tube that opens in the center-left area of the roof of the Serpent Gallery, 152 cm above the current floor level of the cavity. It is necessary to insert the head inside the conduit to see the art (Figure 59) (Collado, 2021 Unpublished).

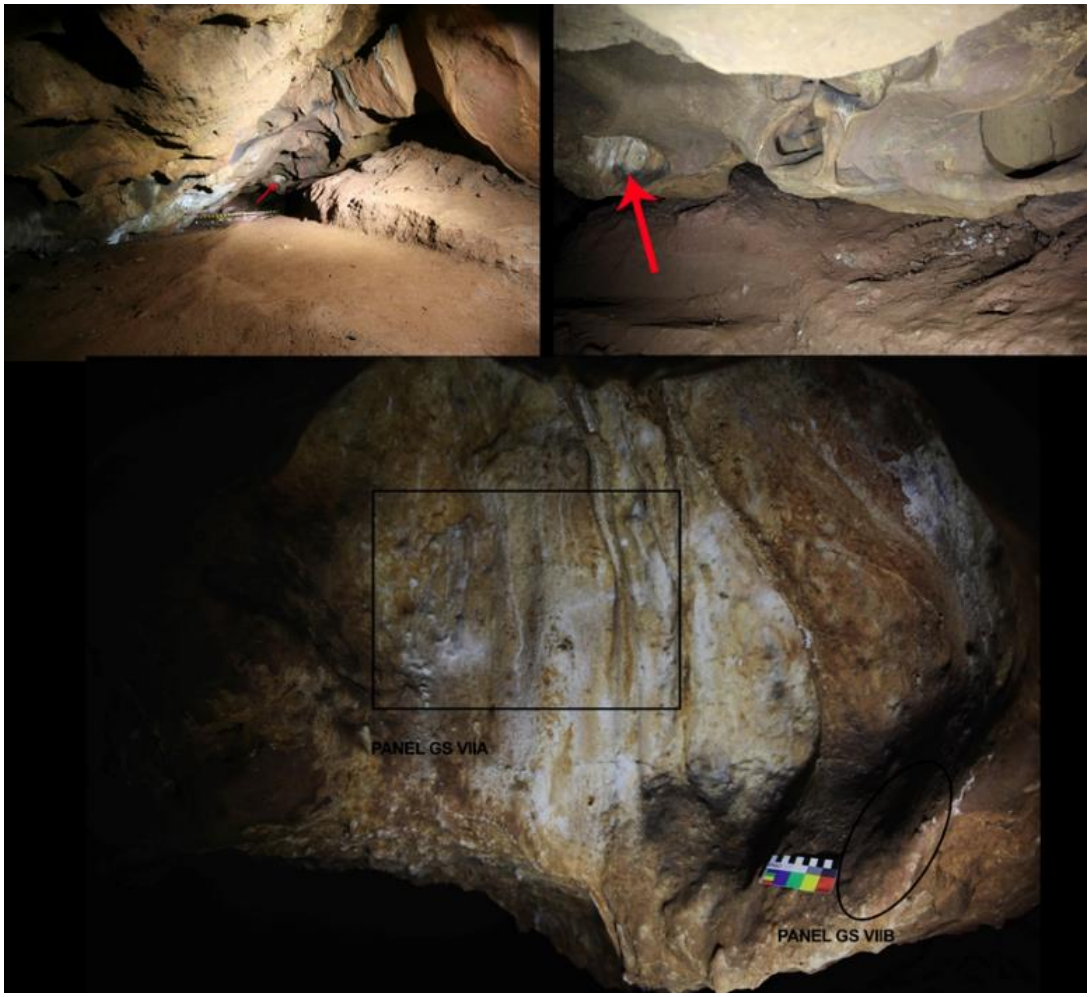


Figure 59. Maltravieso cave, general photo of GSVII panel (Collado, 2021 Unpublished).

6.Unidentified zoomorphic figure GSVII:

It is as possible partial representation of an unidentified zoomorphic figure. It appears in a vertical position facing the ceiling. From it, a wavy line is visible in the upper area that defines the base of the neck and little of the lower part of the body (Collado, 2021 Unpublished).A small bulge immediately anterior to the muzzle was marked on its perimeter by means of an incised line and perforated in the upper area to represent the complete eye of the figure (Figure 60 A, B) (Collado, 2021 Unpublished).

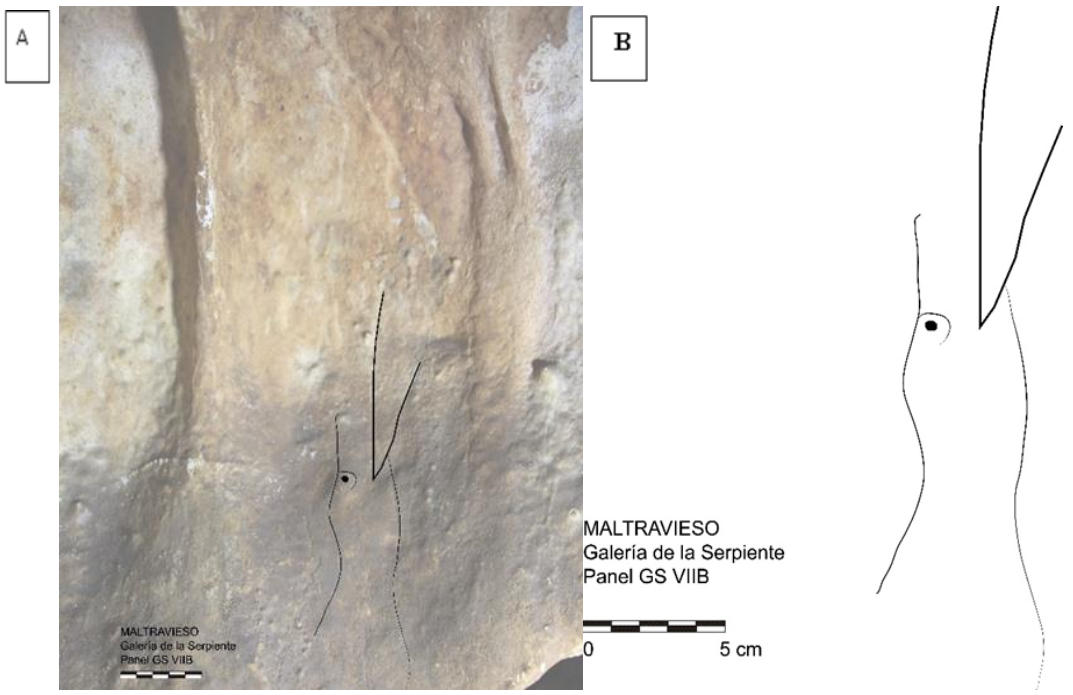


Figure 60. Maltravieso cave. A is Gallery of Serpent GSVII. B is detail of unidentified zoomorphic figure (Collado, 2019 Unpublished).

B. GS VIII panel

There are two figures are made on this panel using the incised engraving technique: a small, almost complete representation of a doe and a series of linear lines with different orientations (Figure 61 A, B) (Collado, 2021 Unpublished).

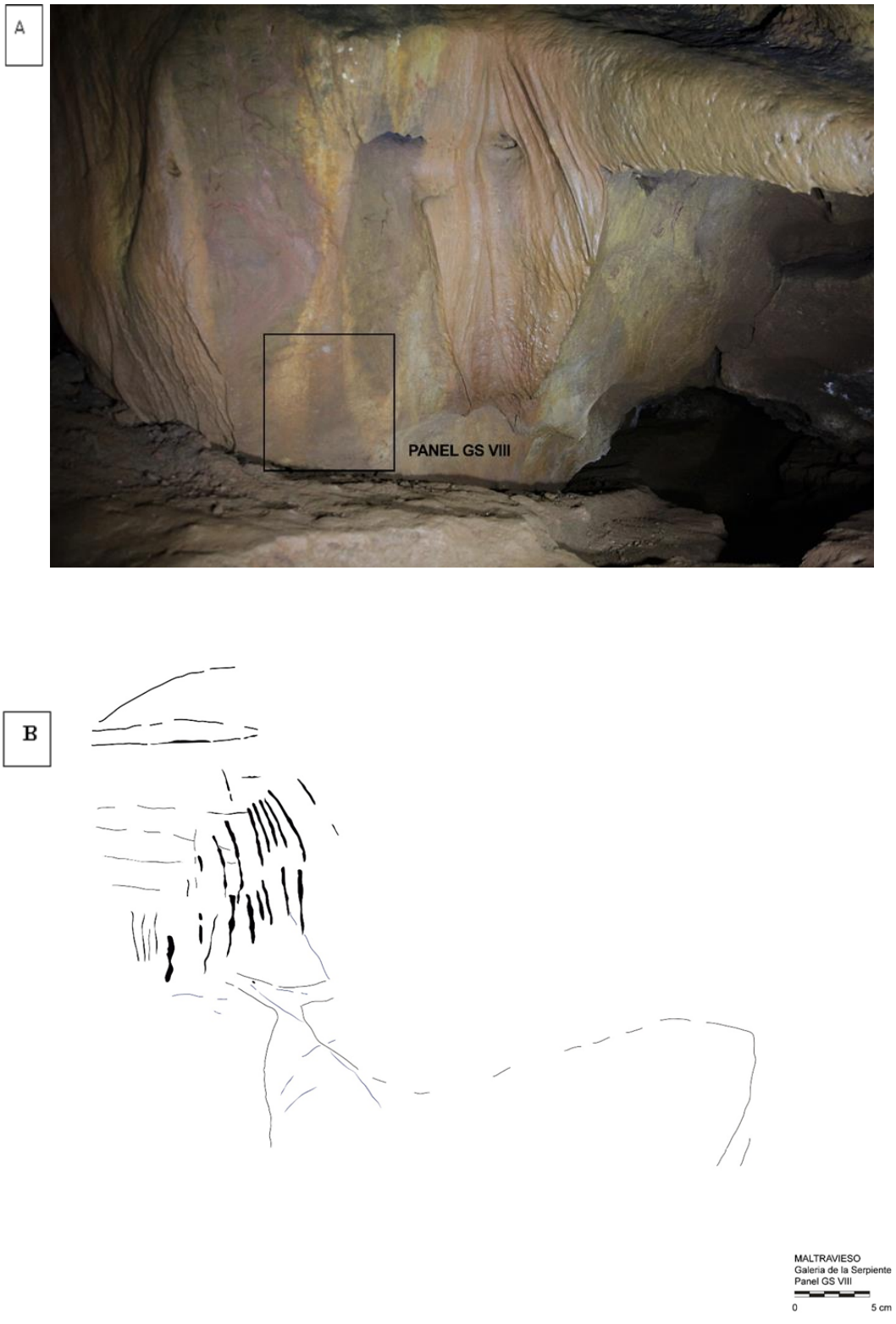


Figure 61. Maltravieso cave. A and B are general view of Panel GS VIII. (Collado, 2018 Unpublished).

7-Cervid GSVIII-1

A zoomorphic figure, possibly identified with cervid. It is oriented to the left, towards the back of the cave and in a static attitude with her neck stretched out and her head is raised (Figure 62 A, B) (Collado, 2008). Morphologically, the upper part of the muzzle, forehead and horn or upper ear is defined by a slightly curved line below which the eye can be seen, represented by a small, incised point (Collado, 2021 Unpublished).

In the anterior part of the figure, below the forehead line, a new line begins that defines the jawbone and extends towards the lower area, representing the line of the chest and the start of the front leg. Typologically, this animal has numerous concomitants with the representation of the incised doe on panel CH III of the Sala de las Chimeneas. Very elongated head, stretched neck, ears or antlers thrown back, similar attitude and position (Collado, 2021 Unpublished).

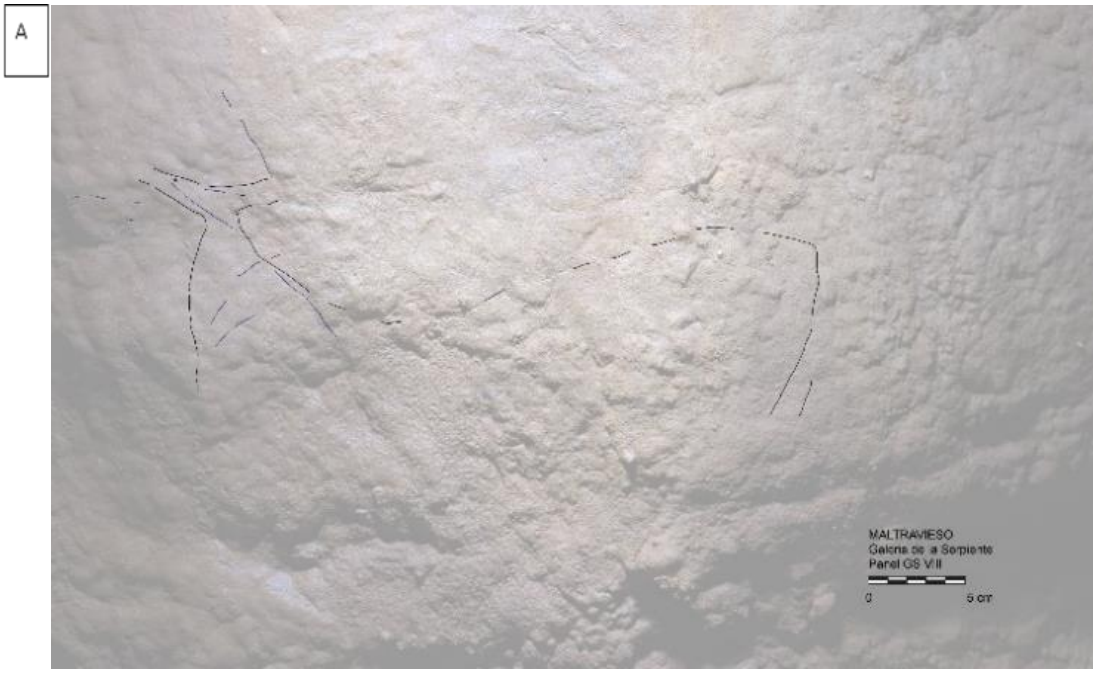


Figure 62, Maltravieso cave, Gallery of Serpent GSVIII panel. GSVIII-1, cervid, A is the original photo with tracing. B is after photoshop tracing (Collado, 2019 Unpublished).

C. GS IX panel

It is located at 130 cm. perpendicular up and slightly to the right from the front panel. It uses as a graphic space the front part of a calcite glaze that starts in an inclined plane from the ceiling of the gallery and on which some speleothems appear in the form of vertical cords attached to the vertical surface that is completely covered by a whitish crust (Figure 63) (Collado, 2021 Unpublished).

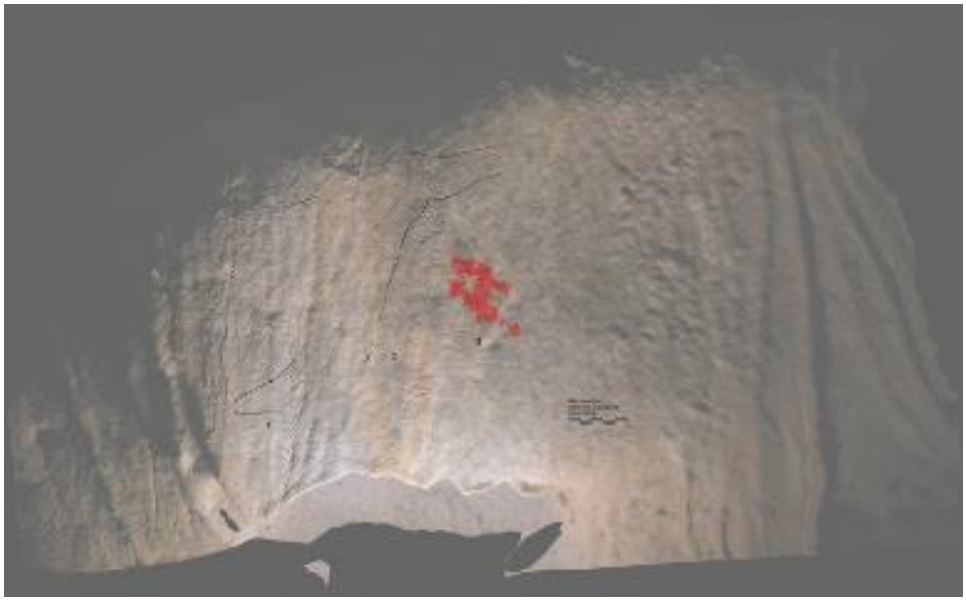


Figure 63. Maltravieso cave, general photo of GSV IX panel (Collado, 2021 Unpublished).

8- Unidentified zoomorphic GS IX-1:

It is the partial representation of an unidentified zoomorphic figure, specifically the area of the head. It is in the lower left area of the panel. The forehead is undulated. There is a small oval mark indicating the eye and continuing towards the muzzle with a rounded morphology (Figure 64 A, B) (Collado, 2021 Unpublished).

Figure 64. Maltravieso cave, Gallery of Serpent GSVII. Unidentified zoomorphic GS IX-1. A is the original, B is after photoshop treatment, (Collado, 2021 Unpublished).

9- Equid figure GS IX-2:

A zoomorphic figure could be identified as an incomplete figure of an equid. It is oriented to the right. The same type of engraved line used in its execution is resembling to the previous motif. At this point, an irregular posterior grinding is clearly visible, which noticeably deforms the animal's nose (Figure 65 A, B) (Collado, 2021 Unpublished).

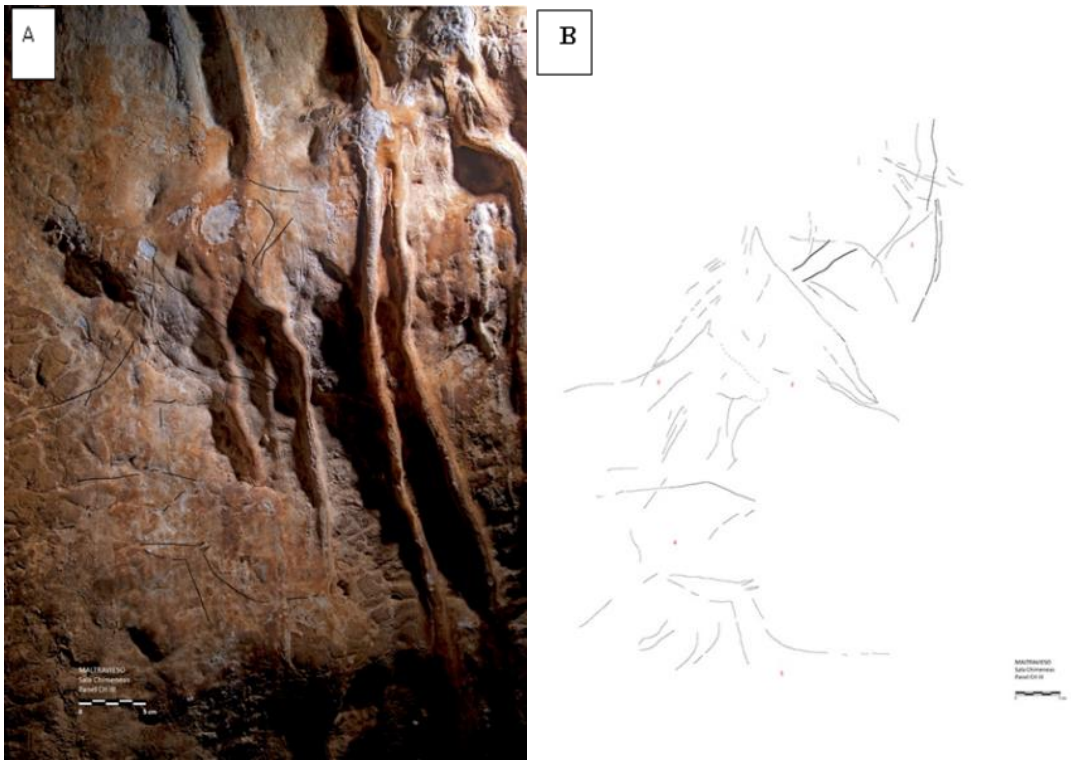
Figure 65. Maltravieso cave, Gallery of Serpent GSVII zomorph GS IX-2. A is the original, B is after photoshop tracing, (Collado, 2021 Unpublished).

4.5.4. Chimney Room (CH)

Its access is made directly from the Gallery of the Serpent, and it is the last room that we find on the tour of the interior of the cave from its access. It is the largest cave space in the whole complex, with measurements of 190 m2. Its maximum height is 19 m. and the width of 12.80 m. The highest floor-to-ceiling height is 5.50 m. and in it a series of pressure tubes are developed, popularly known as "chimneys", which give this room its name (Collado, 2021 Unpublished).

A. Panel CH III

The dimensions of the panel reach 100 cm. of height by 92 cm. of maximum width and is located at a height of 148 cm. All its representations were executed by means of a stroke of little thickness (its width in no case exceeds 0.7 mm.) five representations of animals have been identified, all of them partially represented (Figure,66 A, B) (Collado, 2021 Unpublished).



Figure,66. Maltravieso cave, general view of hall of Chimney A is the original photo. B is the photoshop tracing (Collado, 2021 Unpublished).

10-Equid CH III-1:

It is a partial representation of an equid and oriented to the left. The neck-chest is present. It was executed by incised engraving of remarkable thickness and depth means of three lines, the one that determine the head , then an upper one that starts at the back of the neck and extends towards the dorsal part of the animal and a the third one that defines the lower part of the neck, the chest and continues without interruption (Figure 67 A, B) (Collado, 2021 Unpublished).

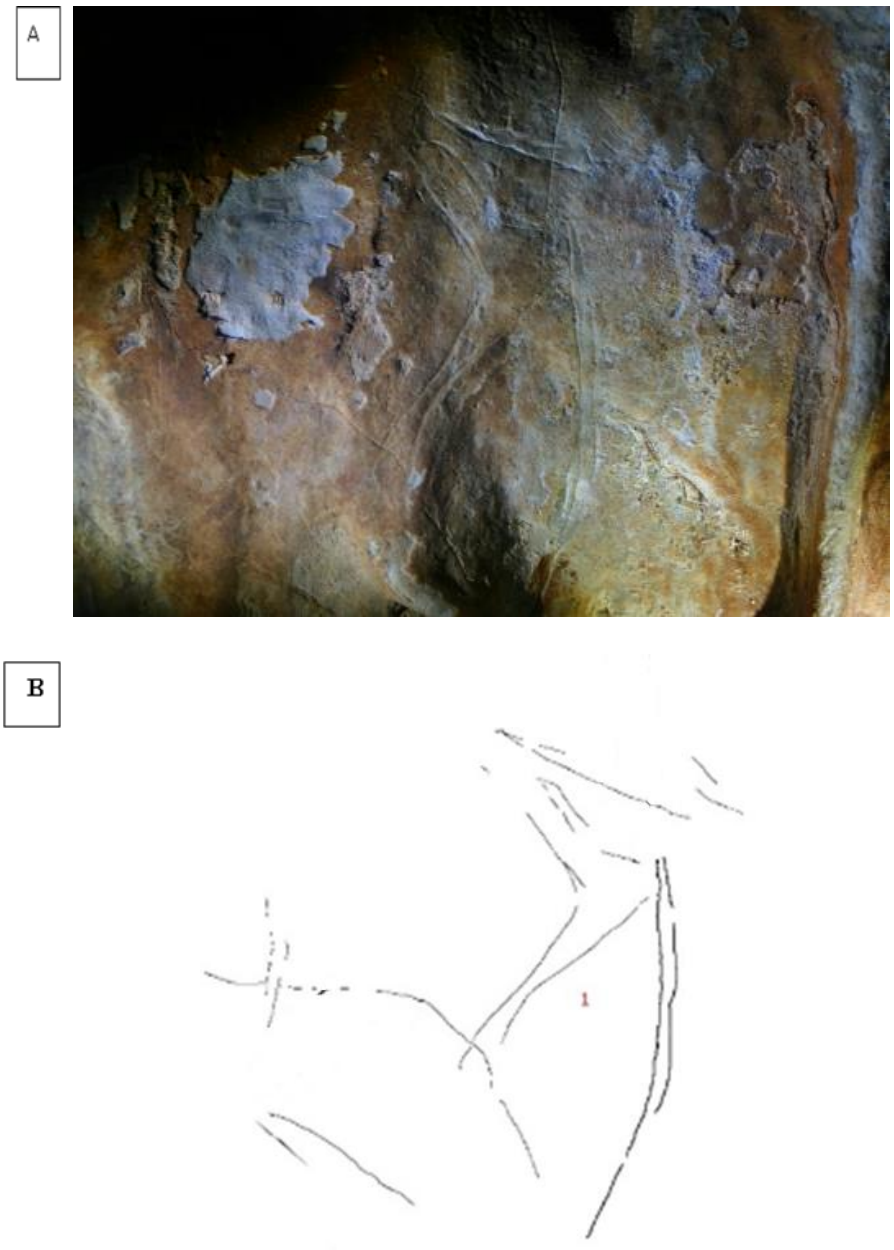


Figure 67. Maltravieso cave, panel GH III-1, A is original photo of equid, B is the photoshop tracing. (Collado, 2021 Unpublished).

11-Equidhead CH III-2

The figure has been identified as the head of an equid and oriented to the right. The ear has a triangular morphology that prolongs its stroke towards the area of the forehead and continues until it configures a snout unnaturalistic, pointed, and disproportionate in relation to the size of the figure. To the left and below the ear is defined, not without difficulty, a very fine and interrupted stroke to small sections, slightly curved, which has been identified as the cranium of the animal (Figure 68 A, B) (Collado, 2021 Unpublished).

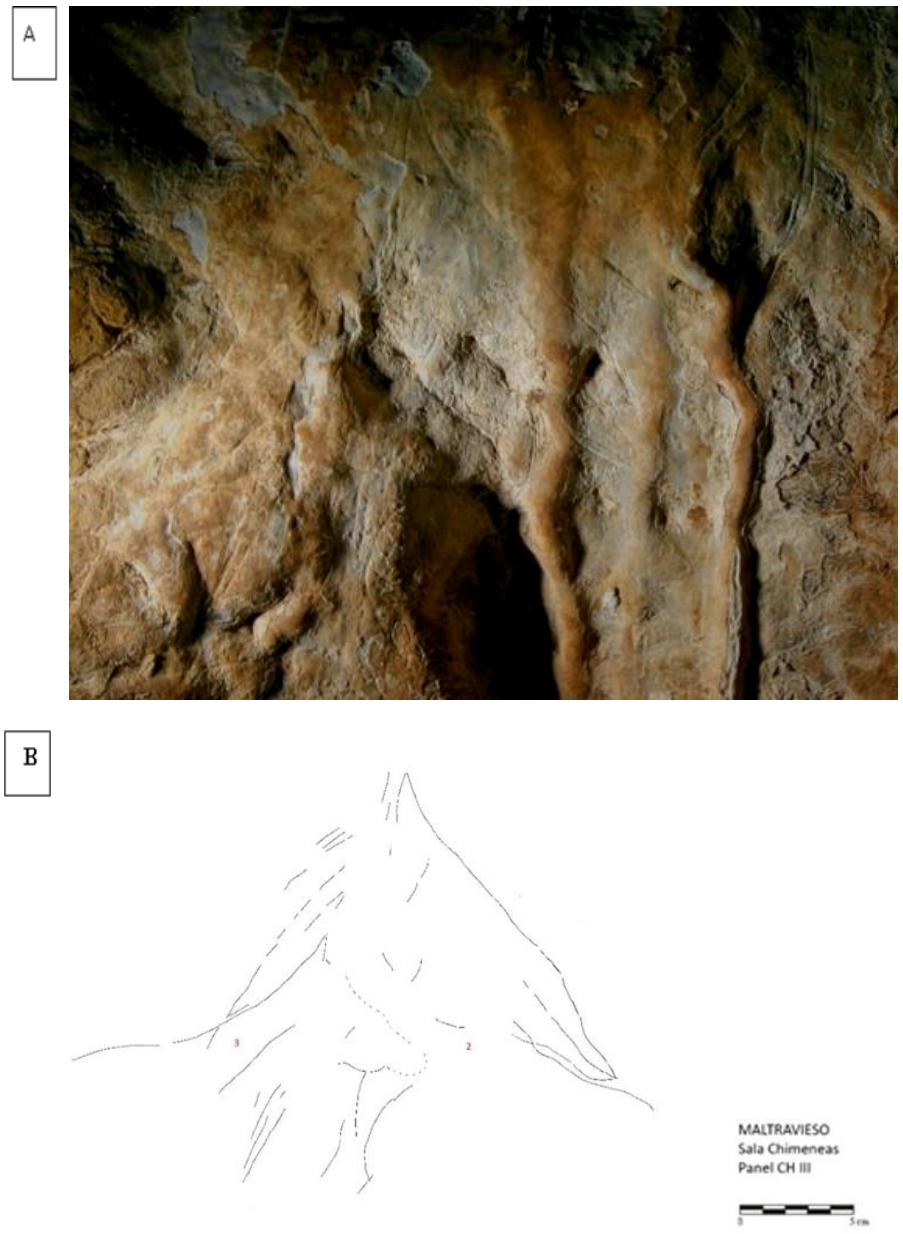


Figure 68. Maltravieso cave, panel GH III-2, A is original photo of two equid, B is the photoshop tracing (Collado, 2021 Unpublished).

12-Equid CH III-3:

It has been identified as the partial figure of an equid oriented to the right. Only the cervical-dorsal line is clearly visible, which extends to the area of the ear, that is represented with a triangular morphology very similar to that shown in the preceding figure. The rest of the head is completed with the help of the support itself. The forehead and the muzzle, completing the jaw at the bottom with a small, curved line engraved with a very fine but clearly visible incision. There are some traces that could be considered part of the animal's chest. The outline of this new motif crosses the lower part of the mane of the previous representation (Figure 69 A, B) (Collado, 2021 Unpublished).

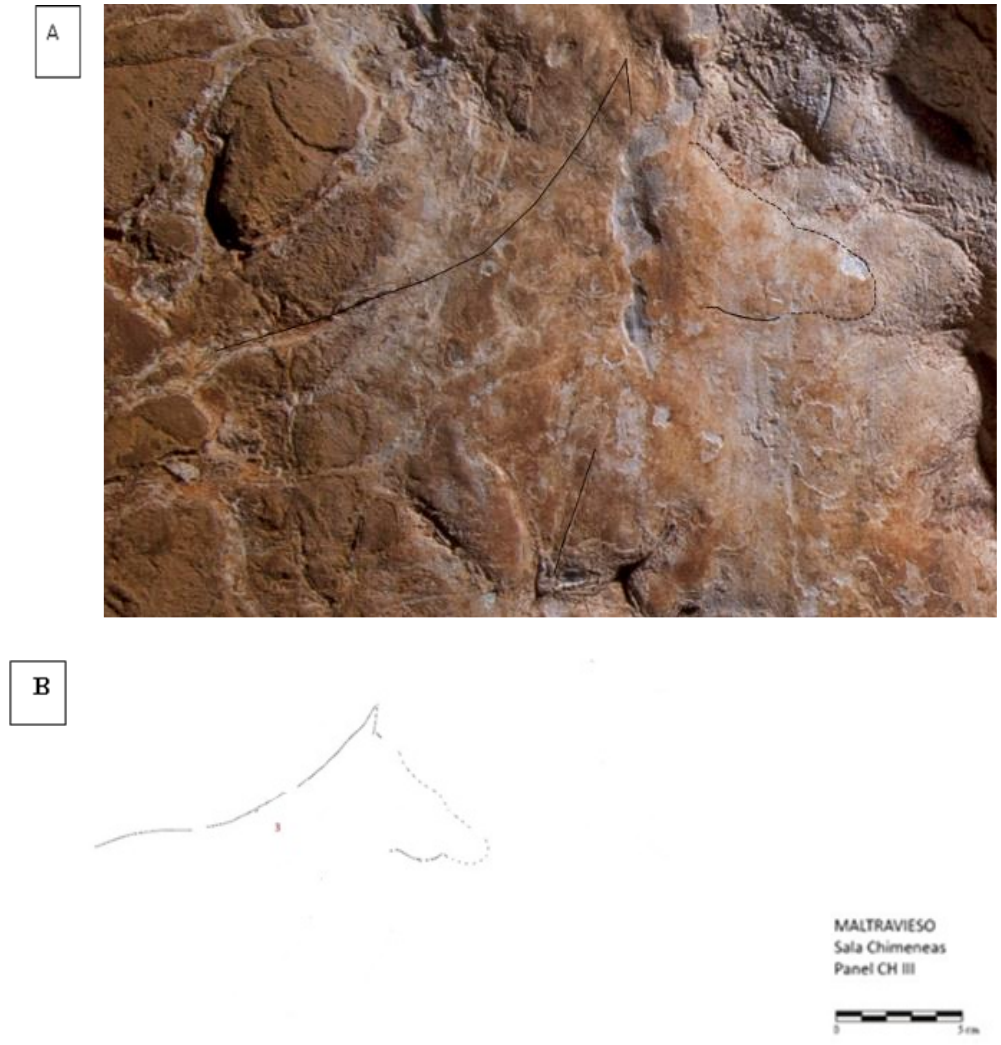


Figure 69. Maltravieso cave, panel GH III, equid CH III-3, A is original photo, B is photoshop tracing (Collado, 2021 Unpublished).

13-Bovid? CH III-4:

It has a perpendicular shape made by using an engraved line of fine thickness. It is a very concise figure, limited to a perimeter line that defines its basic outline and lacks anatomical details. It could be front part of a bovid oriented to the right. It measures 17.7 cm of width by 7.5 cm of height (Figure 70 A, B) (Collado, 2021 Unpublished).

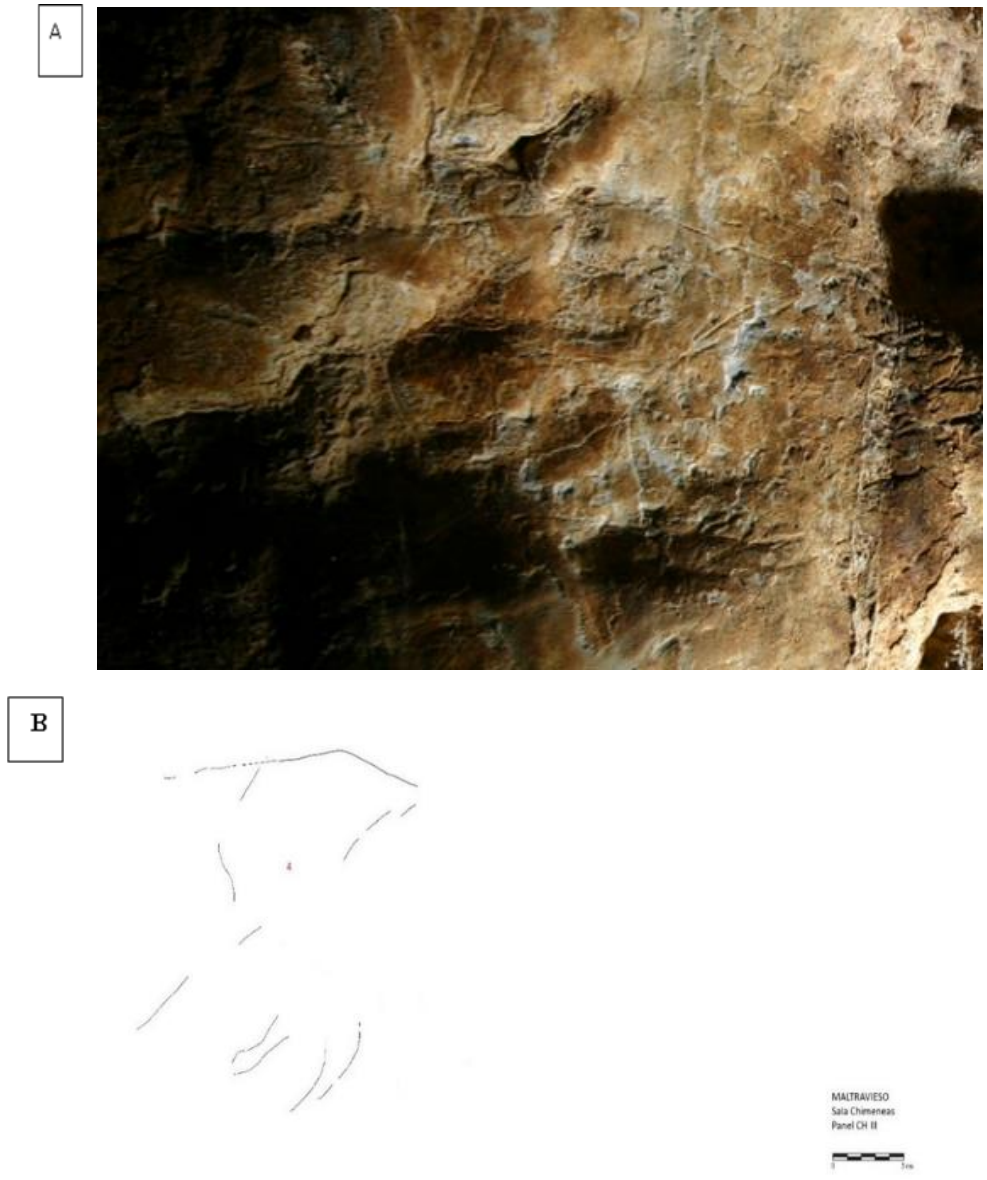


Figure 70. Maltravieso cave, panel GH III, CH III-4, A is original photo, B is photoshop tracing (Collado, 2021 Unpublished).

14-Ciervde CH III-5:

It is identified as a cervid, the head slightly raised and oriented to the left. It has a pronounced cervical-dorsal line that at its upper end bends to the left to configure an elongated front-nasal line that does not close in the snout. The ears appear in frontal perspective, placed in parallel and slightly tilted backwards. It measures 11.4 cm height and 24.5 cm width (Figure 71 A, B) (Collado, 2021 Unpublished)

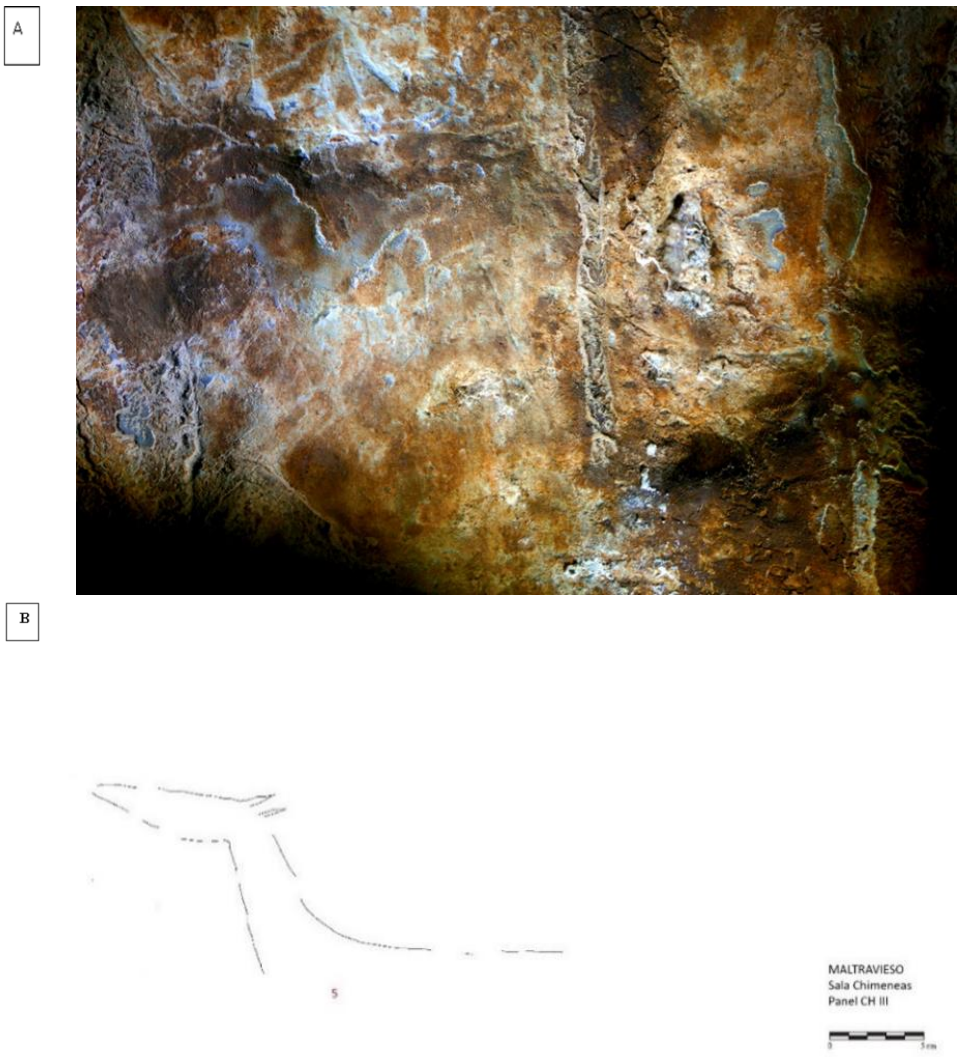


Figure 71.Maltravieso cave, panel CH III, cervid CH III-5, A is original photo, B is photoshop tracing (Collado, 2021 Unpublished).

B. Panel CH VII

It is located 65 cm to the left from the previous panel. It is a small of a dark beige color and rough texture. The dimensions of the graphic space are 51 cm high by 31 cm width, being separated from the current floor of the cavity by 123 cm (Figure 72) (Collado, 2021 Unpublished).

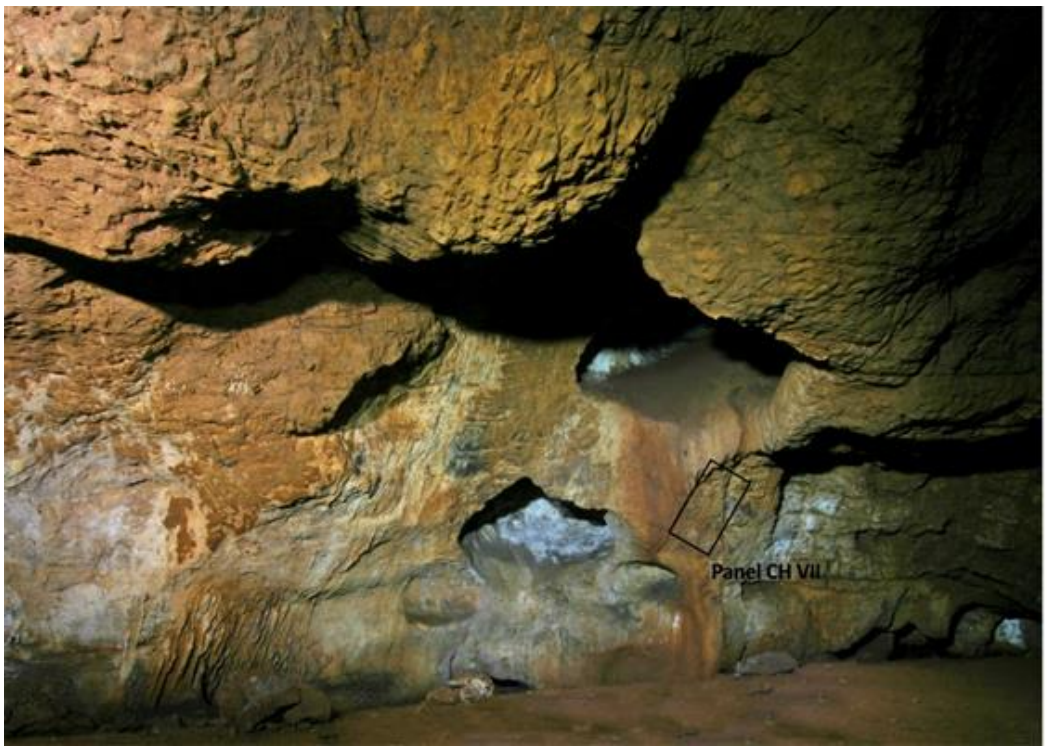


Figure 72. Maltravieso cave, general view of Panel CH VII (Collado, 2021 Unpublished).

15.Equid head CH VII-1:

The figure has been engraved with a thin incised line. The lines outline a complete equid's head in a profile and a straight angle perspective for the two ears, which are resolved by two small and short lines. It is oriented to the left. The head is defined by a single stroke that starts from below in contact with the chest, extending into sharp inflections that configure a broad and round jaw interrupted in its intermediate area by a small irregularity of the support (Figure 73 A, B) (Collado, 2021 Unpublished).

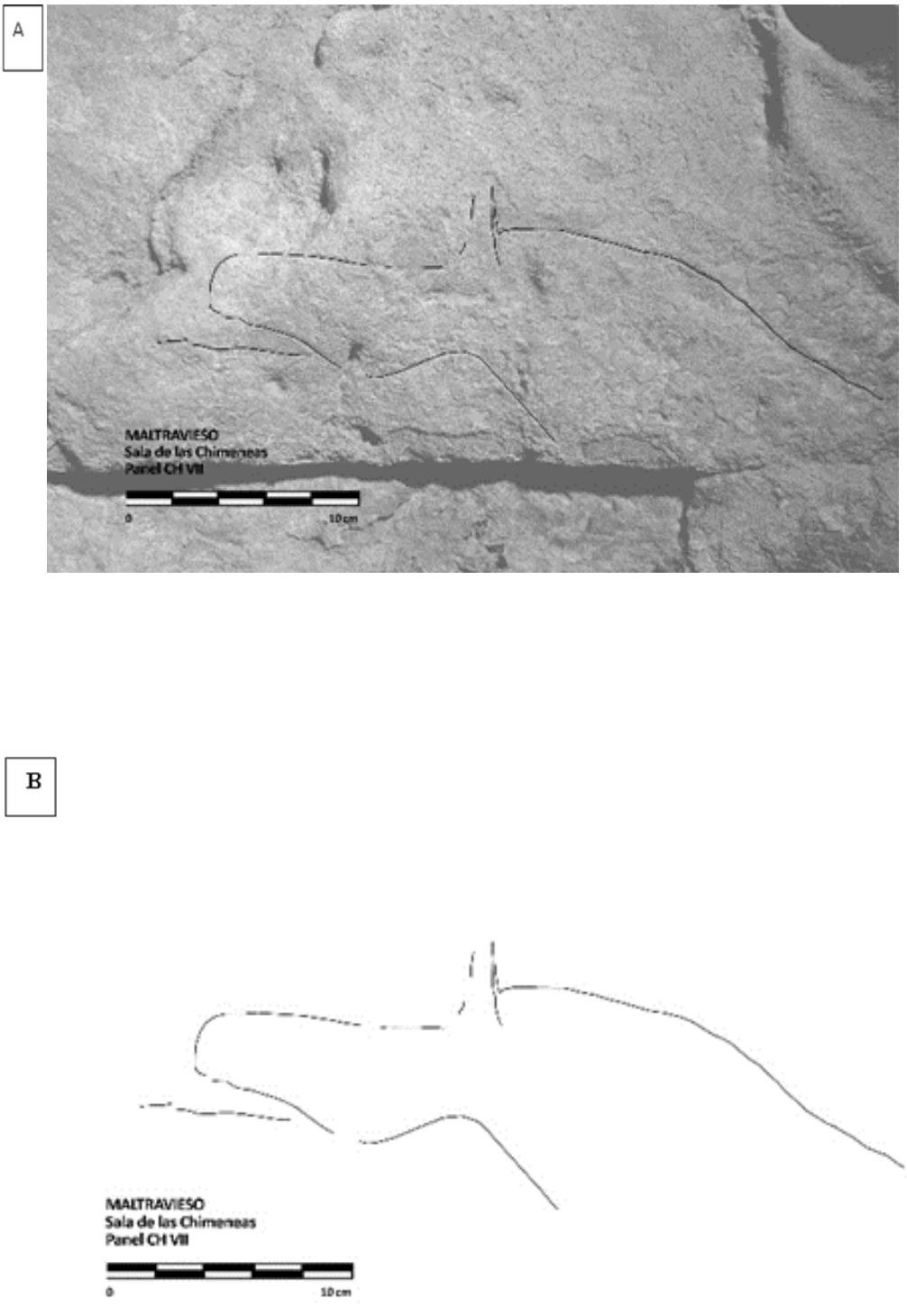


Figure 73. Maltravieso cave, panel CH VII, equid CH VII-1, A is original photo, B is photoshop tracing (Collado, 2021 Unpublished).

C.Panel CH VIII

It is located about 50 cm from the top to the left above the CH VII panel. It has been covered with a thin stalagmitic crust on which the three engraved figures were made by means of a fine incision (two square symbols and a partial representation of an equid) that have been documented on it. The panel measures 70 cm wide by 82 cm height and is located 150 cm high from the current floor of the cavity (Figure 74) (Collado, 2021 Unpublished).

Figure 74. Maltravieso cave, general photo of CH VIII panel (Collado, 2013 Unpublished).

16.Caballo CH VIII-2:

Located in the central area of the panel, it is the partial representation of an equid facing left. It is made with a particularly fine line that was executed without errors or rectifications of the route being affected in the process. Neither the ears nor interior anatomical details are presence, and neither can the relationship of previous or posteriority with respect to the quadrangular symbol that appears below, engraved with a type of stroke of characteristics very similar to that of this figure, be clearly established (Figure 75 A, B)(Collado, 2021 Unpublished).

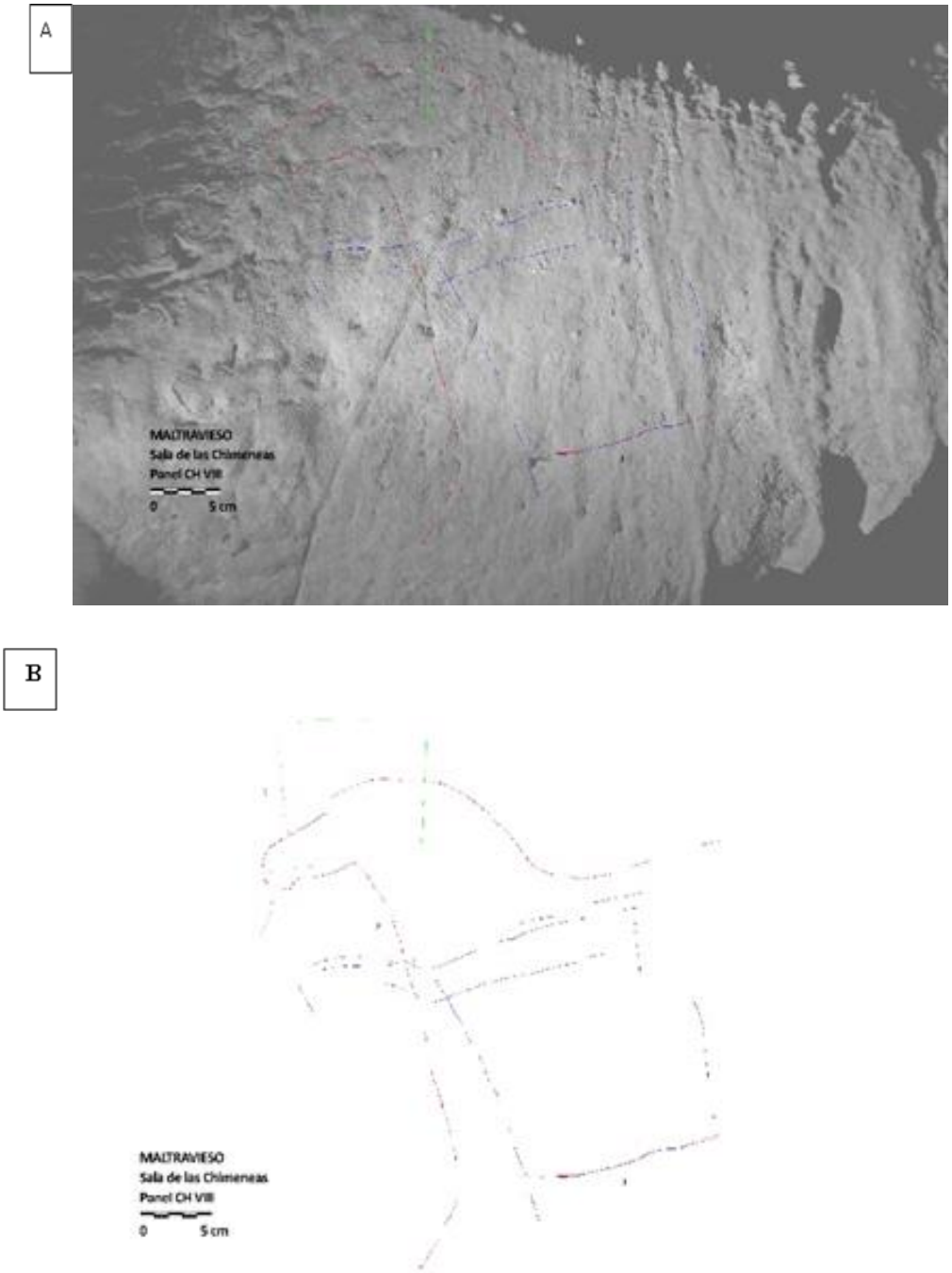


Figure 75. Maltravieso cave, panel CH VII, equid CH VII-2, A is original photo, B is photoshop tracing (Collado, 2021 Unpublished).

4.5.5. Cone room SAC I-1

17-Equid

It has been identified as an incomplete equid figure represented in absolute profile and oriented to the left. The cervico-dorsal curve. A second parallel line appears slightly below, shorter than the previous one that can be identified in a double sense: first, as part of the representation of the crinera, configuring in this way, a kind of incomplete stepped mane. The other interpretation would be to consider this second engraving as an erroneous line that is undone to rectify it with the superior dorsal cervico line. Below, the figure is completed with the lower part of the jaw that extends towards the line of the chest and the incomplete front leg. (Figure76 A, B) (Collado, 2021 Unpublished).

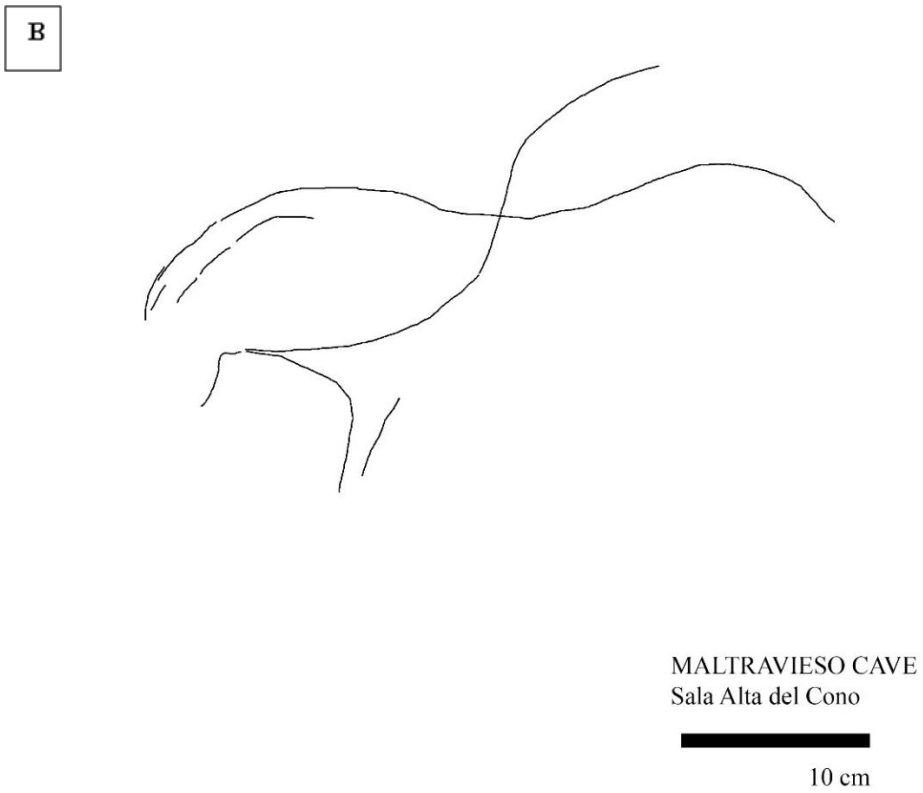


Figure 76. Maltravieso cave, SAC I panel. A is the incomplete figure of the equid SAC I-1. (Collado, 2020 Unpublished). B is photoshop tracing (*Hasnaa Askalany*).

CHAPTER 5, MINA DE IBOR CAVE

5.1. Location and description of the cave

Mina de Ibor cave is located in a small Cambrian calcareous outcrops interspersed midway between the Ibor river valley and the elevations of the Sierra de Porrinas (Figure 77) (Collado, 2008). The cave had the name from its position on the western slope of Cerro de la Mina, it is a low elevation of 589 m. northwest of Castaar de Ibor in Cáceres, in the province of Cáceres extreme southeast (Collado, 2009).

The author of this work discovered in 1995 engraved figures of Paleolithic art that represented various anatomical parts of several different animals. The cave is only about forty meters long. It has a west-facing access in the shape of an arch. This main gallery is 1.5 meters wide and the same high with a first section-oriented east-west that changes direction after five meters of travel to be oriented northwest-southeast (Collado, 2009). Then gradually the gallery narrows until it reaches its final area, where an ascending and extremely narrow path (less than 50 cm wide) leads to the final room. This room has an oval trend plan with a main axis of about 20 meters and a minor axis of about 16 m. On its western side, it reaches a maximum height of 3.5 meters (Figure 78) (Collado, 2009).

The figures of Mina de Ibor consist of a set of seven engraved figures (two cervid, an equid that could belong to post paleolithic, two bears and three other unidentified figures), later a new bear head is found (Collado, 2008). The Paleolithic engravings in Mina de Ibor have general characteristic for the figures is the use of the incised linear line, reduced size of the figures, anatomically partial representations, or the use of irregularities of the support as a complement to generate volume to the figure, a resource especially evident in the bear figures in this cavity (Collado, 2009).

Figure 77. Map of the location of Mina de Ibor cave (site number 3) (Hasnaa Askalany).

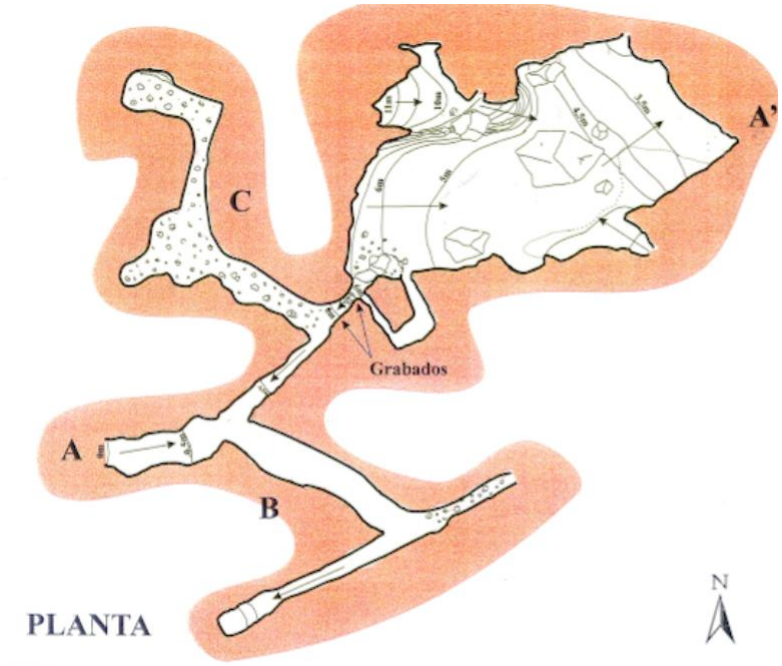


Figure 78. The plan of Mina de Ibor cave, the location of the represented panel (Collado, 2008).

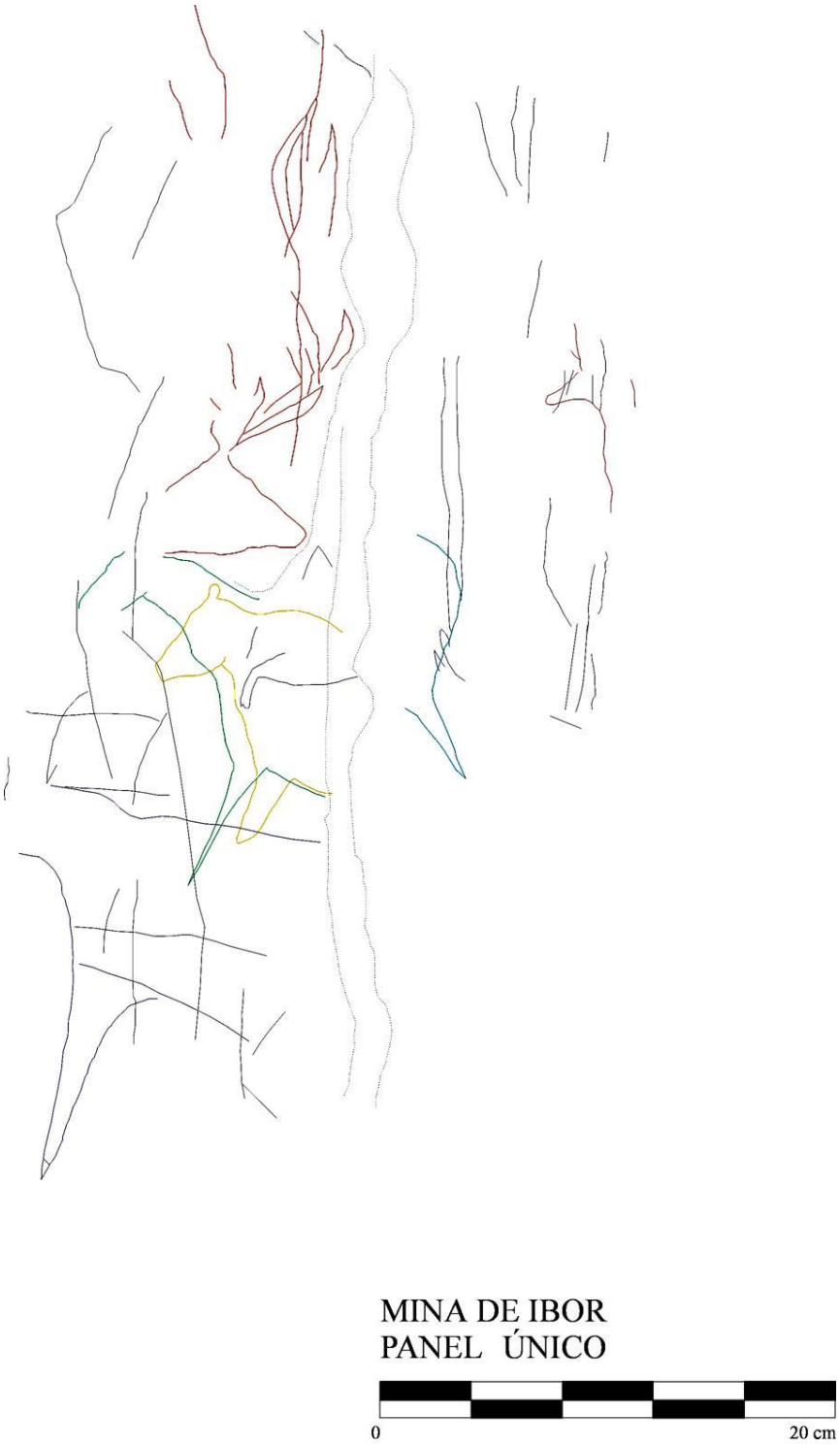


Figure 79. General view of the panel in Mina de Ibor cave, (Collado, 2009).

5.2. Description of the figures

1-Cervid

Head of the cervid is oriented to the right. The figure neckline and the jaw executed with a horizontal line; the nose has a triangular shape. The forehead does not represent the ocular protuberance (Ripoll & Collado, 1995, Collado, 2009).

The top of the head, where the antlers of animal are represented as multiple lines. The ear is behind the antlers. There is curved line, from where a single line starts that defines the cervical dorsal part of this figure, which disappears without completing its full development. The engraving is a thin linear type and (Figure 80 A, B) (Ripoll & Collado, 1995; Collado, 2009).

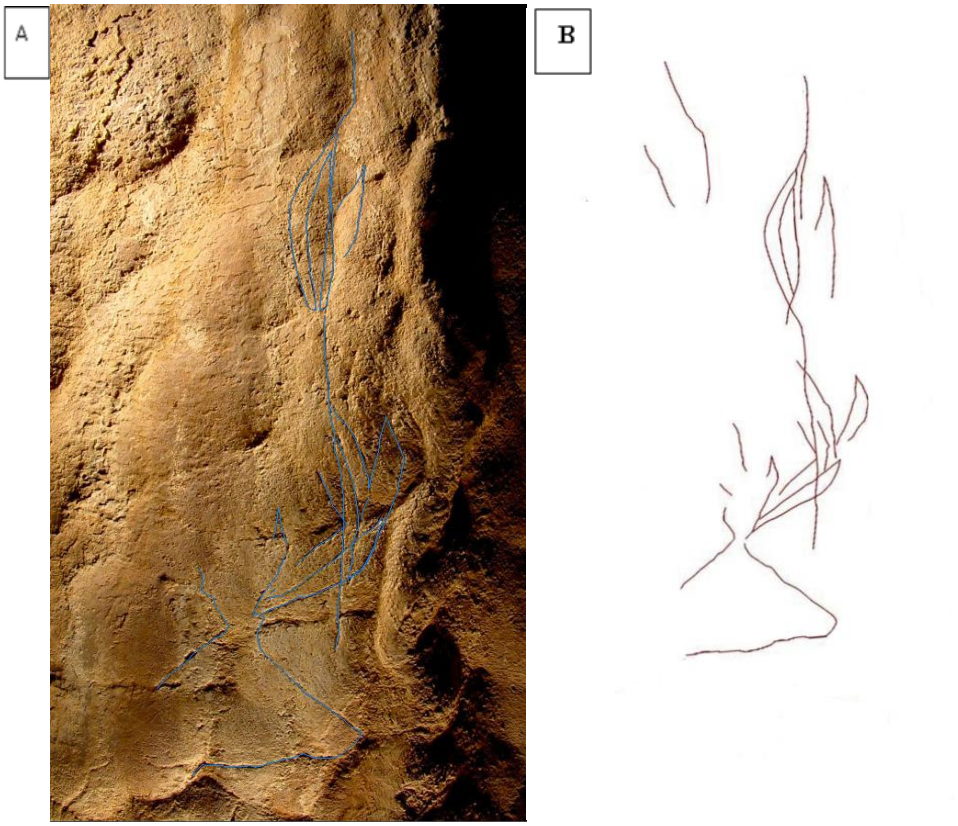


Figure 80. Mina de Ibor cave. Cervid. A is the original photo with tracing. B is photoshop tracing (Collado, 2009).

2- Bear

The figure could be a bear and is oriented to the left. There is only one ear presented. The head is very simple with no inner anatomical detail. We want to highlight the special use of the rock support to give volume to this head. (Ripoll & Collado, 1995; Collado & Ripoll, 1996; Collado,2009,) . All the inner part of the jaw is situated encompassing a small bump, which affects the two-dimensional factor and the artist's ability to take advantage of this surface when setting up the head of this animal. From here starts the incision that represents the neck. The incision differs from the previous figure, not very wide, but more marked in depth (Figure 81 A, B) (Ripoll & Collado, 1995; Collado & Ripoll, 1996; Collado, 2009,).

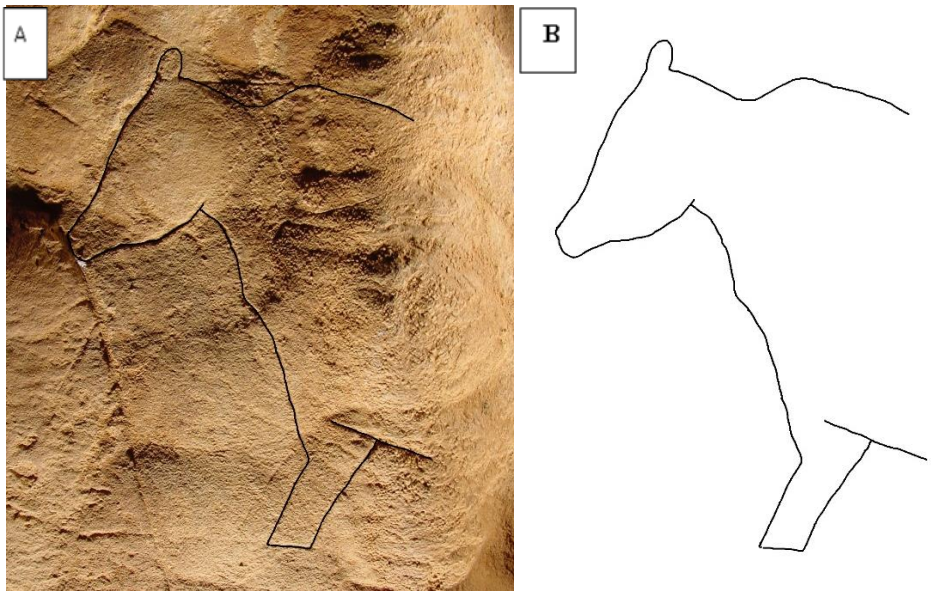


Figure 81. Mina de Ibor cave. *Bear, A is the original photo with tracing. B is the photoshop tracing (photo by Collado, 2009, photoshop tracing Hasnaa Askalany).*

3- Unidentified animal

It is within the previous figure, very fragmented remains of a zoomorphic figure, which is keeping only the hindquarters. It is oriented to left. The appearance general of the leg is very brief and incomplete. The engraving is linear incision fine and of very little depth, which makes it difficult to observe if it is not with adequate lighting (Figure 82 A, B) (Collado, 2009; Collado & Ripoll, 1996).

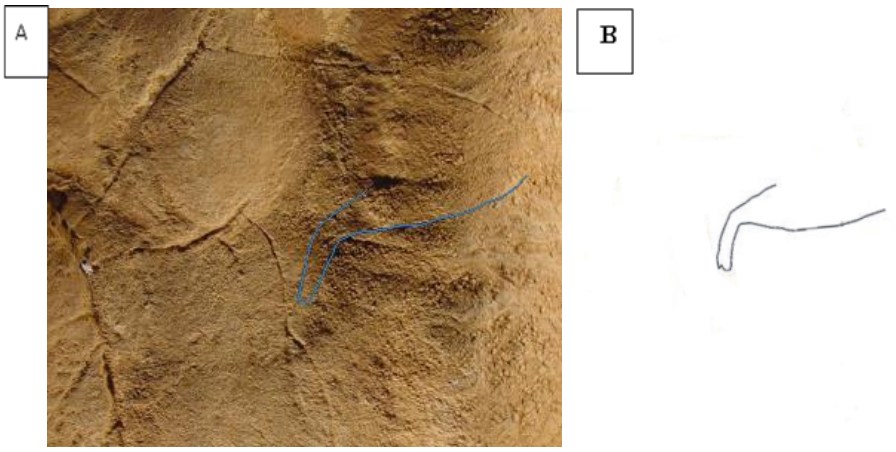


Figure 82, Mina de Ibor cave, unidentified zoomorphic figures. A is the original photo with tracing. B is photoshop tracing (Collado, 2009).

4-Hindquarters of a quadruped

The figure is oriented to the left, and is lost under the calcite cast, greatly hinders its complete vision (Figure 83) (Collado, 2009).

Figure 83. Mina de Ibor cave, the dorsal limb of unidentified zoomorphic figure with tracing photoshop (Collado, 2009).

5- Front leg of a quadruped

It is oriented to the left in a horizontal position, resolved by two lines recorded independent. Still the linear line used, slightly wider than that of the previous figures, but very shallow (Figure 84 A, B) (Collado, 2009).

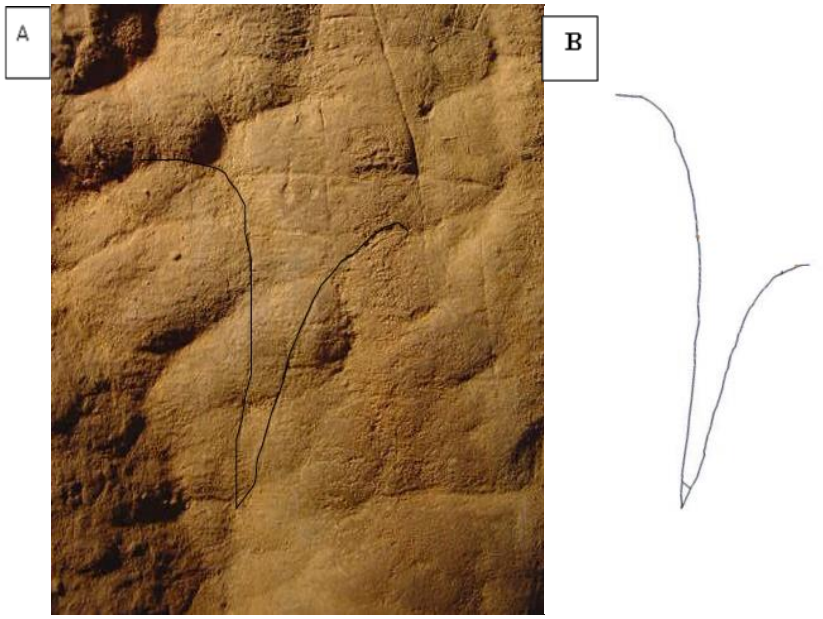


Figure 84. Mina de Ibor cave. A is the original photo with tracing. B is photoshop tracing (Collado, 2009).

6. Cervid

It is a small representation of a cervid oriented to the left, within a groove of the calcite, which causes the figure to be quite lost. Due to its low position the rest of the figure is indistinguishable; in part because it is a marginal area of the decorated panel (Collado, 2008).

The homogeneity in the execution of the figure possibly reveal a moment of the artist realization skill, as with a single stroke is executed the entire anterior part of the animal without any error or corrections, together with the essential characteristics of the figurative set, such as the lack of interest in the limbs, and the detail of the representations (Figure 85) (Collado, 2009).

Figure 85. Mina de Ibor cave cervid, photoshop tracing (Collado, 2008).

7- Possible representation of the head of a bear.

Fine incised linear engraving was used combined with the irregularities of the support to give volume to certain areas of the figure. The muzzle has a rectangular shape and is also highlighted by a bulging of the support, frequent natural projections on the entire surface, which were already used to give volume to the small bear engraved previously discovered and that are again used in this figure, not only in the snout, but also in the of the eye (Figure 86) (Collado, 2009).

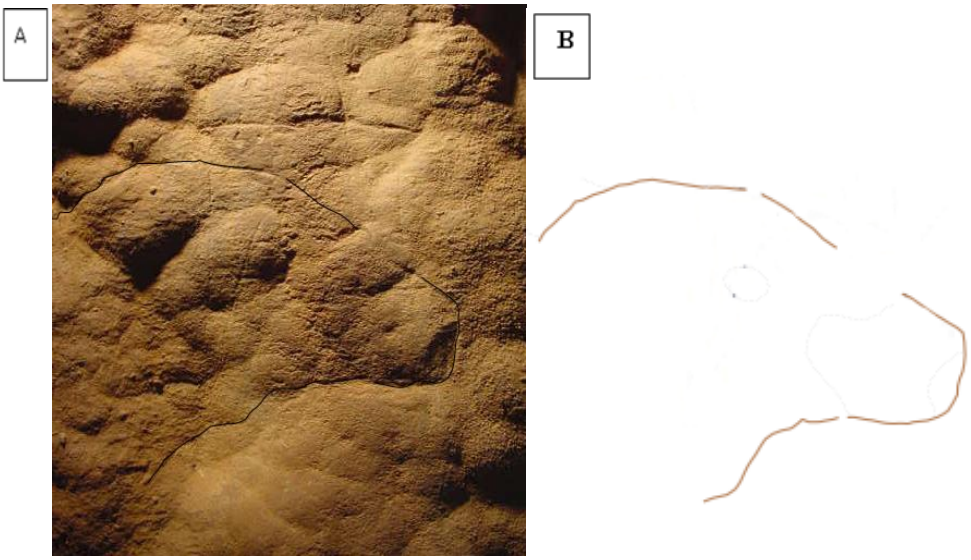


Figure 86, Mina de Ibor cave, possible zoomorphic figure of bear. A is the original photo. B is photoshop tracing (Collado, 2008).

CHAPTER 6. OPEN AIR SITES

GUADIANA RIVER

Molino Manzánez

Moinhola rock no 30

Porto Portel

6.1. Location and geology of Guadiana River

Guadiana is the third Iberian River, originating in La Mancha and ending in Vila Real de Santo António. It is a river, which has a large part of the hydrographic network in southern Portugal and extends into Spanish Extremadura (Collado, 2013)

Almost all the Guadiana's paleolithic art is on the left (Spanish) bank. In the several kilometers of the Portuguese bank, only two engravings can be attributed to the end of the Paleolithic period. They are panel 30 of the Moinhola site and an isolated rock from Porto Portel (Baptista & Santos, 2013). It is in the central strip of the so-called Ossa-Morena Zone (ZOM), in the southwest (SW) of the Iberian Peninsula. ZOM is located between the South-Portuguese and Central-Iberian areas of the Iberian Massif and comprises a SE-NW direction wedge from Córdoba to central Portugal. The main structure of this phase is the Olivenza-Monesterio Anticline, in whose nucleus the Black Series rocks emerge, which are the oldest in the sector belonging to the Precambrian (the same geology formation of Escoural cave, Mlatervieso cave and Mina de Ibor cave (Figure 87 A, B) (Collado, 2013).

A


N
Bay of Biscay
A Coruña
Gijón
Oviedo
Principality of Asturias
Santander
Cantabria
Bilbao
País Vasco
Donostia/San Sebastian
Nouvelle Aquita
Santiago de Compostela
Galicia
Vitoria Gasteiz
Pamplona/Iruña
León
Tarrona
Comunidad Foral de Navarra
Ourense
Vigo
Burgos
La Rioja
Castilla and Leon
Aragon
Valladolid
Zaragoza
Braga
Porto
Castilla - La Mancha
Salamanca
Castilla and Leon
Madrid Community of Madrid
Aragon
Coimbra
PORTUGAL
Toledo
SPAIN
3
2
Extremadura
Castilla - La Mancha
Valencian Community
Albacete
Badajoz
Merida
Lisbon
1
Evora
4
Alacant/Alicante
Murcia
Córdoba
Jaén
Murcia Region
Cartagena
Sevilla
Andalucia
Huelva
Granada
Faro
Jerez de la Frontera
Málaga
Almeria
Gibraltar
Ceuta
Tangier
Tetouan
Oran
0 30 60 120 180 240
Kilometers
Tangier Tetouan Al Hoceima
Melilla
Sources: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

B

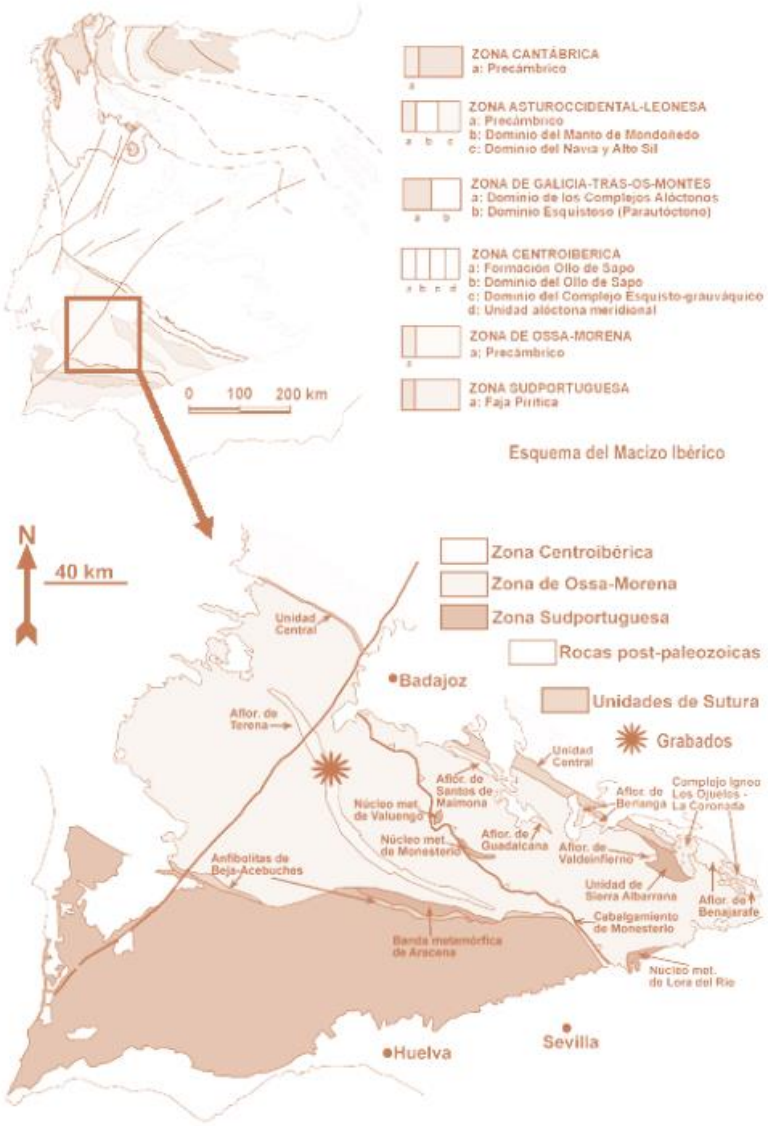


Figure 87. A is map of Guadiana River sites, Molino Manzánez, Moinhola rock no 30, Porto Portel location (Hasnaa Askalany). B is the geological map of site (Collado et al., 2006).

6.2. Description of the figures of Molino Manzánez stations

6.2.1. Station XV: “Esquinera” Sector Molino.

It is in the central area of the site. It measures 225 cm length by 105 cm. high. There is set of the three Paleolithic zoomorphic figures documented in this station (Figure 88) (Collado, 2013).

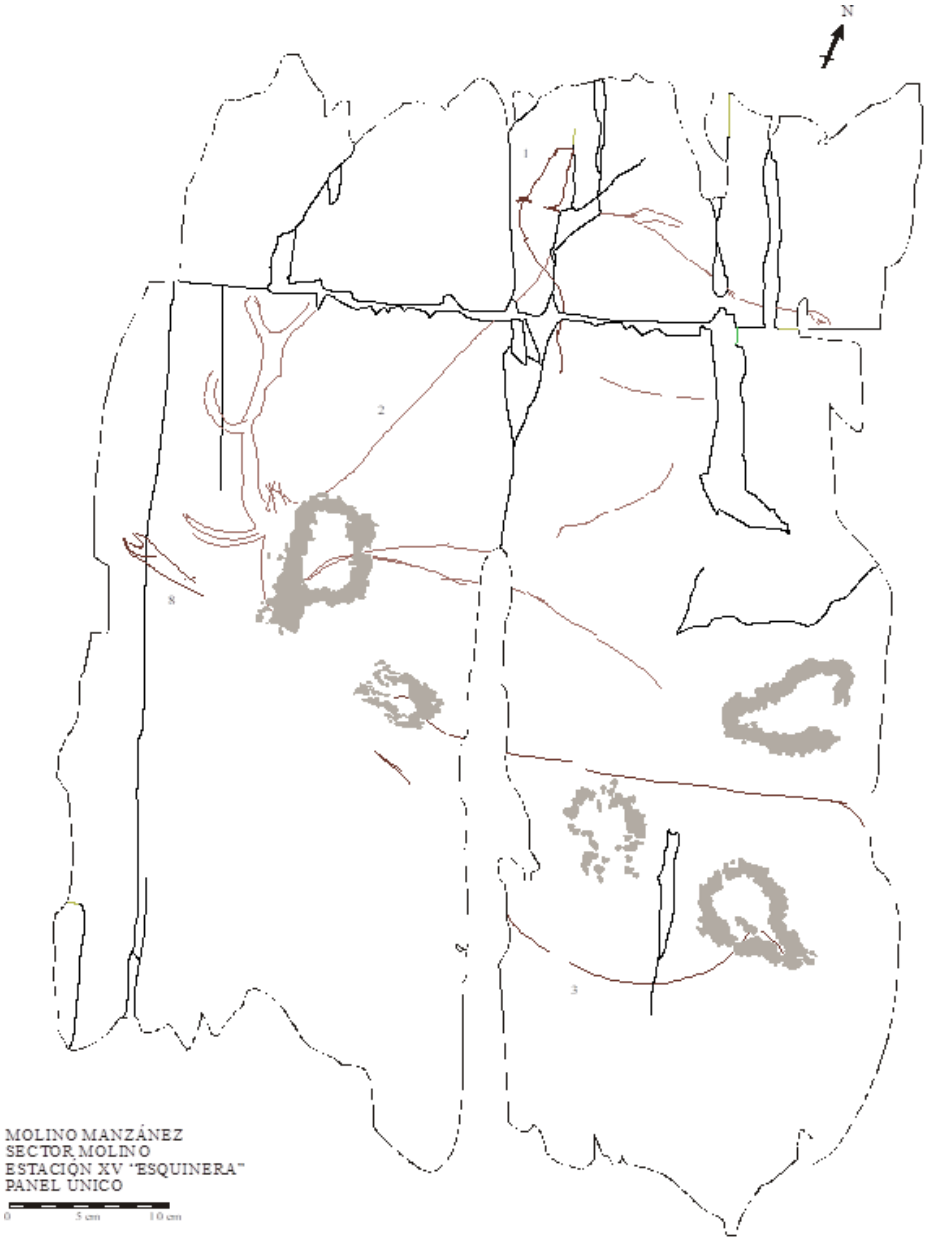


Figure 88. General view of Station XV panel (Collado, 2013).

1. Equid

It is an engraved figure with filiform line that represents the neck and the complete head of an equid, with a main line to the cervical line, with no evidence of the remaining anatomical parts of the animal. The figure is oriented towards the North. It measures 7.6 cm in height by 16.5 in width and appears in absolute profile. There are two small lines indicate the ears (Figure 89 A, B) (Collado et al., 2006; Collado, 2013).

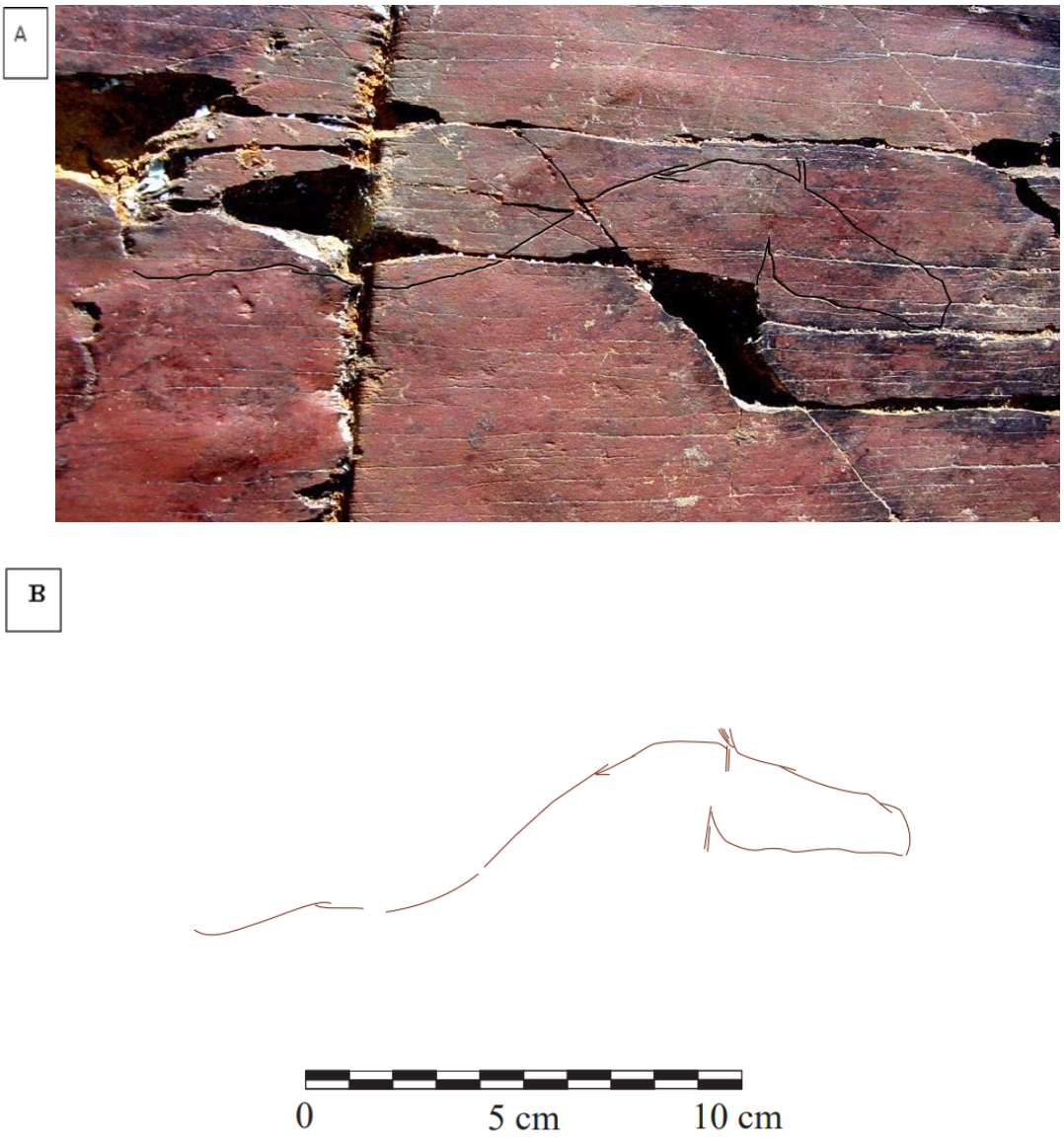


Figure 89. Station XV "Esquinera, equid figure, A is the original photo. B is the photoshop tracing (Collado, 2013).

2. Cervid

The cervid is engraved in a filiform line. It is superimposed to the previous equid. A part of its jaw is missing. It is represented in absolute profile, and oriented to the South. The ears are represented with a triangular-shape and slightly to backwards. It Measures 30 cm high by 38.5 cm maximum width. It has 17.7 cm long antler (Collado et al., 2006; Collado, 2013).

The lower part has two lines one line that appears above the jawbone (that is used to correct this area of the representation), turns sharply indicating the neck and reappears below the picket to form the line of the chest that extends downward with a brief interruption in an attempt to set the front leg, that indicate the attempt to rectify the original representation giving rise to two lines that continue divergent downwards. A small tail is visible. It is made up of two short and convergent lines curved downwards (Figure 90) (Collado et al., 2006; Collado, 2013).

Figure 90. Station XV "Esquinera", cervid. Photoshop tracing (Collado, 2013).

3 .Headless cervid

It is engraved and oriented to the left and in absolute profile. There is a large, curved line forms the belly of the animal, which is interrupted by a crack destroys any sign of the anterior limbs. There is small line that partially represents the lower area of the animal's neck. In the upper left area, with no anatomical connection with the rest of the figure, the remains of a large antler that possibly the cervid described in this section, although poor preservation in the head area makes this claim impossible. The measures are 21.45 cm. length and 14.3 cm. height (Figure 91) (Collado et al., 2006; Collado, 2013).

Figure 91. Station XV headless cervid, photoshop tracing (Collado, 2013).

6.2.2. Station CCLXXVI. “Bonito día” Sector Espadas.

It is a reddish surface which measures 2.40 m. long by 1 m width (Figure 92 A, B).

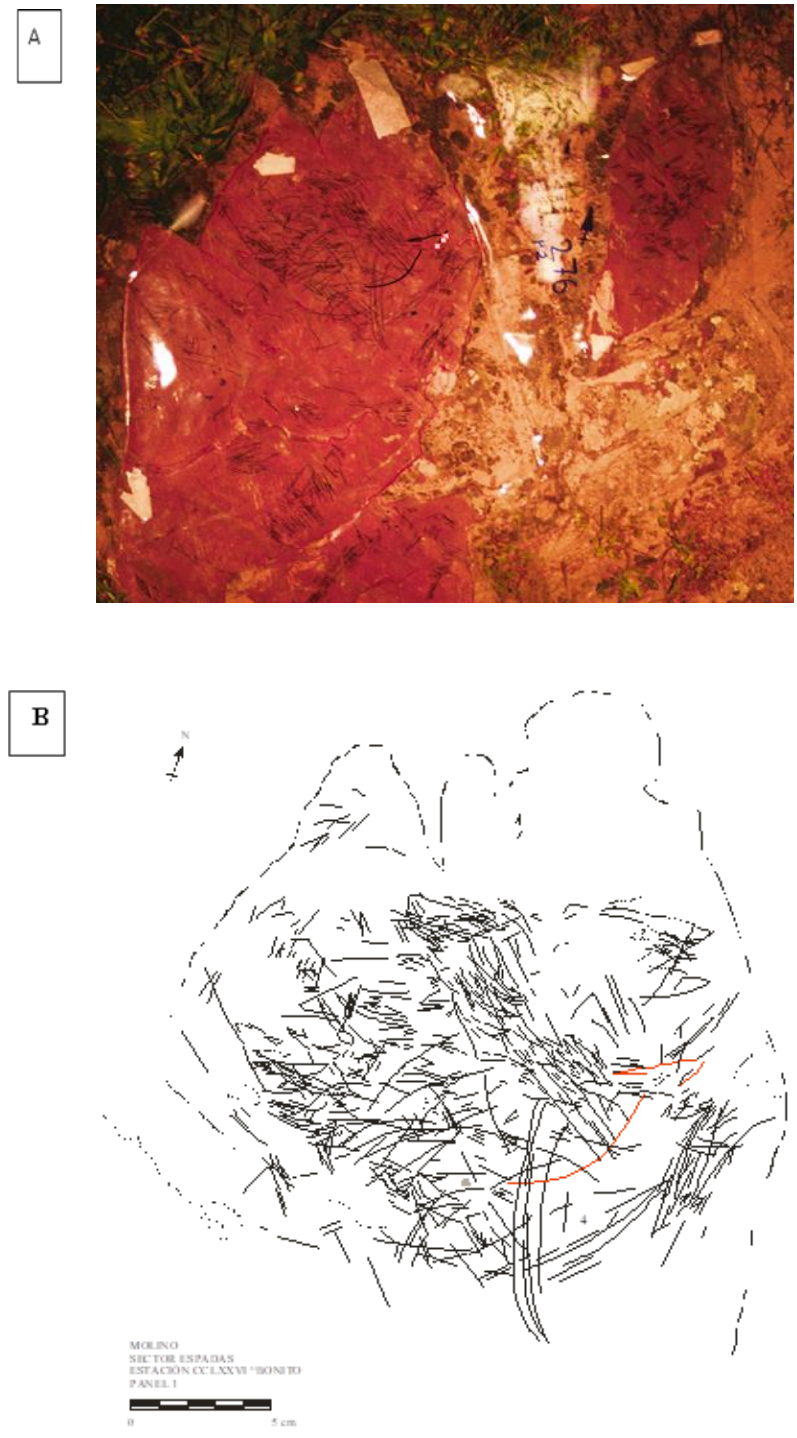


Figure 92. General photos of Station CCLXXVI, “Bonito día”. A is original photo, B is Photoshop tracing (Collado, 2013).

4. Cervid

This is a small figure of a cervid with incomplete anatomy. It measures 7.15 cm in length and 4.5 cm in height. It is oriented to the right. The head is defined by two small lines in the shape of a pointed arc that do not come together at the nose. From the back of it a long and thin ear towards back is configured, resolved by two curved lines at an angle. Finally, a single independent line defines the very pronounced cervical-dorsal curve (Figure 93 A,B) (Collado et al., 2006, 2013).

Figure 93. Station CCLXXVI, cervid. A is original photo. B is Photoshop treatment (Collado, 2013).

6.2.3. Station CDXCVII: “Sete” Sector Isla Molino.

It is 1.20 m. high and 0.95 m. width. The upper surface rises from the ground level 0.70 m. (Figure 94 A, B) (Collado, 2013).

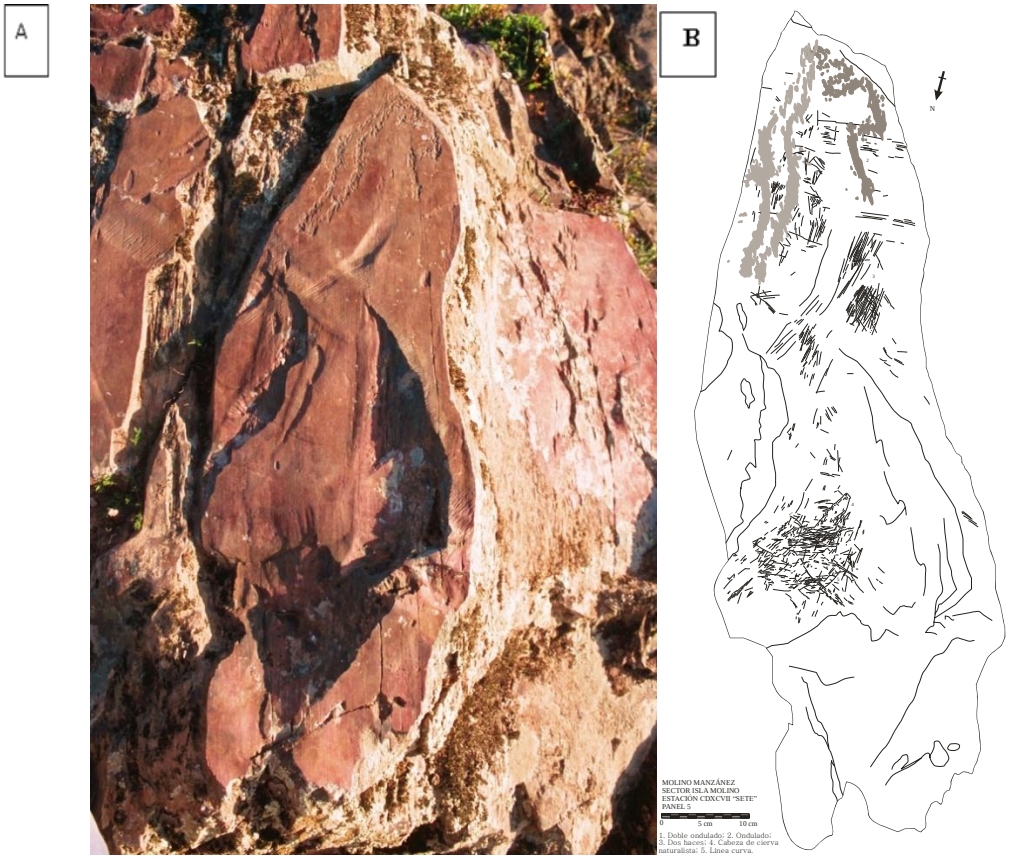


Figure 94. A is a general of panel 5 of Station CDXCVII "Sete”. B is Photoshop tracing (Collado, 2013).

5. Herd

This figure could be identified as a bovid. It has a small head. On the back of the animal there is a rectilinear line that is prolonged to define a brief cervical-dorsal curve with a gentle upward undulation marking the start of the neck, which is interrupted by two small

lines at an upward curved angle, which served to represent the ear (Collado et al., 2006; Collado, 2013).

From here, the line is taken up again, which by a brief curvature defines the head extending in a rectilinear way through the forehead until it reaches the snout where it turns 90º downwards to represent a rectangular shaped snout that raises the possibility that this figure could also be identified with a bovid, though the absence of the horns.

In the lower area of the nose, the chinstrap is clearly marked as well as the jaw, resolved in a very simple way by means of a curved line. The eye and the nostril are marked by two small dots engraved on the surface. The figure measures 5.3 cm in length and 2.5 cm height (Figure 95 A, B) (Collado et al., 2006; Collado, 2013).

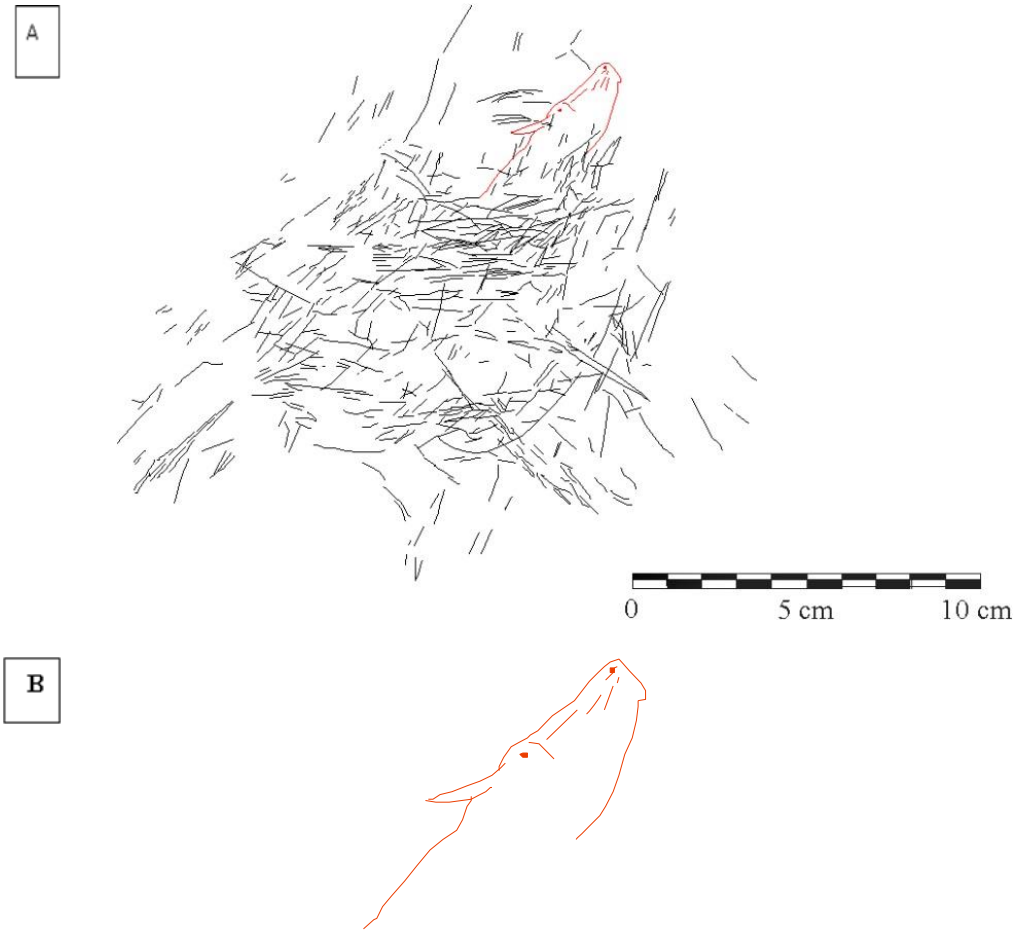


Figure 95. Station CDXCVII, "Sete" bovid. A is original photo, B is detail of the herd also done by photoshop tracing (Collado, 2013).

6.2.4. Station XXVI. “El Boceto”. Sector Simpson.

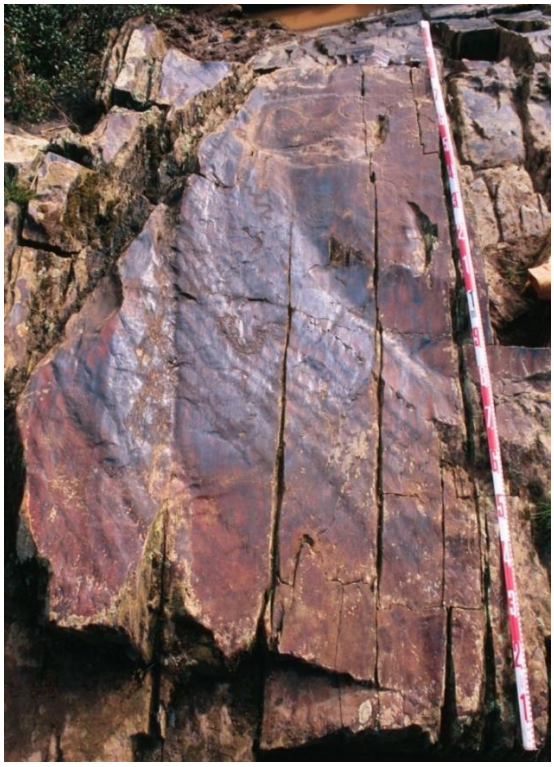
It measures 180 cm. length and 175 cm. wide. It contains a series of picket engravings superimposed the Paleolithic zoomorphic representation.

6. Cervid

Executed in absolute profile except for the antlers that shows a biangular perspective and by means of a fine filiform line. The head of the animal is oriented to the North. It is the largest of the Paleolithic figures documented with dimensions that reach a height of 41 cm and 49 cm (Collado et al., 2006; Collado, 2013) .

The figure shows a notable disproportion between the body length and the head is oval. The ears very schematically hinted at by three small straight lines. The antlers are practically lost. Two divergent cervical-dorsal lines are observed in the posterior area. The upper one extends linearly towards the posterior area until it disappears without any attempt on the part of the author to complete the anatomy of the animal. On the other hand, the lower cervical-dorsal line, superimposed to several notched lines, where it curves towards the lower area to configure the rump. The tail, detached from the buttock. (Figure 96 A, B, C) (Collado et al., 2006; Collado, 2013).

A



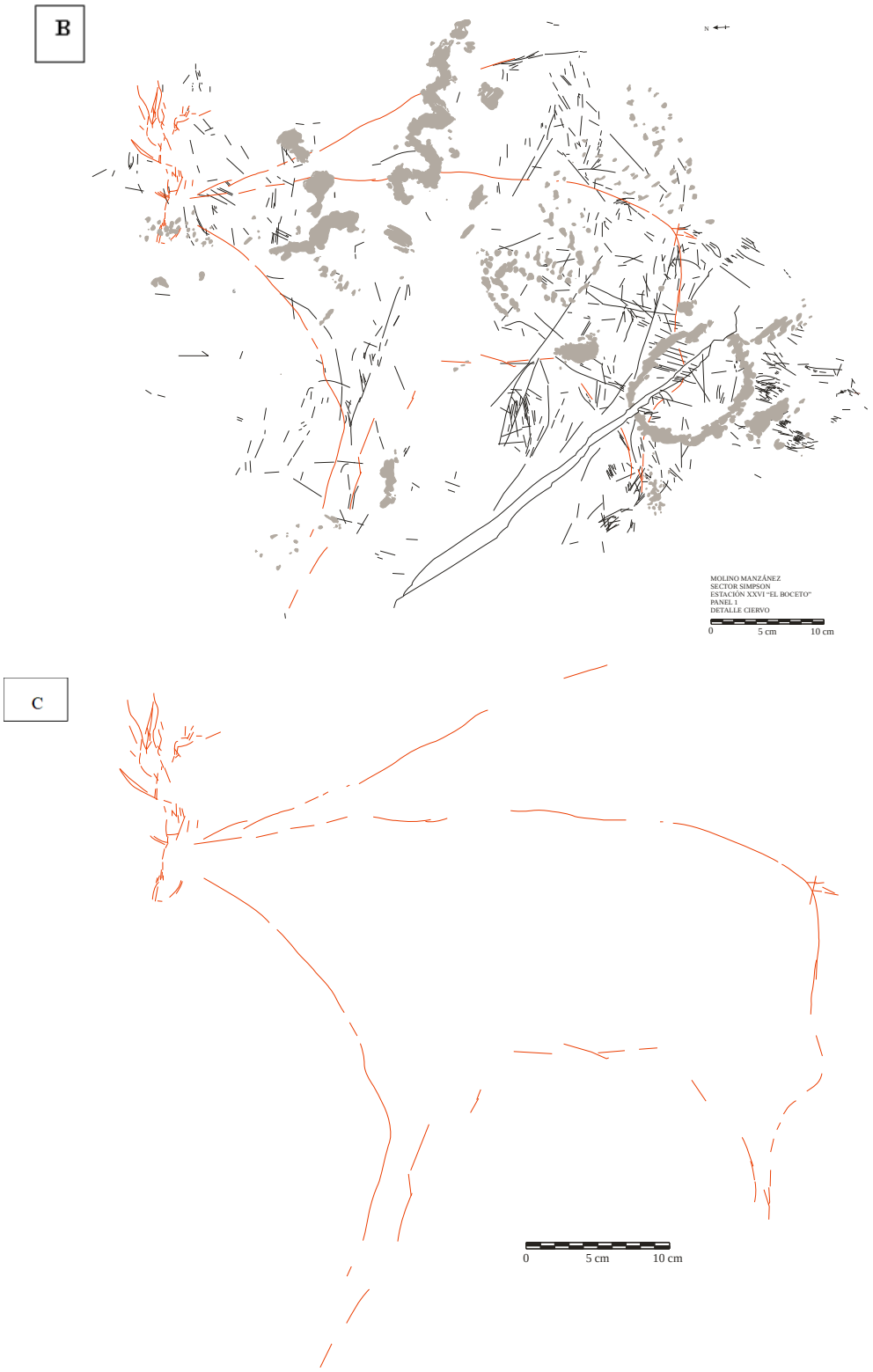


Figure 96. A is original photo of Station XXVI, B, and C are photoshop tracing (Collado, 2013).

6.2.5. Station XXII: “El Globo” Simpson Sector.

It is located about 7.5 meters further southeast from the previous station. It measures 2 m. length and 1.13 m. wide (Figure 97).

Figure 97, A general image of panel Station XXII "“El Globo”. Done by photoshop tracing (Collado, 2013).

7. Goat (caprid)

It is oriented towards the west. The nose is pointed without closing. The jaw is not very pronounced and part of the start of the neck. On the back of the head there are two simple curved lines towards back that have been identified as the animal's antlers. The figure measures overall 9 cm. high and 14.5 cm. width (Figure 98 A, B) (Collado et al., 2006; Collado, 2013).

Figure 98. Station XXII "El Globo". A is the original photo. B is photoshop tracing (Collado, 2013).

8 .Caprid

It is a filiform figure in absolute profile and oriented towards left. Better preserved appears the posterior part in which the cervical-dorsal line can be seen divided into two lines, which turn downwards to define the rump and the closure of the rump with the tail attached to the buttock represented by a small, curved line (Collado et al., 2006; Collado, 2013).

A new line takes up the figure indicating the anterior part of the hindquarters that extends to the left in a fragmented and rectilinear line that was used to configure the belly from the posterior groin area and without physically connecting with the front leg. The figure measures 7 cm. high by 12 cm. maximum width (Figure 99) (Collado et al., 2006; Collado, 2013).

Figure 99. Station XXII, caprid is treated by photoshop tracing (Collado, 2013).

6.2.6. Station LXXVI: “La Cuchara”. Sector Espadas

It is a large rock of cubic shape and quite near to the water's edge, less than a dozen meters, which has caused a poor general conservation due to the intense cracking, washing and the numerous detachments and chips that can be observed. The measurements are 62 cm. long by 45 cm. width (Figure 100) (Collado, 2013).

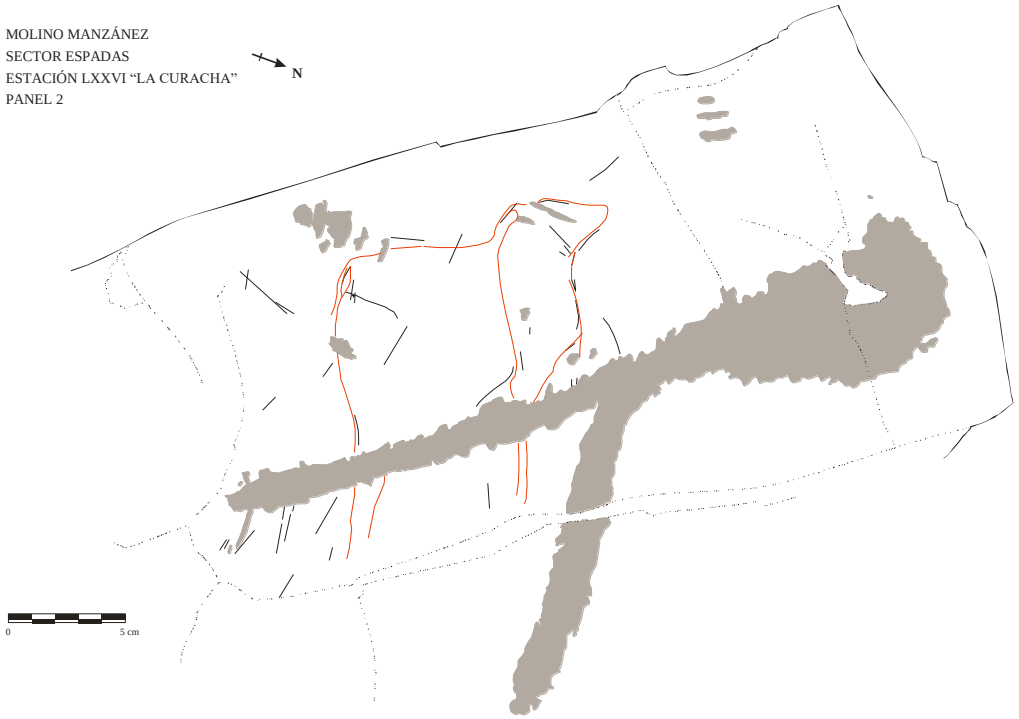


Figure 100, General view of the panel after photoshop tracing (Collado, 2013).

9 .Unidentified animal

It is made of a filiform line in absolute profile. The representation shows the two intertwined hindquarters. The figure orientation is on the right. The hindquarters present, with the leg. The line that it reaches the buttock as in the one indicating the belly. The first rises in a gentle curve and breaks to form the tail. A small line appears that indicates the tail. The dimensions are 13 cm high and 14 cm width. (Figure 101) (Collado et al., 2006; Collado, 2013).

Figure 101. Station LXXVI, "La Cuchara". Unidentified animal photoshop tracing (Collado, 2013).

6.2.7. Station XCII: "Heineken". Heineken Sector

It is the largest of the stations documented in the whole of the Manzánez Mill. exceptional dimensions of 400 cm in length and 375 cm in width. The filiform engraving was executed in the station (Figure 102) (Collado, 2013).

Figure 102, Station XCII, general view of the panel (Collado, 2013).

10 .Equid

It is an incomplete zoomorphic figure identified as an equid. Located in the central area of the rock. The measurements are 20.5 cm length and 9.8 cm width. It is in filiform incised line, and oriented towards the right. The jaw has a semi rounded snout. A wavy line that defines the cervical-dorsal curve and ends at the rump where it disappears. There is a long line that could be part of the hind leg (Figure 103) (Collado et al., 2006; Collado, 2013).

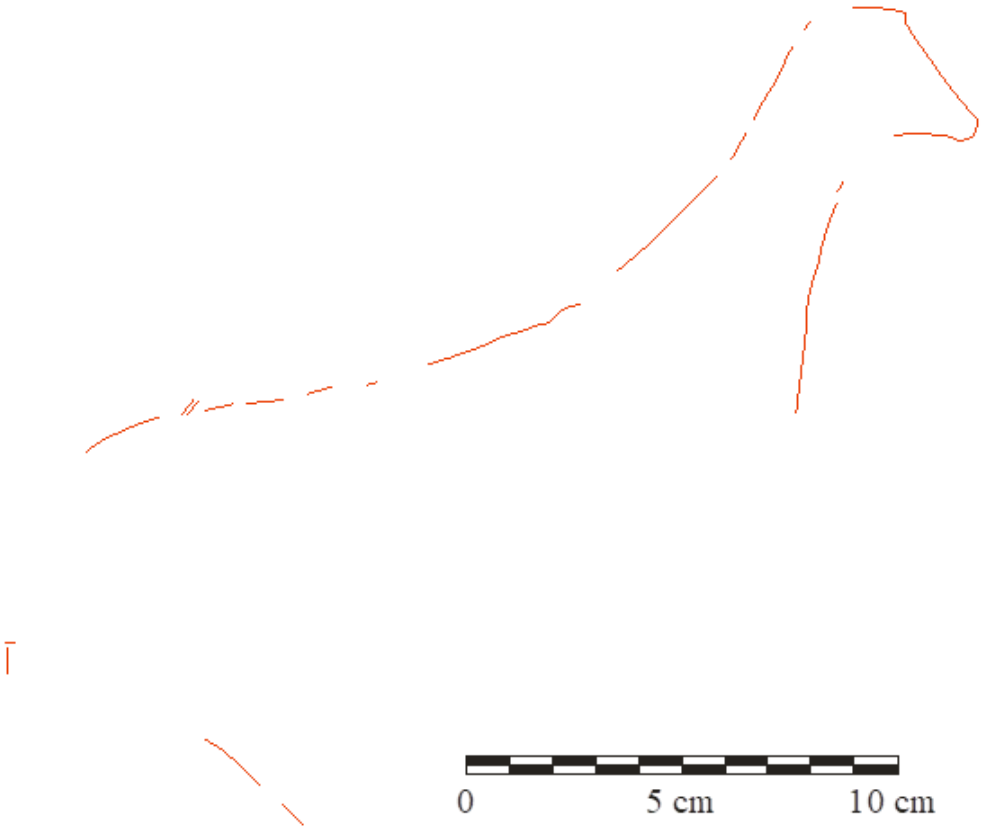


Figure 103, Station XCII, "Heineken". The equid with photoshop tracing (Collado, 2013).

11 .Equid

There is a new zoomorphic with a filiform line, to the right of the previous figure. It is a small equid facing right, in absolute profile, measuring only 6 cm high and 10 cm width. The hind leg, the rump, and the back are present, while the neck disappears. It is impossible to notice any remains of the head. On the back, the tail was represented. There are two small parallel lines that could be the remains of the representation of the front leg (Figure 104) (Collado et al., 2006; Collado, 2013).

Figure 104. Station XCII, "Heineken". The equid with photoshop tracing (Collado, 2013).

12.Equid

An equid is oriented towards the right. It has elongated cervical-dorsal line and disproportionate comparing to the small head of the equid. A large chip is missing and caused the loss of the ears in the upper part of the head. The muzzle has a rectangular shape. A little to the left there are two small lines that possibly form the final part of the neck and the start of the animal's chest. The dimensions are 32.89 cm length and 6.1 cm height (Figure105) (Collado et al., 2006; Collado, 2013).

Figure 105, Station XCII, "Heineken". The equid with photoshop tracing (Collado, 2013).

6.2.8. Station CVII: "Cangrejos". Crabs Sector

It is a large dark gray rock with 2.12 m. long and 2.30 m. of width. It presents an acceptable conservation even though the washing of the water has caused some cracks. The techniques used in the execution of the figures included in the two panels that the station contains, are the picketing and the incision in filiform lines (Collado, 2013).

13 .Herd

It could be a representation of a doe executed by a multiple filiform incision and superimposed to a small, dotted circle. The figure is oriented to left. It shows the front part, without limbs. The head has a jawbone that extend towards the muzzle that presents a semicircular shape indicating the nose. The ear appears in a triangular shape and oriented backward to indicate the attitude of bellowing or browsing. The dimensions are 15 cm height and 23.5 cm width (Figure 106 A, B) (Collado et al., 2006; Collado, 2013).

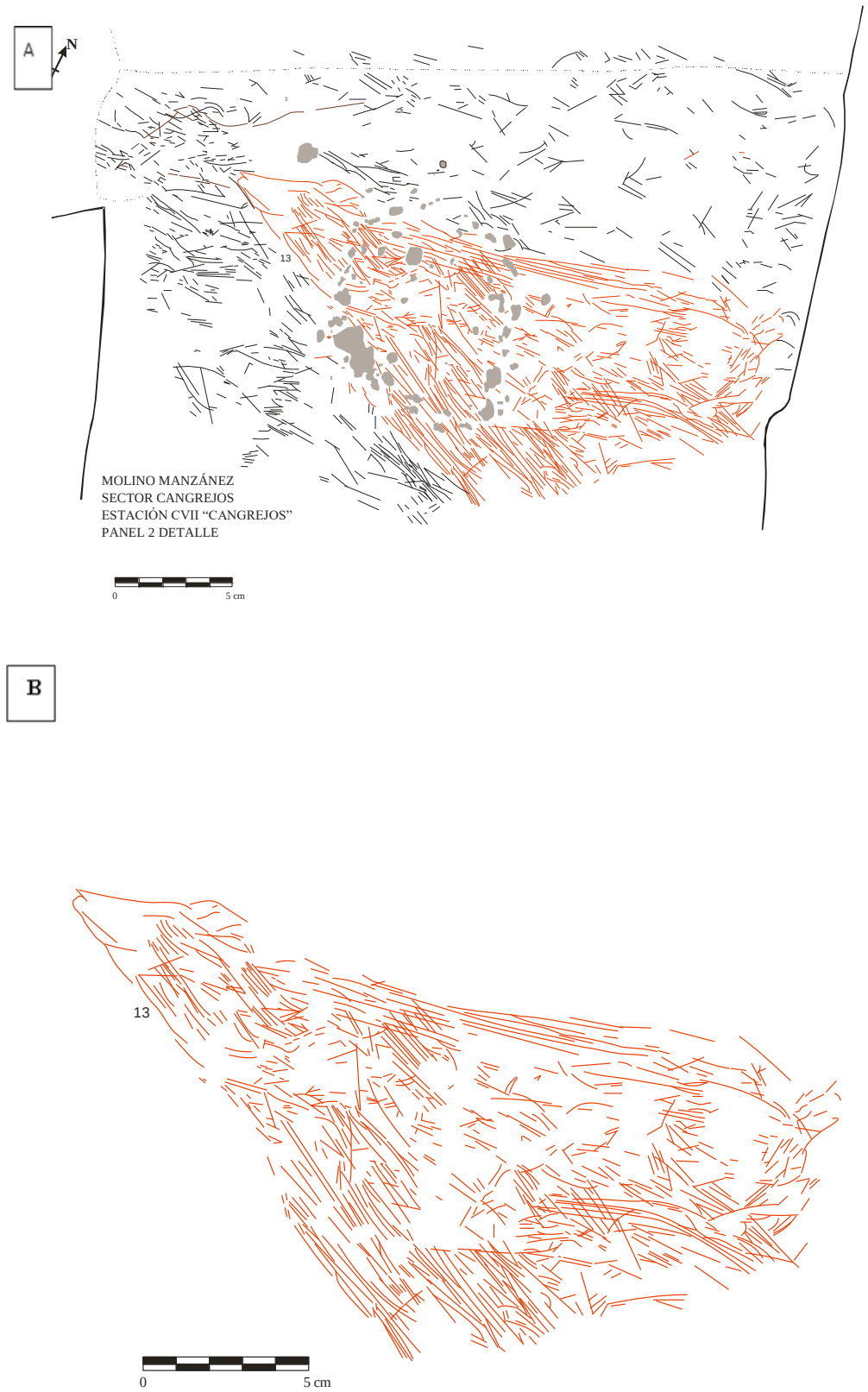


Figure 106: Station CVII: "Cangrejos". A and B are detailed tracing of doe (Collado, 2013).

6.2.9. Station CDVII: “Hyperlavado”. Crabs Sector

This station is made up of a sloping rock with a crowning surface of 133 cm. The surface has suffered from intense water wear that has mainly affected the conservation of the figures, especially the filiform ones that present an extremely fine thickness due to the intense washing that they have been subjected (Collado, 2013).

14 .Cervid

The head is to the left. The anatomical interior has filling that is resembles the previous figure. It shows the neck stretched out, in an attitude of roaring or browsing also as the preivous figure, an attitude to which contribute in the representation of the position of the nose and the ears (Collado et al., 2006; Collado, 2013).

The head follows a sub-triangular shape, the forehead, the snout and the jaw are present. The ears, tilted back. On the upper part the cervical dorsal line has a well defined concave-convex line, but part of it is lost in the haunch area and is taken up in the tail, attached to the buttock. The hind leg, with the very marked hock and is finished in a "V", without cutting the hoof. The dimensions 16.5 cm high and 29 cm long (Figure 107) (Collado et al., 2006; Collado, 2013).

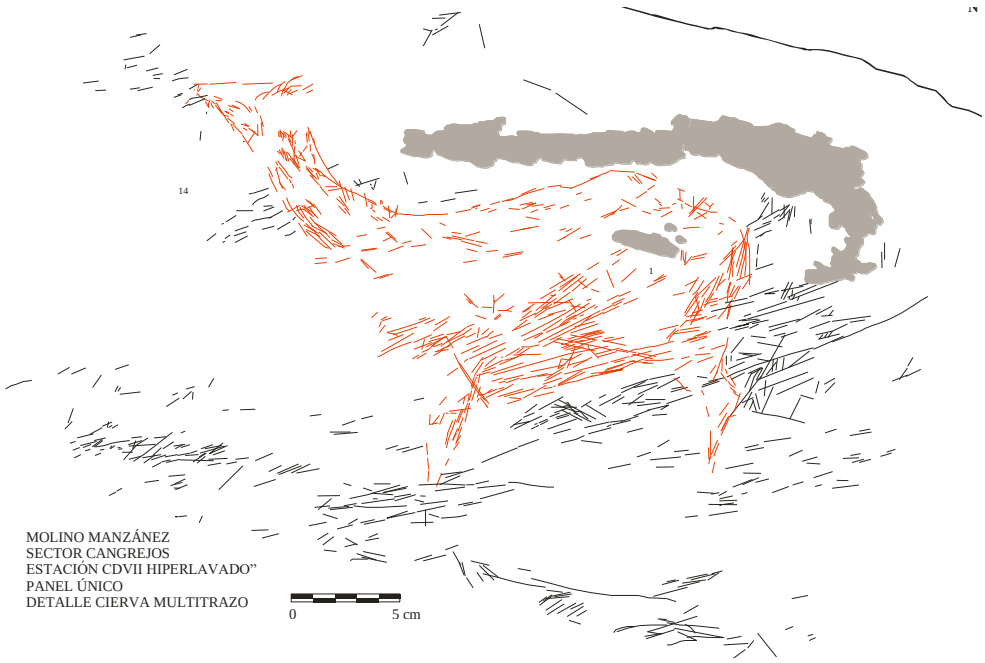


Figure 107. CDVII Station "Hiperlavado" detail tracing of the doe (Collado, 2013).

6.2.10. Station CDXXIV: “Noel”. Heineken Sector

The general conservation is poor because of aqautic and atmospheric degradation. The technique is picketing and fine lines, the latter is infused with small strokes of scattered picketing. This station is 80 cm. length and 179 cm. wide (Figure 108 A, B) (Collado, 2006).

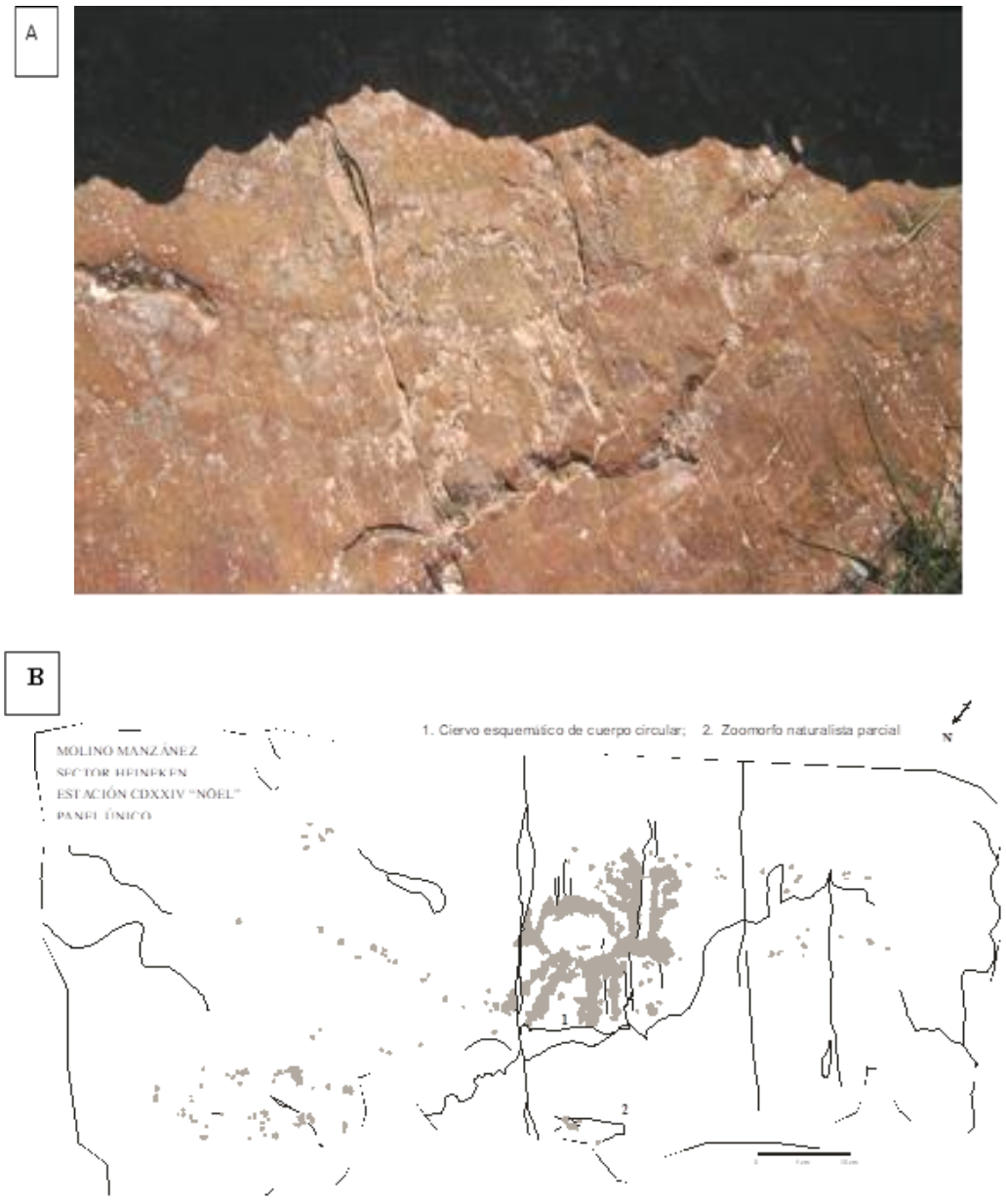


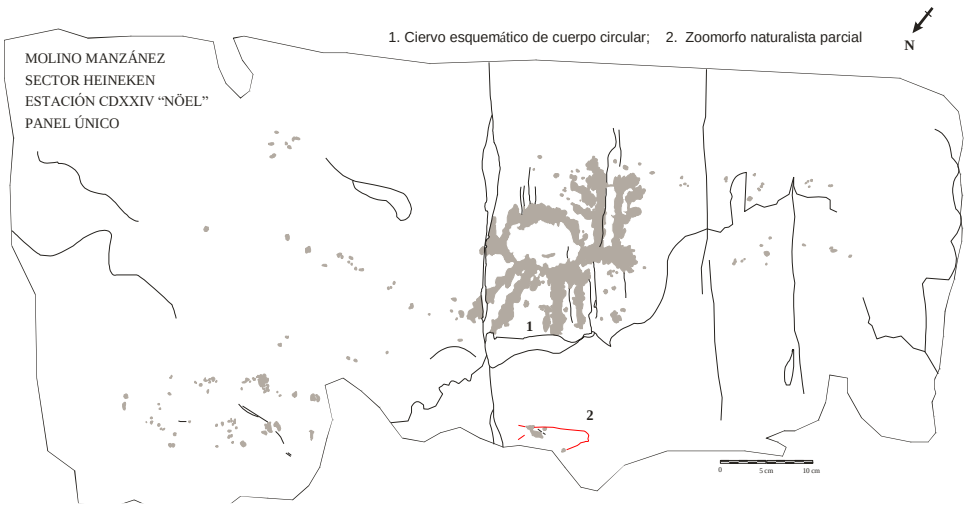
Figure 108, A is the original photo. B. is the tracing of Station CDXXIV “Noel” with the equid's head (Collado, 2013).

15 .Equid head

It has been identified as an equid made in a continuous line . Only the head is represented and oriented towards the right. The ear is repsented by a simple line towards back. The forehead ends in a rounded snout that gives way to a marked chin strap. It measures 3 cm. height by 7.5 cm. width. (Figure 109 A, B, C) (Collado, 2006, 2013).

A

B



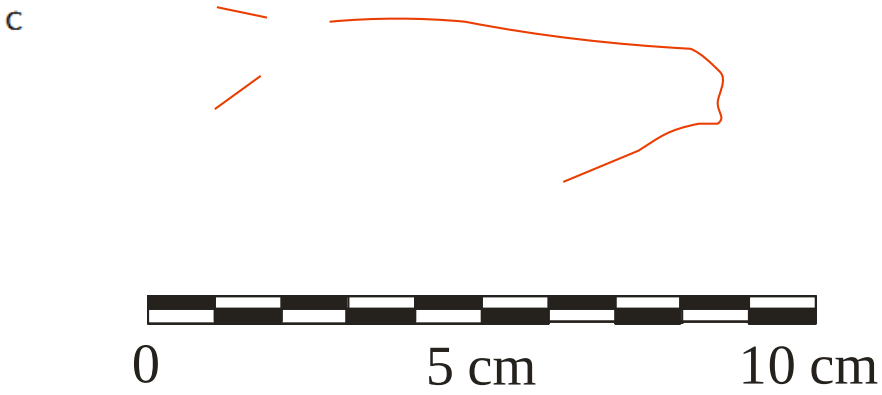


Figure 109. A is the orginal photo . B and C are photoshop tracing (Collado, 2013).

6.2.11. Station DLVII: "El Paletín", Sector Mariposas.

It is a large station with mesures of 440 cm length, 156 cm. wide and 78 cm. High. The general conservation is poor, presenting two large horizontal cracks that section the rock into three large sections. The figures have the picketing and filiform techniques (Figure 110) (Collado et al., 2006; Collado, 2013).

Figure 110. General view of DLVII Station "Paletín" (Collado, 2013).

16 .Cervid

A figure of cervid has incised linear line technique. It is oriented to the left. The antlers are represented by small branched lines. The head appears as a sub-triangular shape, and the nose has a pointed shape. The jaw forms a right angle with the neck line. The cervical-dorsal curve does not show a clear connection with the back of the animal's head. The entral line and the limbs are absent. It measures 20 cm height and 28 cm width (Figure 111 A, B) (Collado et al., 2006; Collado, 2013).

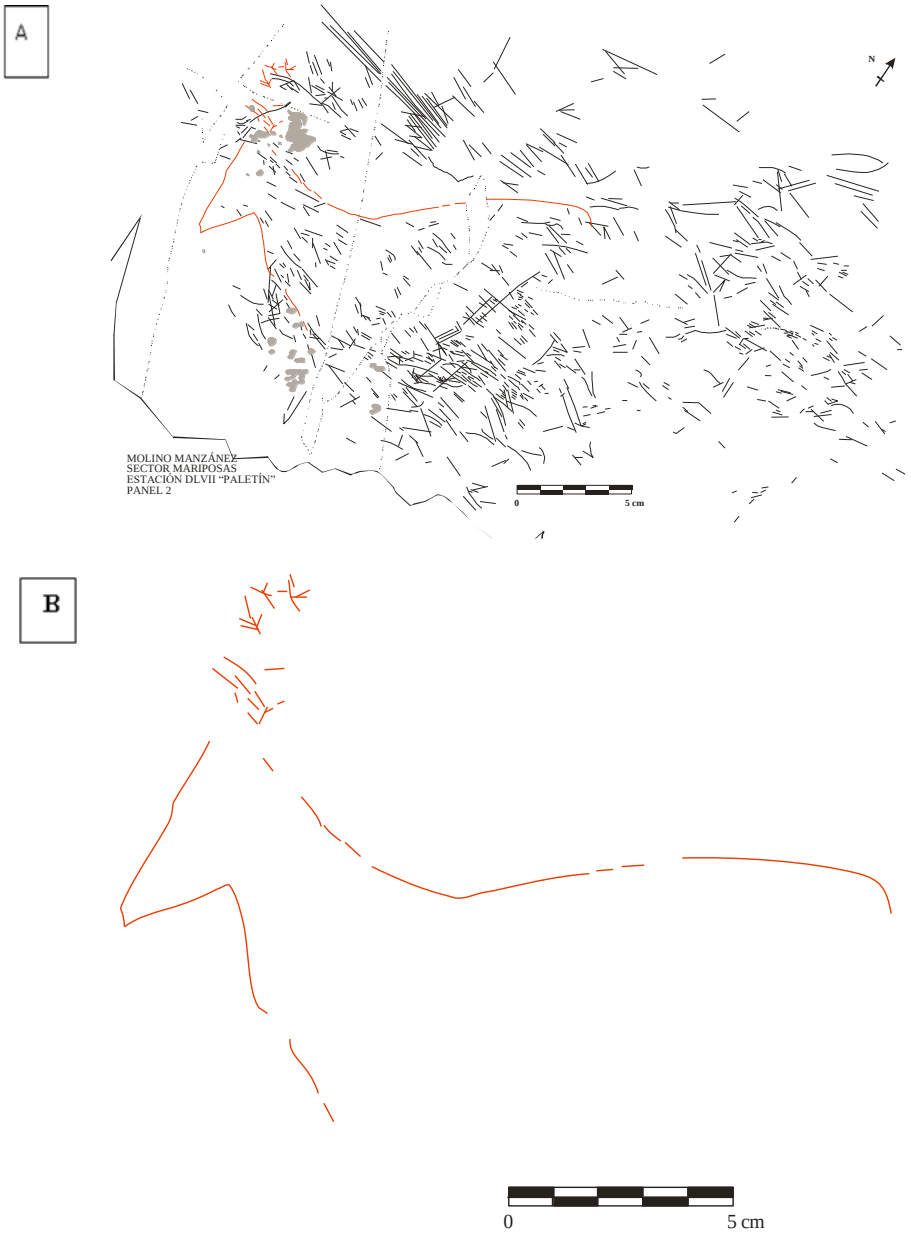


Figure 111. A and B are detail tracing of cervid from DLVII Station "Paletín"(Collado, 2013).

17 .Equid head

The figure is to the right of the previous one. The head is identified as an equid. It is oriented to the right and looking up, in an attitude of browsing. It has two small vertical lines represent the ears, in a technical and stylistic solution very similar to that of the equid's head from the XV "Esquinera" station. The forehead in a slightly concave line that ends in a rectangular-shaped snout that closes on itself to mark the animal's mouth. It measures 4.5 cm. length and 2.8 cm. height (Figure 112 A, B) (Collado et al., 2006; Collado, 2013).

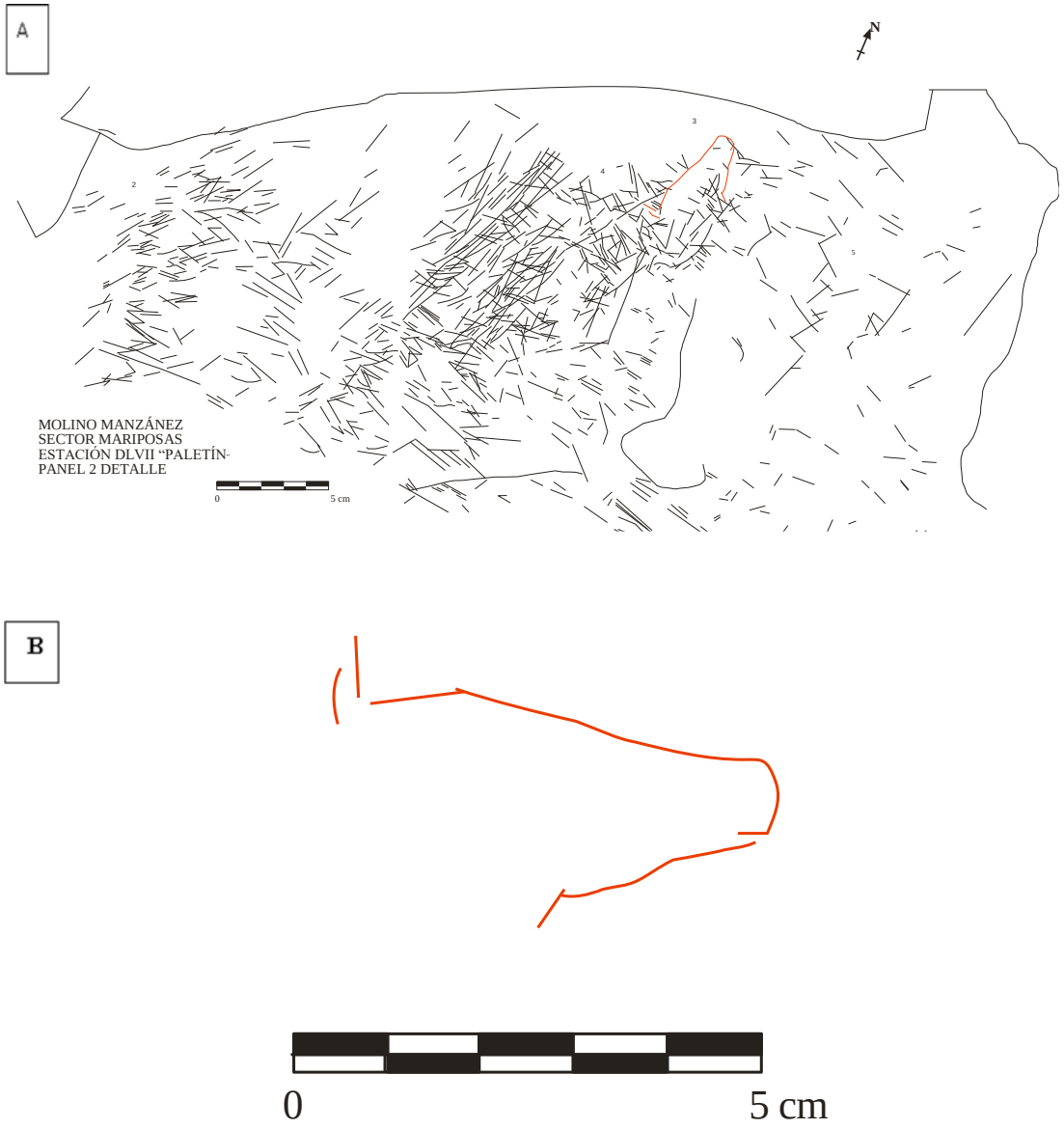


Figure 112. DLVII Station "Paletín", the head of a equid. A and B are detailed photos done with photoshop tracing (Collado, 2013).

6.2.12. Station CCXIV: “El Toro Pelón”. Mill Sector.

This station is a small rocky outcrop of 57 cm. length by 30 cm. The general conservation of the station is good, although it presents horizontal cracks. The zoomorphic figure in this section is made with filiform incision (Collado, 2013).

18. Bovid

It is made in a continuous filiform line. It is oriented to the left and depicted in absolute profile. It shows a rounded snout that extends towards the forehead. The antlers are bent forward in a double curve. The cervical-dorsal curve is ending at the rump. There is an indication of the tail. The hock and hoof are perfectly identifiable on the hind leg of the animal. The figure measures 26 cm in length and 16.5 cm. height (Figure 113) (Collado et al., 2006; Collado, 2013).

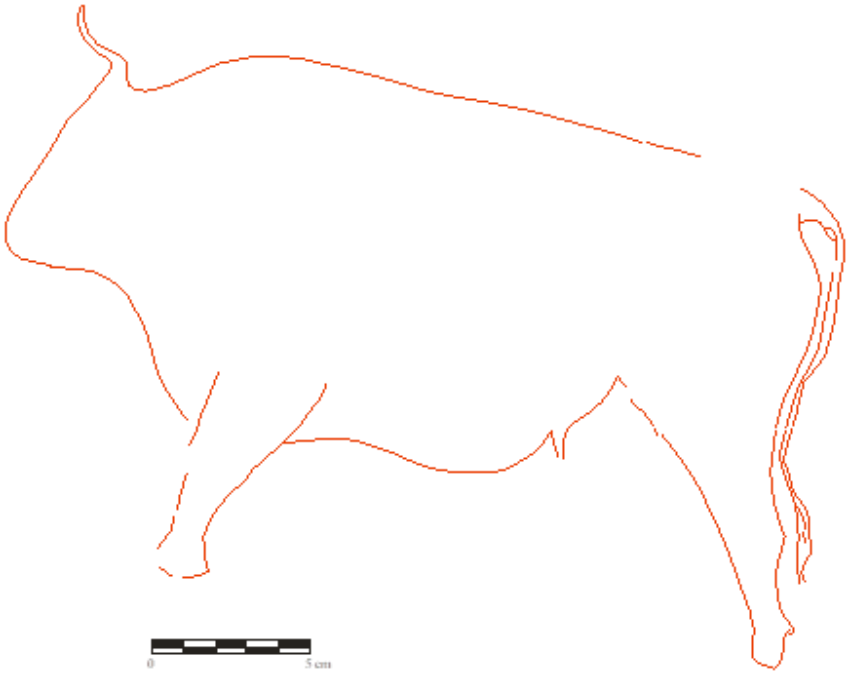


Figure 113. CCXIV Station "Toro Pelón”, bovid, done with Photoshop tracing (Collado, 2013).

6.2.13. Station CCXCIV: “Mouflon”. Isla Molino sector.

This station has large measurements 2.90 m. long and 1.60 m. wide and 1.20 m. high from the ground. The representations are grouped into two panels .Furthermore, both surfaces show intense wear marks and numerous mass losses and transverse cracks. The

figures include the abraded line, in addition to the usual pickets and filiform incisions (Collado et al., 2006; Collado, 2013).

19.Cervid

Represented in profile and poorly preserved due to the intense erosion. It is oriented to the right, the forehead by a thick abraded line that extends towards the muzzle. The concave jaw and continues through the chest and front leg where it ends. In the upper part of the head, there is a series of slightly wavy and unconnected lines that could be part of a brief antler. The buttock ends in a small line that indicates the tail. The belly is slightly hinted at by means of a rectilinear line. The dimensions of the figure are 33.03 cm. length by 37 cm. height (Figure 114) (Collado et al., 2006; Collado, 2013).

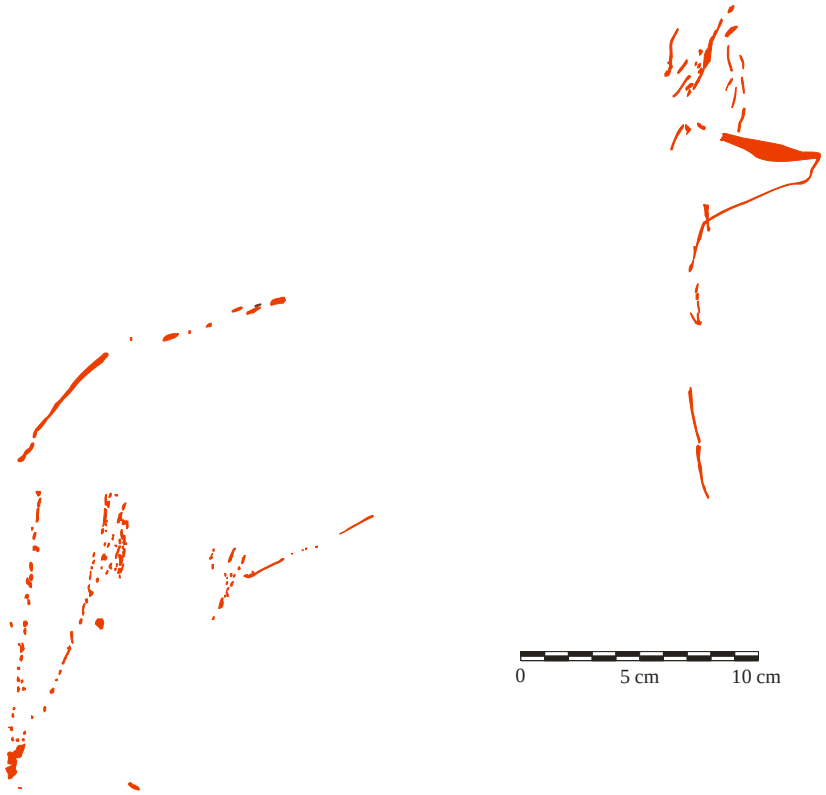


Figure 114. Tracing of the cervid of the CCXCIV Station "Muflón (Collado, 2013).

6.2.14 . Station CCCIII: “Chupacabras”. Crabs Sector.

It is a station that is generated on a surface of 170 cm. length, 110 cm. wide and 40 cm. high affected by two large longitudinal cracks. The techniques used in the execution of the figures located on this surface are picketing for post-Palaeolithic figures and incision in fine lines for the paleolithic zoomorphic motif and the rest of the schematic motifs (scattered linear beams and lines) (Collado, 2013).

20. Unidentified zoomorphic figure

Unidentified zoomorphic figure because of the poor state of conservation. It is oriented to the left, in absolute profile, the technique used is a filiform line. The head has been lost and only a gently undulating dorsal cervical line is visible. The back of the hind leg that is configured by two convergent lines lost in its lower area as well as practically the entire curve ventral and forelimbs. The figure measures 16 cm. length and 10.5 height (Figure 115) (Collado et al., 2006; Collado, 2013).

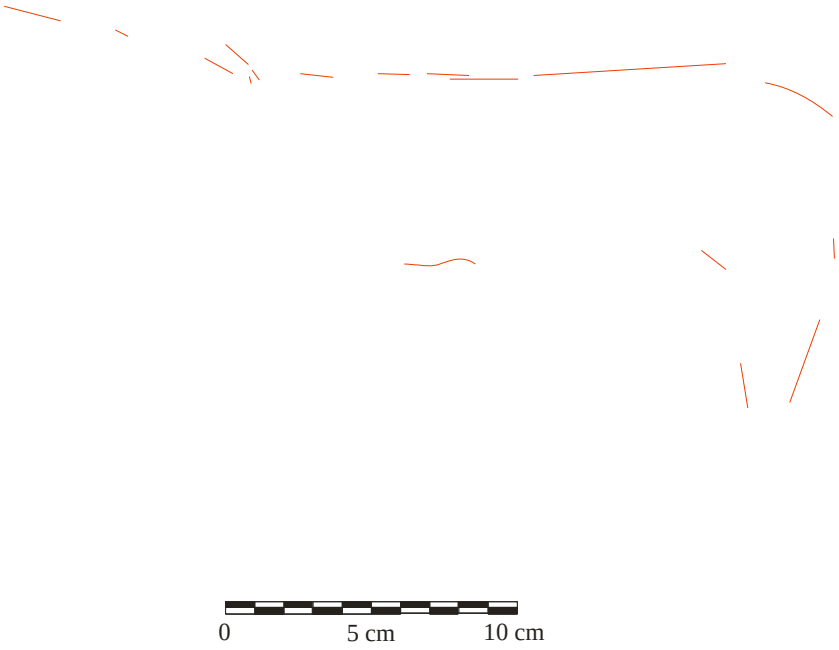


Figure 115. Station CCCIII: “Chupacabras” unidentified zoomorphic figure (Collado, 2013).

6.3. The Moinhola rock no 30

It is between several bundles of incised lines, keeps a linear and incomplete representation of equine, with the head and neck in absolute profile and part of the forequarters outlined present (Baptista, 2009).

Stylistically, it is identical to the type of motifs specially the head can be paralleled with that of the rock equid XV «Esquinera» by Molino Manzánez (Figure 116)(Collado, 2006)

Figure 116. Rock No.30 of Moinhola. Photo of the equid figure (Baptista, 2009).

6.2. Porto Portel

The engraving in Porto Portel is another incomplete motif, featuring an incised cervid in absolute profile. With a pointed head, a long antler, and the ear behind, a well-balanced neck and the start of the cervical-dorsal, are the features that configure this engraving with a beautiful effect. The figure is cervid. it is done with incision. It resembles the Molino Manzánez figure the XV «Esquinera» (Figure117) (Baptista,2009).

Figure117 .The incised cervid from Gudiana rocks with paleolithic engravings from Porto Portel.(Baptista, 2009).

CHAPTER 7, ANALYZING THE SW OF IBERIAN PENINSULA ZOOMORPHIC FIGURES

7.1. Escoural cave

General view

❖ The total zoomorphic figures in Escoural cave are 25. The identified figures are 19 (84%), while four figures are unidentified (16%) (Figure 118), and two new figures are discovered in documentation campaign 2021. The equid is the most represented figure in the cave with 16 figure (76%). Then the bovid is the second by five figures (24%) (Figure 119). There is no representation of cervid or goat or sheep (except one figure is not clear if it bovid or caprid (P1.44, fig. 71).

❖ The technique of figures in Escoural cave are engravings, and painting. Engravings figures are in total 14 figure (56%), while the paintings are 11 figures (44%) (Figure 120). The paintings divide between eight black pigments (73%), and three red paintings (27%) (Figure 121).

❖ Most of the zoomorphic figures in Escoural cave are partially represented. The head and the neck are represented in 20 figures (38%) (P1.4, fig. 5), (two heads in Pl.5, fig. 6), (pl.8 fig. 10), (Pl. 16, fig. 23), (PI.24, fig. 37), (PI.26, fig. 39), (PI.27, fig.40), (P1.28, fig. 42), (P1.29, fig. 44), (two heads in P1 .30, fig. 47), (Pl.34, fig. 55), (Pl.36, fig59), (P1.36, fig. 60), (P1.44, fig. 71), and (P1.45, fig. 72).

❖ Nevertheless, some zoomorphic figures represent other physical characteristics such as the dorsal cervical line that represented in eight figures (15%) (Pl. 6, fig. 7), (pl.8 fig. 10), (PI.16, fig. 24), (P1.19, fig. 30), (Pl.35, fig. 57), (Pl.36, fig59), (P1.46, fig. 75), and (Pl.70 A.). The ventral line represented in six figures (12%) (Pl.8 fig. 10), (PI.12, fig. 19), (PI.16, fig. 25), (partialy P1.19, fig. 30), (Pl.35, fig. 57), (P1.46, fig. 75) (Figure 122).

❖ As for the front leg, it is presented in four figures (7%) (PI.12, fig. 19) (Pl. 16, fig. 24), (Pl.36, fig. 59), and (P1.46, fig. 75). The hind legs are four figures (7%) (PI.12, fig. 19) , (Pl. 16, fig. 24), (P1.19, fig. 30), and (Pl.35, fig. 57) (Figure 122).

❖ The ears are present in seven figure (15%) (P1.4, fig. 5), (two heads Pl.5, fig. 6), (PI.24, fig. 37), (PI.26, fig. 39), and (two heads P1 .30, fig. 47). Most of ears are represented as single ears which give the impression, that they are represented in a profile.

❖ The antlers and the horns are present in four figures (7%) (Pl.34, fig. 55), (P1.44, fig. 71), (P1.64A), and (Pl.70 A). One figure gives the absolute profile of the two horns figure (P1.44, fig. 71) (Figure 122).

❖ The orientation preference of the figures is the right 56% rather than the left 44% (Figure 123).

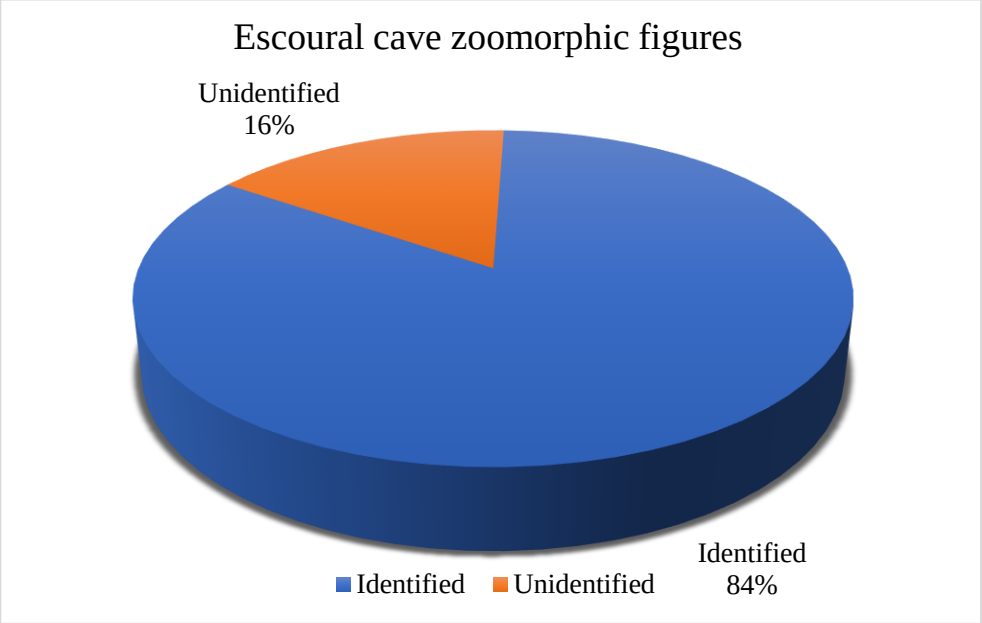


Figure 118. Chart represents the numbers of identified and unidentified zoomorphic figures in Escoural cave (Hasnaa Askalany).

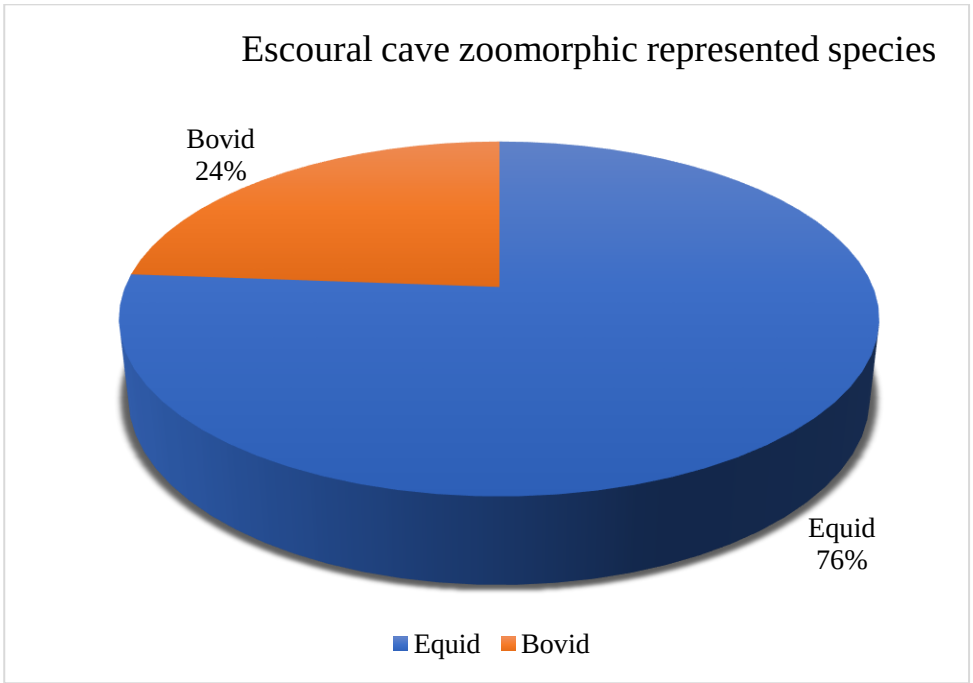


Figure 119. Chart represents the zoomorphic represented species in Escoural cave (Hasnaa Askalany).

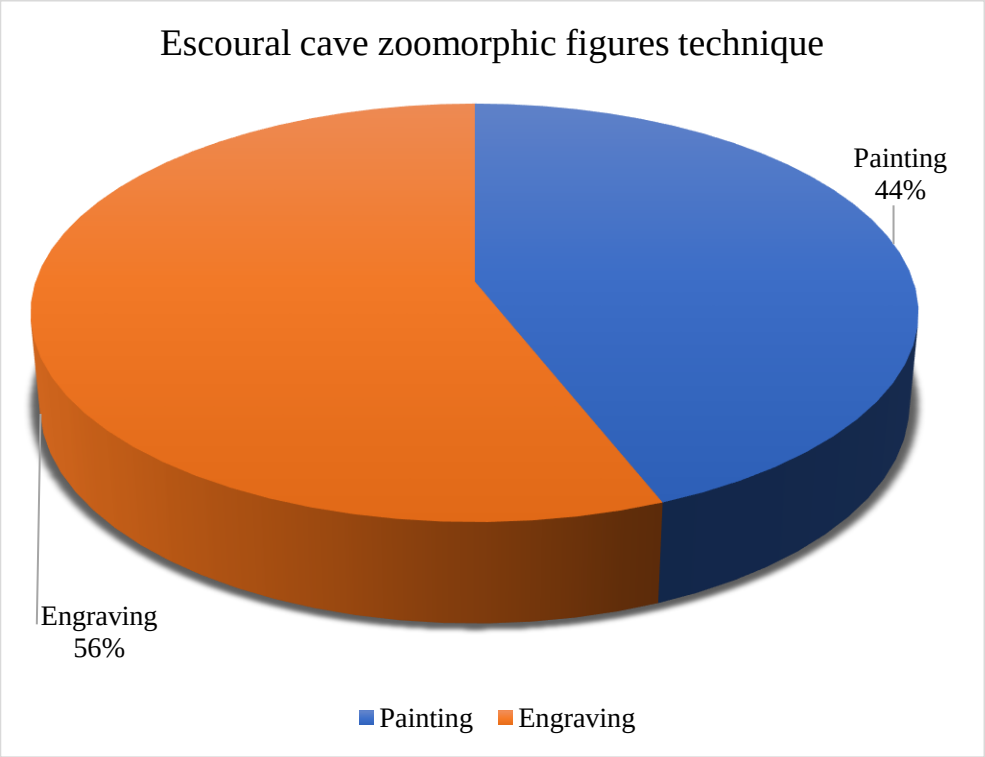


Figure 120. Chart represents the technique of the zoomorphic figures in Escoural cave (Hasnaa Askalany).

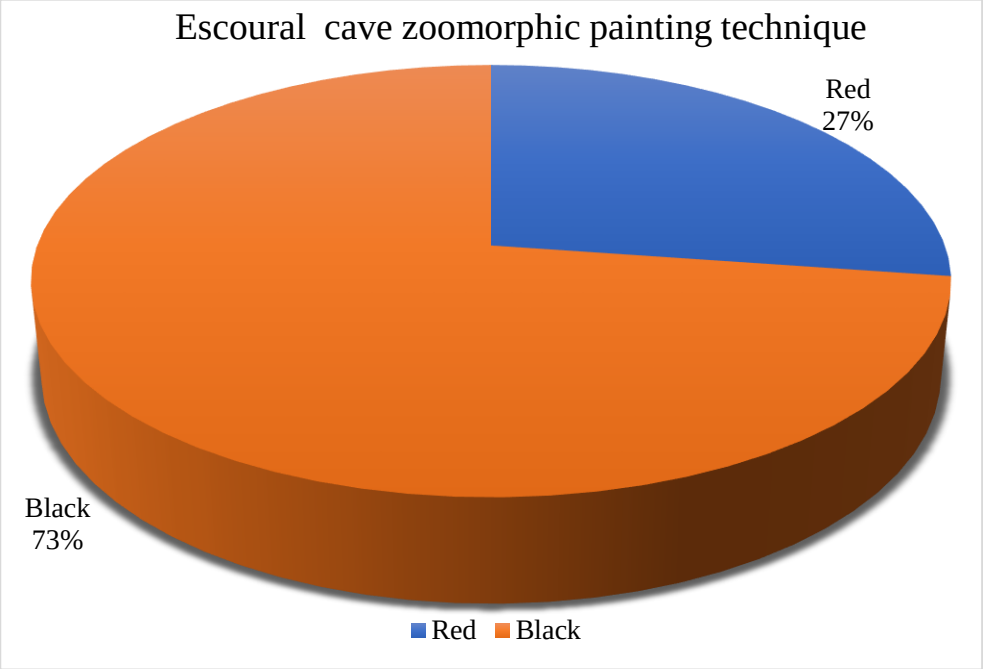


Figure 121. Chart represents the colors of pigments used in Escoural cave (Hasnaa Askalany).

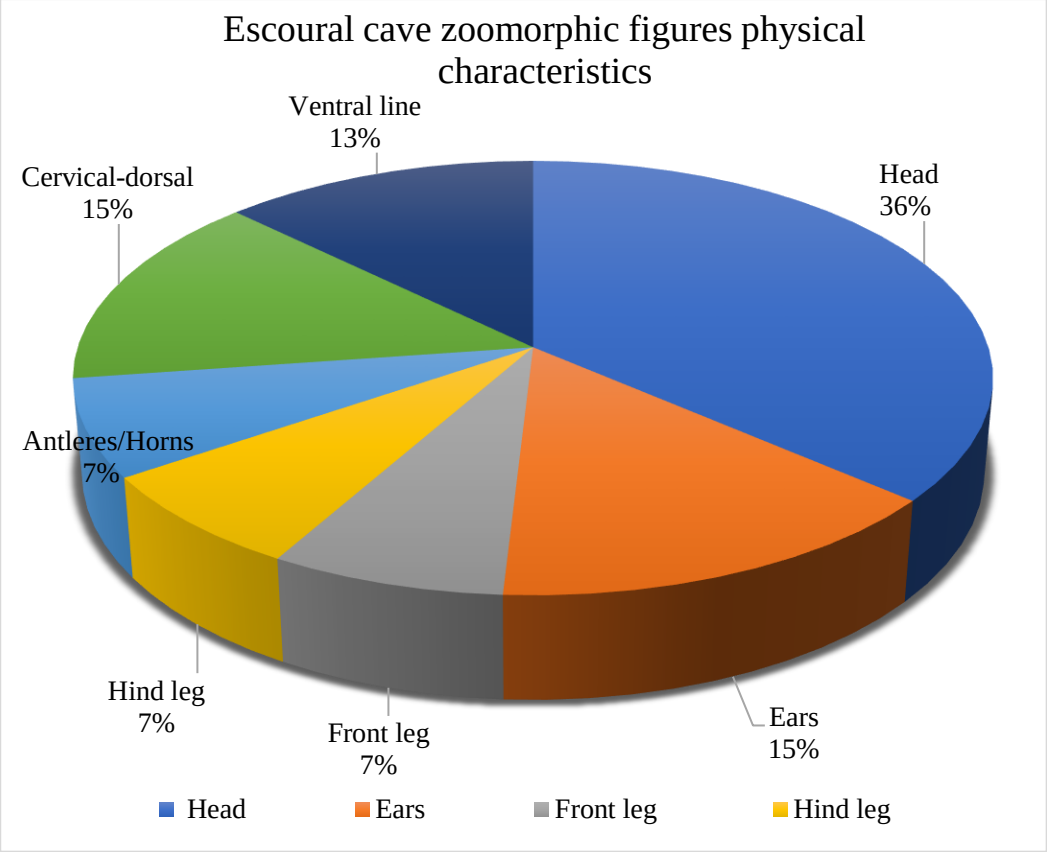


Figure 122. Chart represents the physical characteristic of the zoomorphic figures in Escoural cave (Hasnaa Askalany).

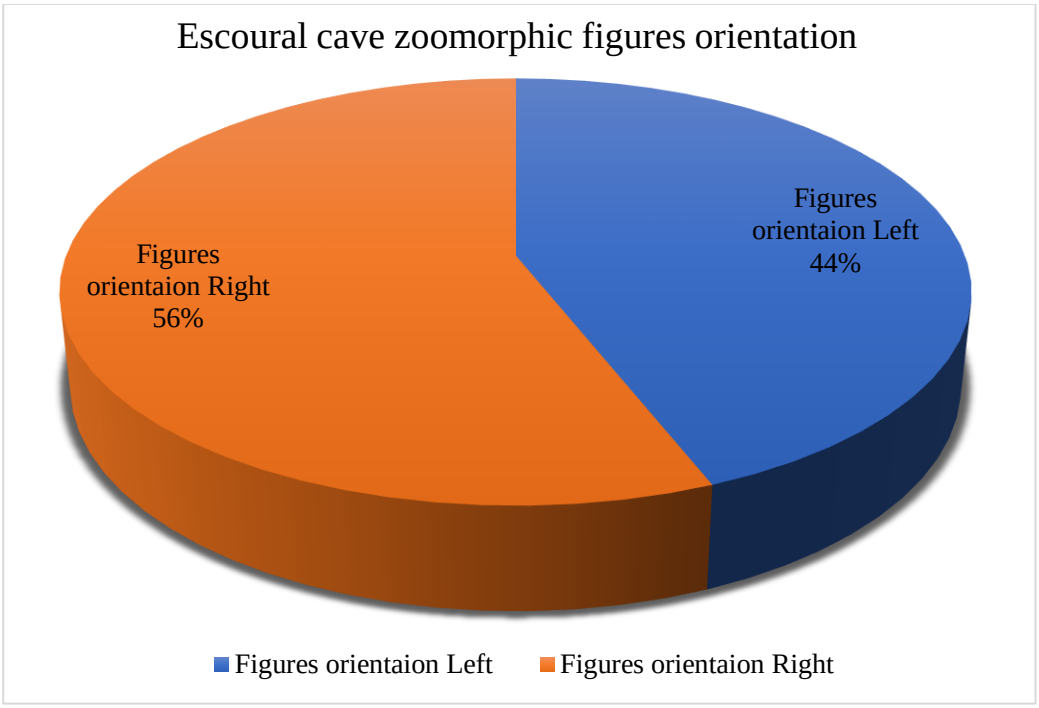


Figure 123. Chart represents the orientation of zoomorphic figures in Escoural cave (Hasnaa Askalany).

The figures of the equid

❖ There are 13 confirmed equid figures (68%), which are (P1.4, fig. 5), two (Pl.5, fig. 6), (pl.8 fig. 10), (PI.24, fig. 37), (PI.26, fig. 39), (PI.27, fig.40), (P1.28, fig. 42), (P1.29, fig. 44), two (P1 .30, fig. 47), (P1.36, fig. 60), (P1.45, fig. 72). There are three headless equid figure (16%) (P1.19, fig. 30) (Pl.35, fig. 57), and (P1.46, fig. 75). Finally, there are three figures (16%) could represent equid (Pl. 16, fig. 23), (PI.16, fig. 25), and (PI.27, fig.40) (Figure 124).

❖ In terms of technique, there are 12 engraving figures (63%), which is more used than paintings that is only represented in seven figures (37%). In terms of painting the red pigment are used only in two figures (pl.8 fig. 10) and (P1.45, fig. 72) (22%), while the black pigments are present in five figures (78%), (P1.19, fig. 30), (P1.29, fig. 44), and (P1.36, fig. 60), and for the possible figures three black pigments (Pl. 16, fig. 23), (PI.16, fig. 25) and (P1.29, fig. 44) (

❖ Figure *125*, Figure 126).

❖ Most engraved equids heads have linear decoration lines. It is clear in figures, (P1.4, fig. 5), two heads (Pl.5, fig. 6), two heads (PI.24, fig. 37), (PI.26, fig. 39), (P1.28, fig. 42), and (P1 .30, fig. 47). Some figures have resembling, which is clear in the figures (Pl.5, fig. 6) and (P1 .30, fig. 47). Each figure is composed of two equids' heads, one big and next to it a smaller equid figure. It could interpret as a mother equid and her child, and the artist saw it in the surrounding landscape.

❖ Also, in figures (P1.4, fig. 5) and (PI.24, fig. 37) both equids their heads are down. They both have linear decoration and have the same vertical engraving line that cut them in the neck.

❖The physical characteristics of Escoural cave equid are represented in the chart (Figure 127). We can see both cervical and ventral lines appeared in three figures (9%) (pl.8 fig. 10), (Pl.35, fig. 57) and (P1.46, fig. 75), and partial in figure (P1.19, fig. 30). The front leg presents only in one figure (3%) in figure (P1.46, fig. 75). The hind leg present in two figures (9%) in figures (P1.19, fig. 30), (Pl.35, fig. 57).

❖ The muzzle of the equid shape is diverse. Two equids have rectangular muzzle shape (Pl.5, fig. 6) and (P1.28, fig. 42). Three equids have three ducks' bills muzzle shape such as (pl.8 fig. 10) , (P1.29, fig. 44) and (P1.45, fig. 72). Four equids have and triangular

muzzle shape in (P1.4, fig. 5), (PI.24, fig. 37), (PI.26, fig. 39), and (P1 .30, fig. 47). Finally two equids have rounded muzzle shape in (P1.36, fig. 60).

❖ The ears are represented in six figures (21%). There also are diverse there are the triangular ear-shape in figures (pl.4 fig. 5), the small equid in (Pl.5, fig. 6), (PI.26, fig. 39), the two equid in (Pl .30, fig. 47). Rounded ear shape in the big equid (Pl.5, fig. 6), semi rounded (PI.24, fig. 37) (Figure 127).

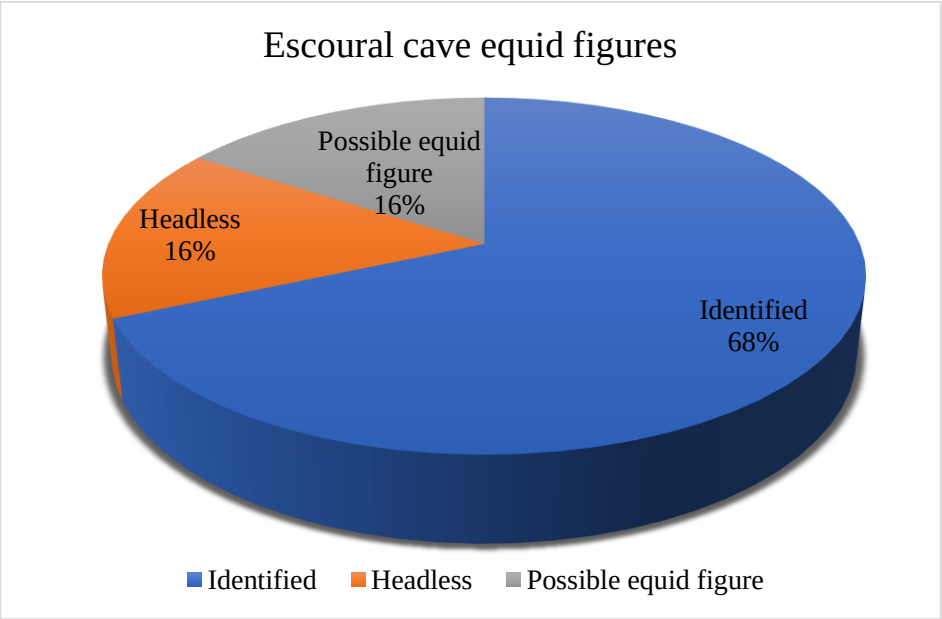


Figure 124. Chart represents the equid figure in Escoural cave (Hasnaa Askalany).

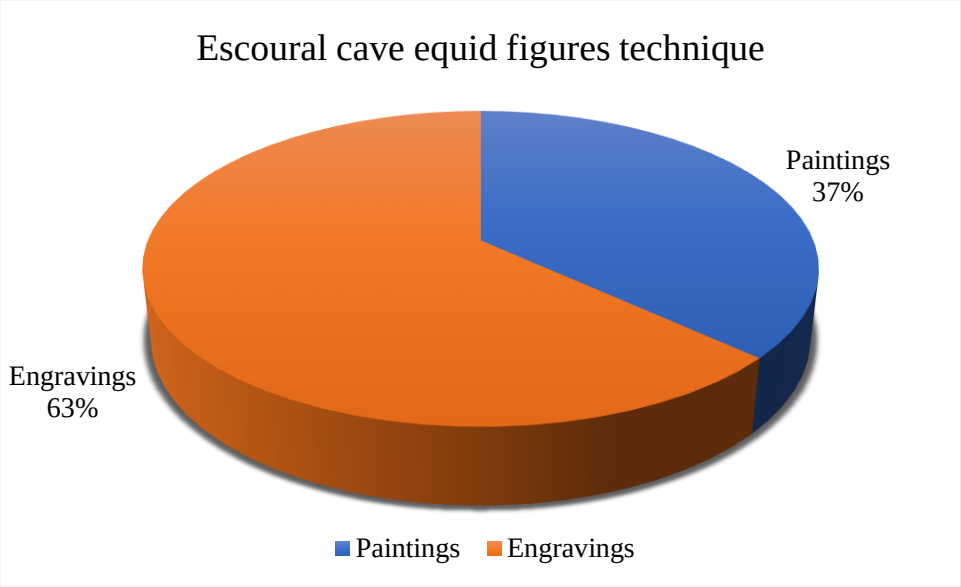


Figure 125. Chart represents the technique in the equid figures in Escoural cave (Hasnaa Askalany).

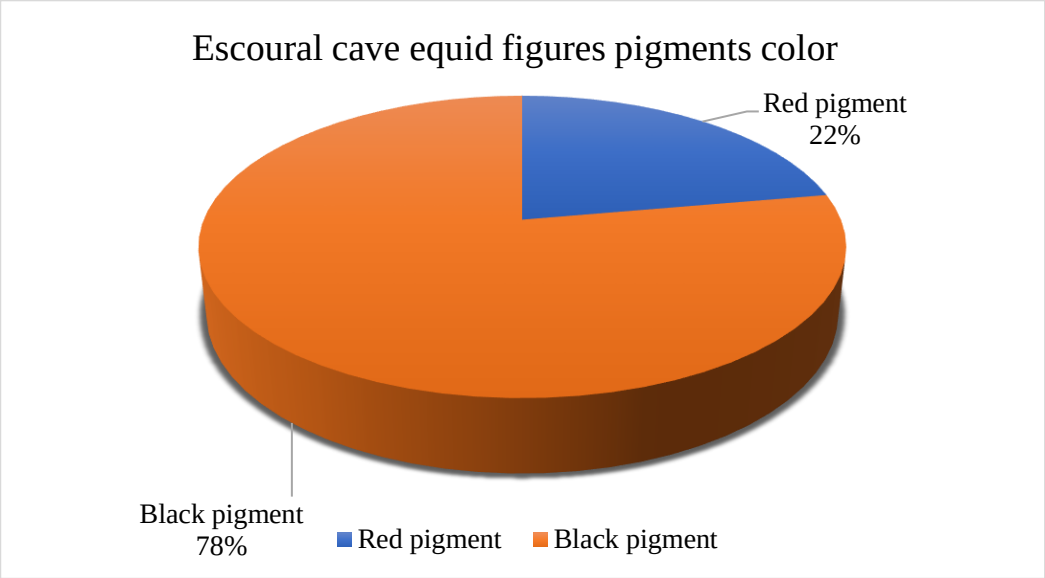


Figure 126. Chart represents the colors of pigments used in the equid figure in Escoural cave (Hasnaa Askalany).

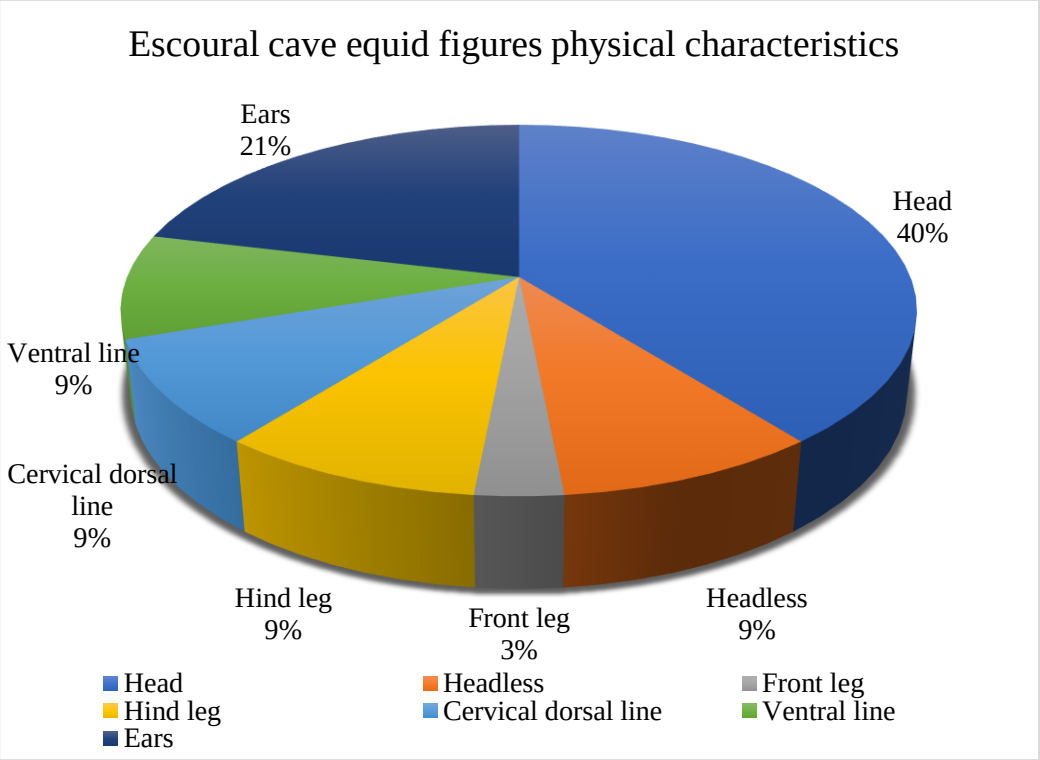


Figure 127. Chart represents the physical characteristic of the equid figures in Escoural cave (Hasnaa Askalany).

The figure of the bovid

❖ There are five of bovids figures, two figures are identified (20%) in (Pl. 16, fig. 24), (P1.34, fig. 55), one figure is unidentified in (Pl.44, fig. 71). In addition to the two new figures (40%) are discovered (P1.64 A) and (Pl.70 A) (Figure 128).

❖ The technique used is engraving with three figures (67%) and painting with (33%) each. The engraving figures are (P1.34, fig. 55), (P1.44, fig. 71), and (Pl.70 A). The painting figures are; one figure has black pigment (Pl. 16, fig. 24) and one figure has red pigment (P1.64 A) (Figure 129, Figure 130).

❖ There is not much detail in the bovid figures, only the horns are represented in four figures (29%) (Pl.34, fig. 55), (P1.44, fig. 71), (Pl.70 A), (P1.64 A). There are two figures (14%) have only cervical dorsal line in figure (Pl.70 A.), and (Pl. 16, fig. 24) (Figure 131).

❖ Figure (Pl. 16, fig. 24) is the only figure (7%) has ventral line, front, and hind leg (Figure 131).

❖ The muzzle shape of the bovid figures is different. Two bovid figures have rectangular muzzle-shape (Pl.70 A), and (P1.64 A). while in one bovid figure (Pl. 16, fig. 24) has rounded muzzle-shape.

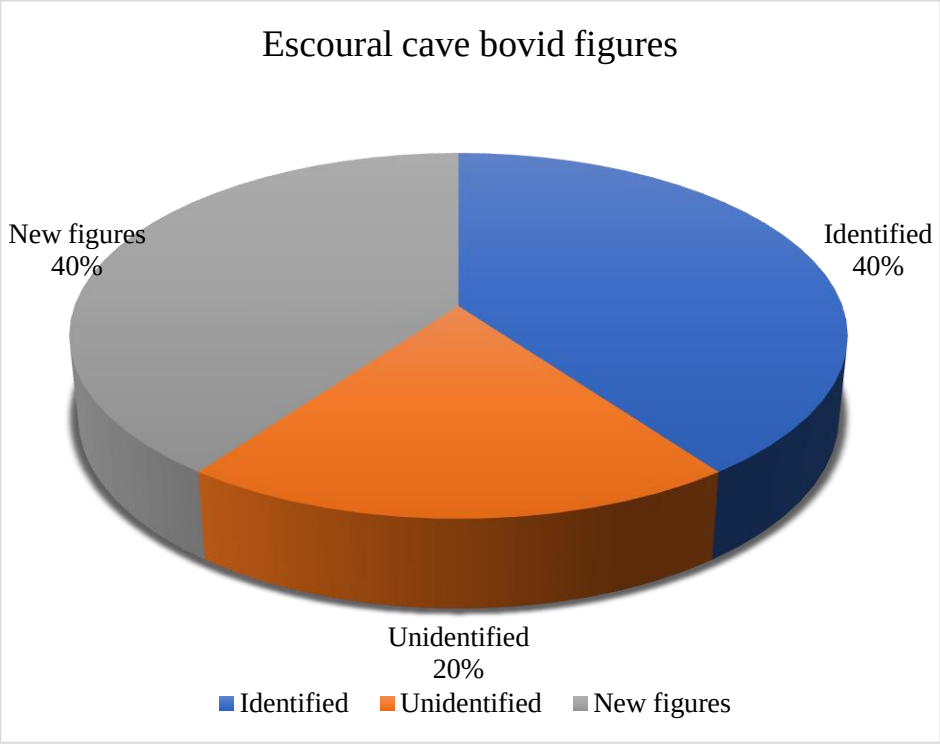


Figure 128. Chart represents the bovid figures in Escoural cave (Hasnaa Askalany).

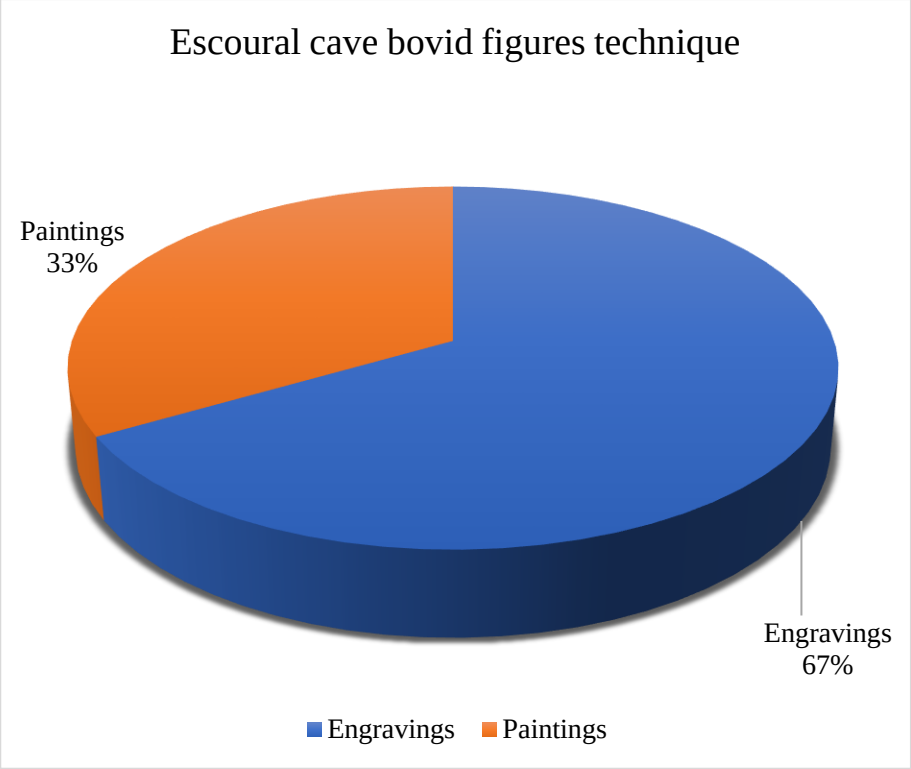


Figure 129.Chart represents the technique of the bovid figures in Escoural cave (Hasnaa Askalany).

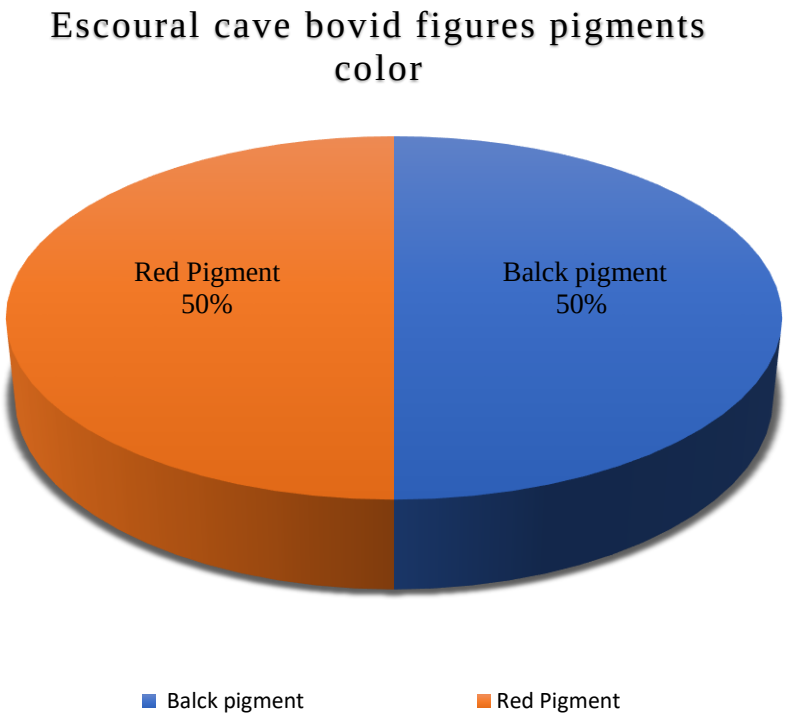


Figure 130. Chart represents the bovid figures of pigment colors in Escoural cave (Hasnaa Askalany).

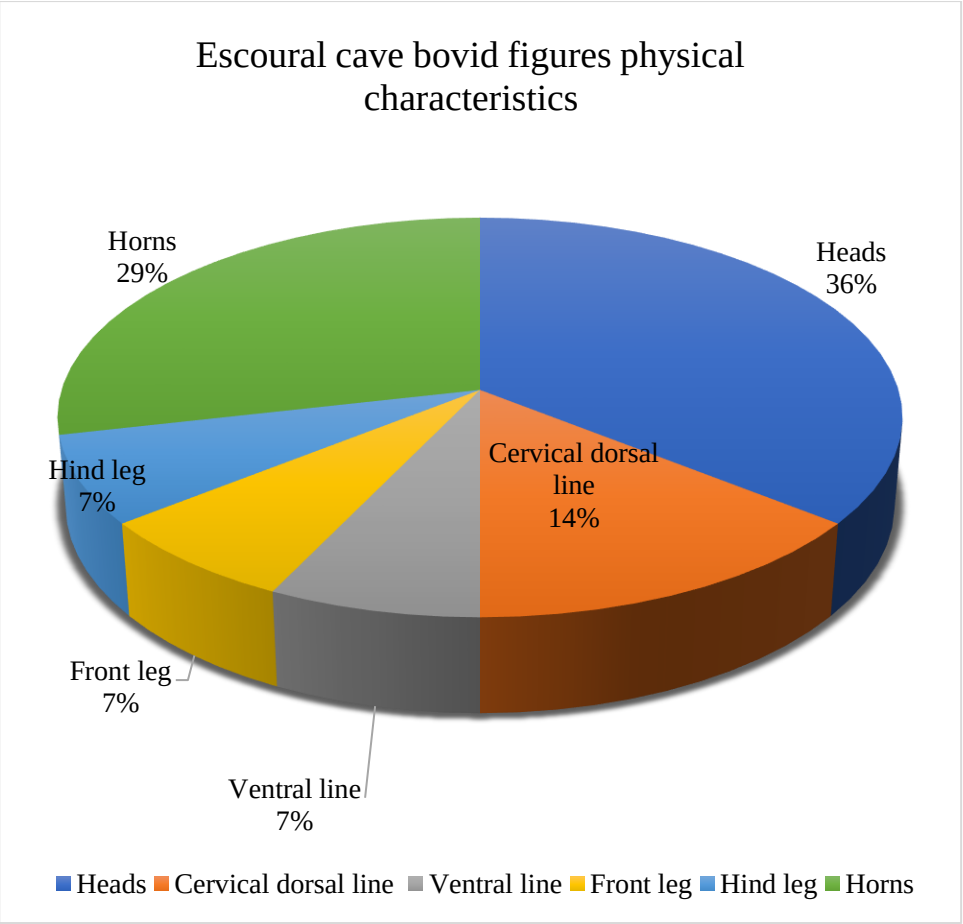


Figure 131, Chart represents the physical characteristics of the bovid figure in Escoural cave, (Hasnaa Askalany).

7.2. Maltravieso cave

General view

❖ Based on Collado, 2021 unpublished material data, that helped the scholar to analyze the zoomorphic partial art figures of the Maltravieso cave .

❖ Here, the data present a total of 17 figures. The identified ones are 13 figure (76%), and the unidentified figures are four figures (24%) were only CIV-1, GSVII-2, GSIX-1, CHIII-1 (Figure 132).

❖ The equid figure is also the highest represented species with nine figures (60%) CIII-1, GSIX-2, CHIII-2, CHIII-3, CHIII-4, CHIII-5, CHVII-1, CHVIII-2, and SACI-1. Then the cervid are three figures (20%) CIII-2, GSVIII-1, and CHIII-5. The bull is two figures (13%) in CV-1, and CHIII-4. Finally, the goat is one figure (7%) PIV-8 (Figure 133).

❖ In terms of technique (Figure 134, Figure 135), we can see that engravings are 13 figures (76%). It is the highest technique represented in Maltravieso cave, while paintings are four figures (24%). There are only three painting in the figures CHIII-1, CHIII-2, and CV-1. Another technique was found is the airbrushing CIV-1. This technique has filling with special intensity the areas corresponding to the eye, snout and muzzle of the animal. In terms of colors CHIII-1, and CV-1 are painted with black pigment, while CHIII2, and CV1 are represented in red pigment (Figure 135). The figures do not have linear decoration lines as Escoural cave, but some of the figures show representation of the eye such as figures CV-1, CIV, CIII-2, GS IX, GSVII-2, and GS VIII-1.

❖ We can also see the same technique used in Escoural cave used in Maltravieso, with that most animal figures are represent as partial figures, also the headless figures in Escoural cave are represented here in Maltravieso cave figures SACI-1, CHII-1, and CHII4.

❖ In terms of physical characteristics of zoomorphic figures in Maltravieso cave (Figure 136), the cervical dorsal line is repented in five figures (25%) GSVIII-1, SACI-1, CHIII-3, CHIII-5, and CHVIII-2, while the ventral line is only in one figure (5%) SACI-1. The front leg is in four figures (20%) in GSVIII-1, SACI-1, CHIII-1, and CHVIII-2, and the hind leg is only in one figure (5%) GSVIII-1.

❖ Antlers and horns are represented in four figures (20%), the antler is in figure CIII-2, and the horns are in figures CV-1, PIV-8, and GSVIII-1. The ears are represented in five figures (25%) GSVIII-1, CHIII-2, CHIII-3, CHIII-5, and CHVII-1.

❖ Regarding the orientation of the figures, the orientation preference is to the left with (71%) and (23%) to the right (Figure 137). Except one figure with 6% is looking up to the ceiling GSVII-2. In some figures the artist shows intentions of corrections such as SAC I - 1. The correction sometimes did not accomplish the requested result as in figure GS IX. Another anatomy figure that was not correct GSVIII-1. There is a panel that has intense figures in Chimney where we can 5 figures, from CH-1 till CH-5.

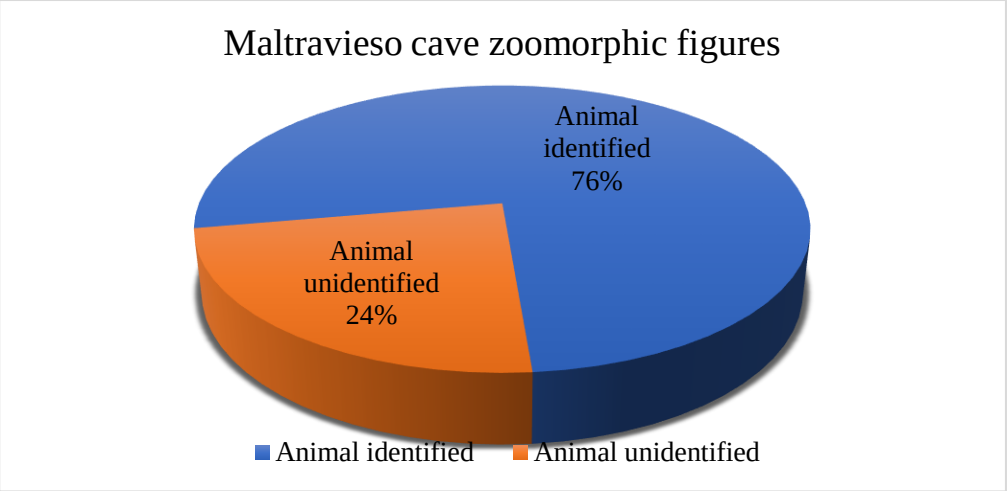


Figure 132. Chart represents the numbers of identified and unidentified figures in Maltravieso cave (Hasnaa Askalany).

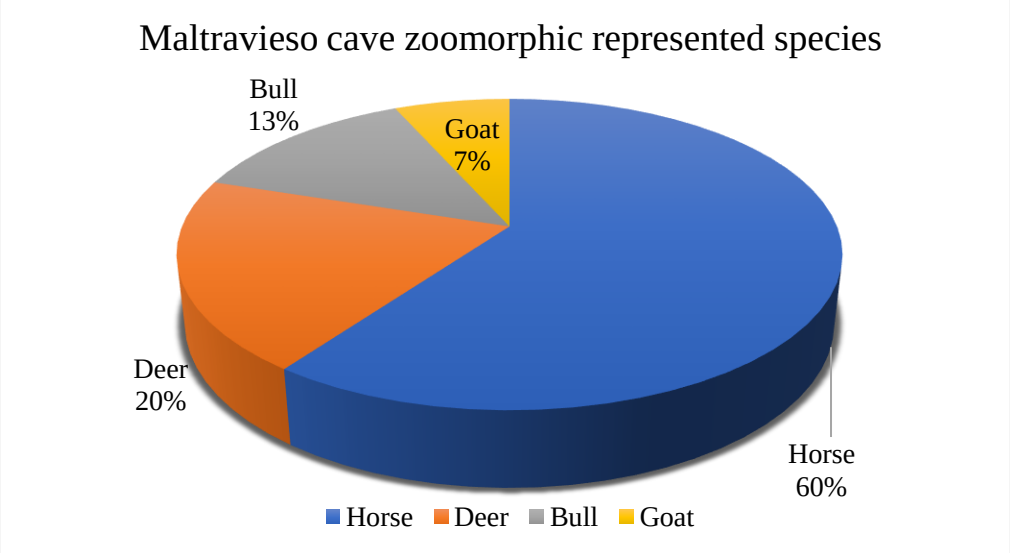


Figure 133. Chart represents the species of the zoomorphic figures in Maltravieso cave (Hasnaa Askalany).

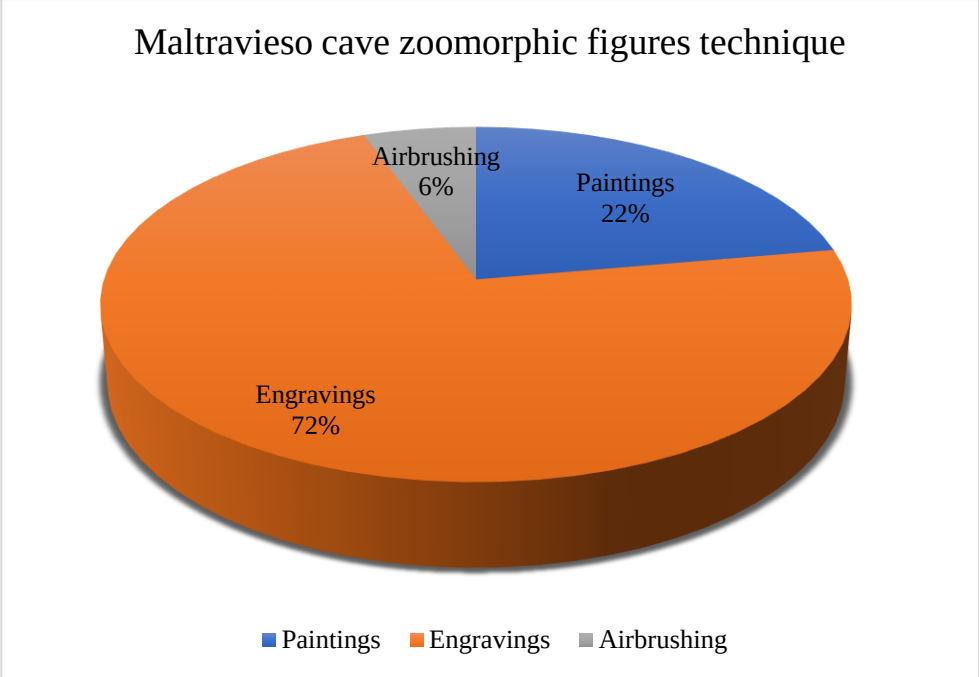


Figure 134, Chart represents the technique of the zoomorphic figures of Maltravieso cave (Hasnaa Askalany).

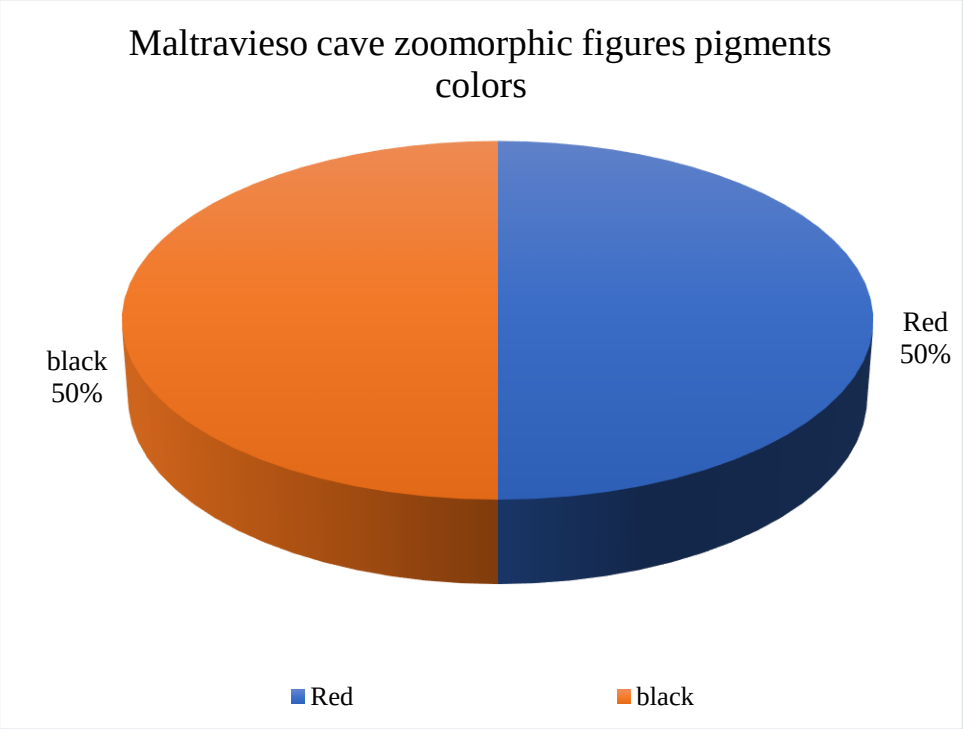


Figure 135. Chart represents the colors of pigments used in Maltravieso cave (Hasnaa Askalany).

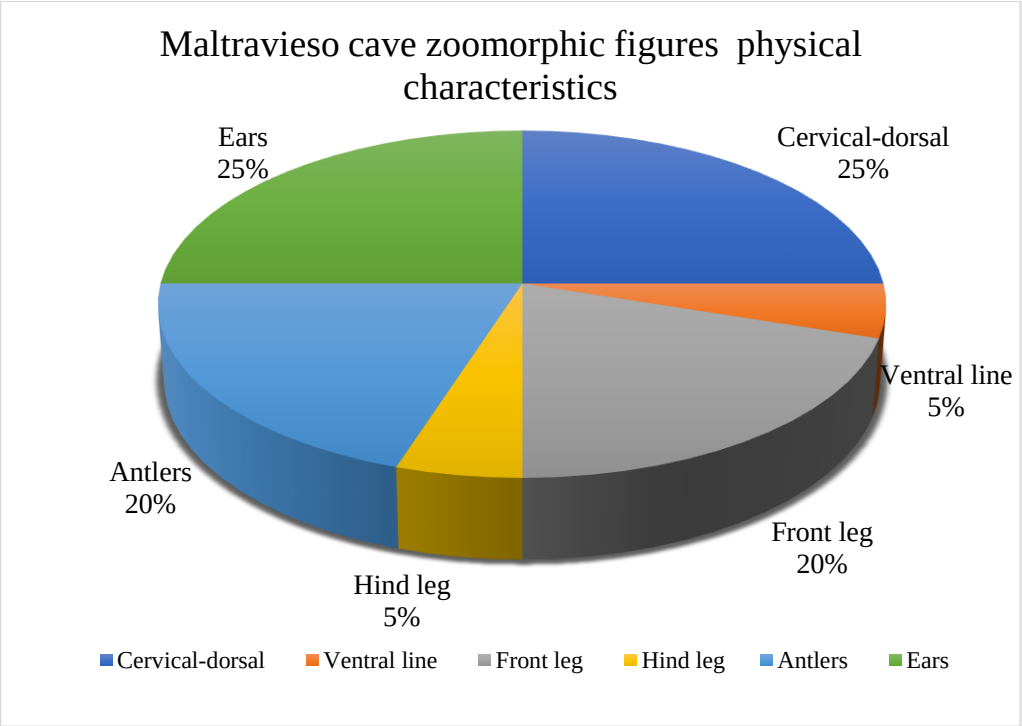


Figure 136, Chart represents the zoomorphic figures physical characteristic of Maltravieso cave (Hasnaa Askalany).

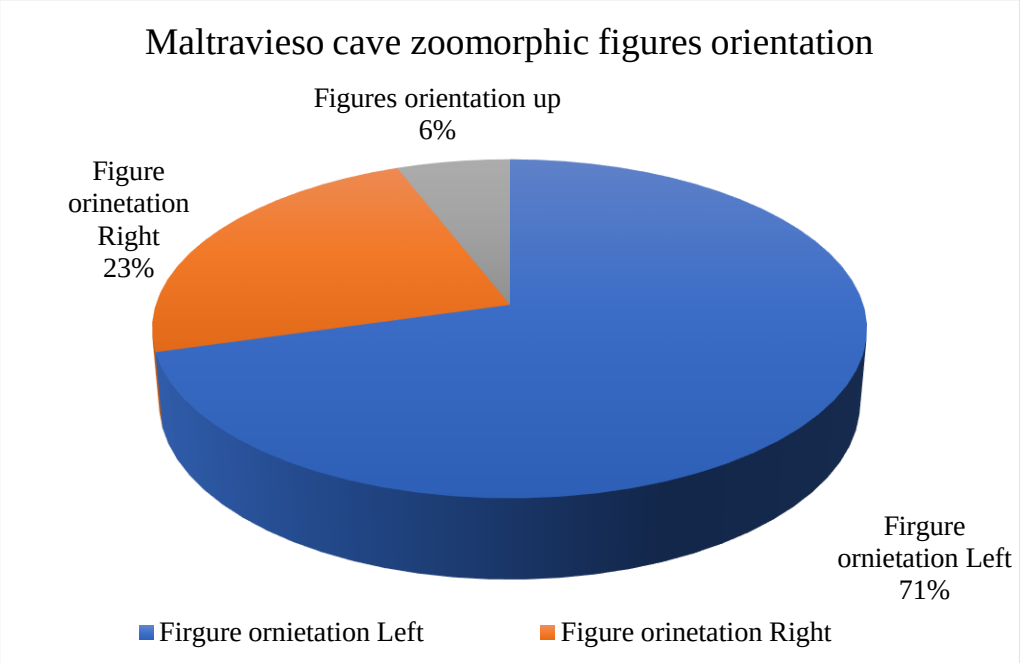


Figure 137.Chart represents the orientation of the figures in Maltravieso cave (Hasnaa Askalany).

The figure of the equid

- The total of the equids are 9 figures. They are represented in eight figures mostly in engraving (89%) except one red painting (11%) in C III (Figure 138).
- In terms of physical characteristic, the equids are normally presented partial figures. There are two figures have cervical dorsal line (12%) in CH VII-2 and SAC-1, which also they show the front leg (12%) and only one figure has the ventral line (6%) in figure CH VII-2. The ears are represented three figures with (17%) in figures CH III-2, CH III-3, CH VII-1 (Figure 139).
- The muzzle in the CHIII-1 shows that it was not presented correctly and shows default, and figure GSIX-2 a very elongated snout that does not close, a clumsy posterior grinding is clearly visible, which noticeably deforms the animal's nose.
- Some were painted in red and had intensive pigment in the muzzle area like figure CHIII-1. Some have a mouth duck bill, GSIX-2, SAC-1, CHIII-2, CHIII-3, CH VII-1, CH VII-2 .
- Some figures were represented with cervical dorsal line such as figure SAC-1.
- Some of the equids are represented in bigger anatomy such as figures CH VII-1, and CH VII-2, or irregular lines due to the wall that supports the engraving SAC-1 that also shows correction in the figure .
- Some figures have ears like CHIII-2, CHIII 3, and CH VII-2 the ears look triangular-shaped.
- We can see in general that the equid is oriented to the left are five figures (56%) represented in figures CIII-1, SACI-1, CHIII-5, CHVII-1, CHVII-2, while the figures GSIX-2, CHIII-2, CHIII-3, and CHIII-4 are oriented to the right (44%), which is giving a balance in orientation concept (Figure 140).
- There are some figures resemble Escoural cave such as the representation (P1 .30, fig. 47), such as the two equids, however we can see in the figure CHIII-1-2 that they could not made by the same artist (Figure 141).

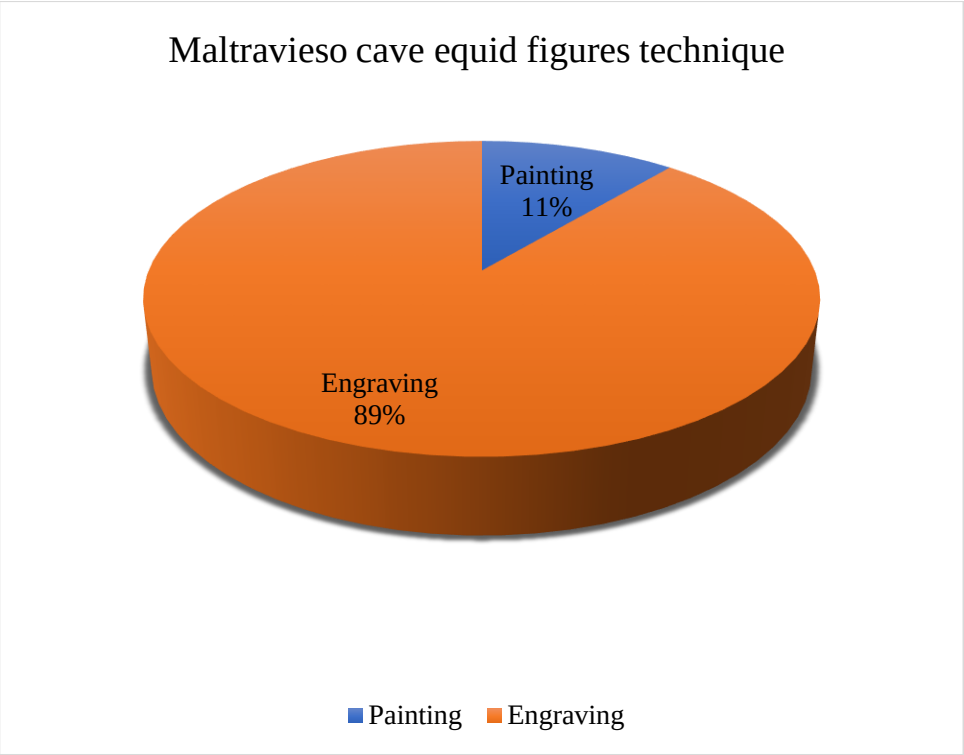


Figure 138, Chart represents the equid figures in Maltravieso cave (Hasnaa Askalany).

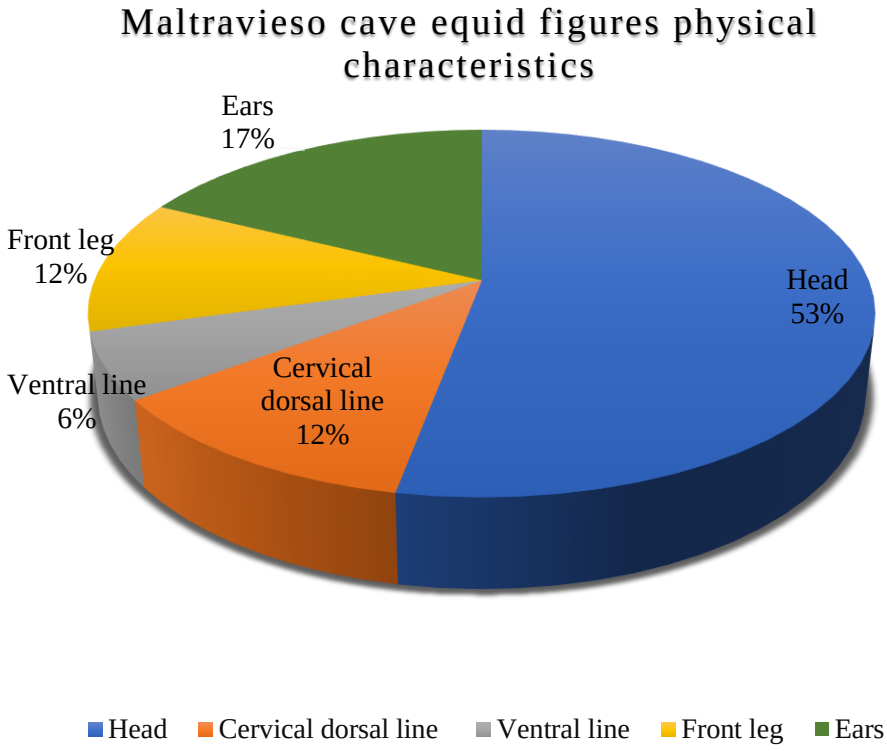


Figure 139, Chart represents the physical characteristics of equid figures in Maltravieso cave (Hasnaa Askalany) .

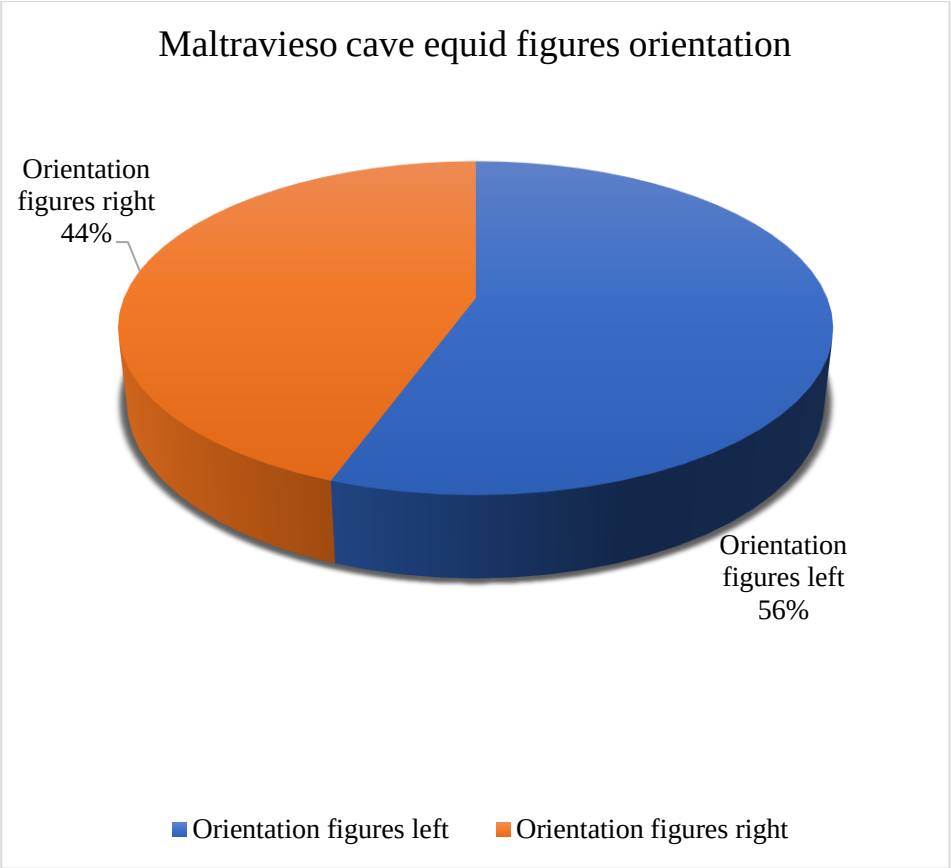
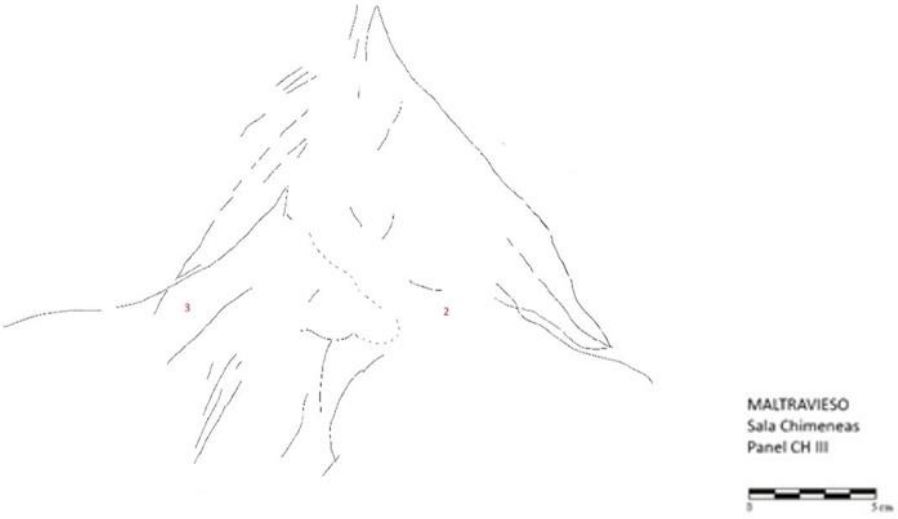


Figure 140.Chart represents the orientation of the equid figures in Maltravieso cave (Hasnaa Askalany).



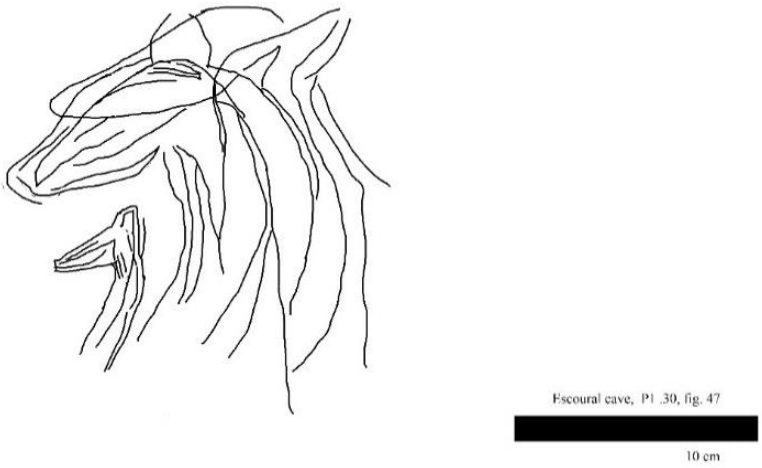


Figure 141.Presents the similarities between Escoural cave (P1 .30, fig. 47) and Maltrvieso cave (Collado, 2021, Hasnaa Askalany)

The figure of the bovid

❖ Maltravieso cave has two bovid figures CV and CHIII-4 (33%) (Figure 142), they are represented in painting technique. The shading in the eye area in figure CV is presenting a morphology very similar to that already seen in the figure CIV-1.

❖ Though the chart represents balance in anatomical details (20%) for head, headless, horns, tail, and eye, however CV in terms of anatomy is the one that has shown some details like the head, horn, eye, and rear part like tail (Figure 142).

❖ Regarding orientation of the bovid figures, they are balanced, CV-1 figure is in the left and CHIII-4 is in the right (Figure 144).

❖ In terms of technique there are balance (50%) for each technique. One engraving figure CHIII-4 and one figure in painting, black pigment CV (Figure 145).

The cervid figures

❖ The cervids are only represented in three figures CIII-2, GSVIII-1, CHIII-5 (50%), which was not found in Escoural cave (Figure 142).

❖ In terms of technique the engraving with 67% was more used than the painting 33%. however, in figure C III-2 is in terms of technique represented in black pigment and has some details like the eye as it is topped in the forehead and some divergent lines give the impression of antlers.

❖ In terms of anatomy, the head with 34% is present in all figures. The Antlers with 22% was only in two figures CIII-2, and GSVIII-1. The eye with 22% was present in two figures CIII-2, and GSVIII-1. The ear with 11% was pronounced in one figure CHIII-4. The cervical dorsal line was present with 11% in figures GSVIII-1, and CHIII-4 (Figure 146).

❖ Figure GSVIII-1 has numerous concomitances with the representation of the incised doe in figure CHIII-4. Very elongated head, stretched neck, ears or antlers thrown back, similar attitude and position of bellowing or browsing. But figure GSVIII-1 has not corrected anatomy.

❖ All the cervids figures are oriented to the left.

❖ Finally, the goat is the only represented in figure PIV-8 (17%). It is not represented in high numbers compared to the equid figures (Figure 142). It is represented in Maltravieso cave and is not represented in Escoural cave. In terms of technique, it is represented in engraving and both antlers are curved and have a V shape and are represented in the absolute profile. The muzzle has rectangular shape. The figure orientation is to the left.

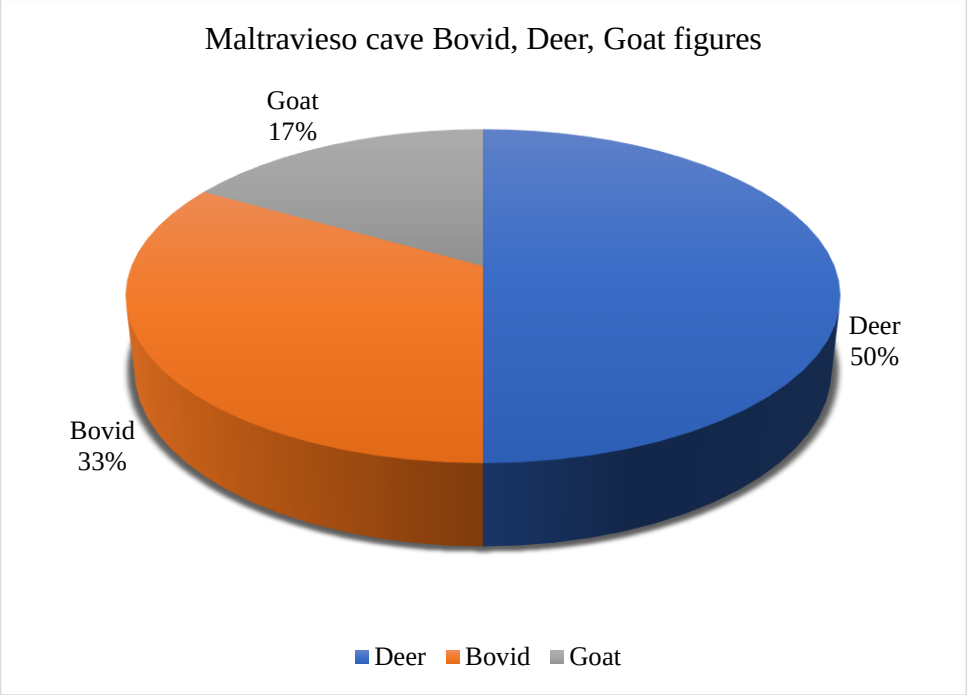


Figure 142. chart represents other zoomorphic figures in Maltravieso cave cervid, bovid, and goat (Hasnaa Askalany).

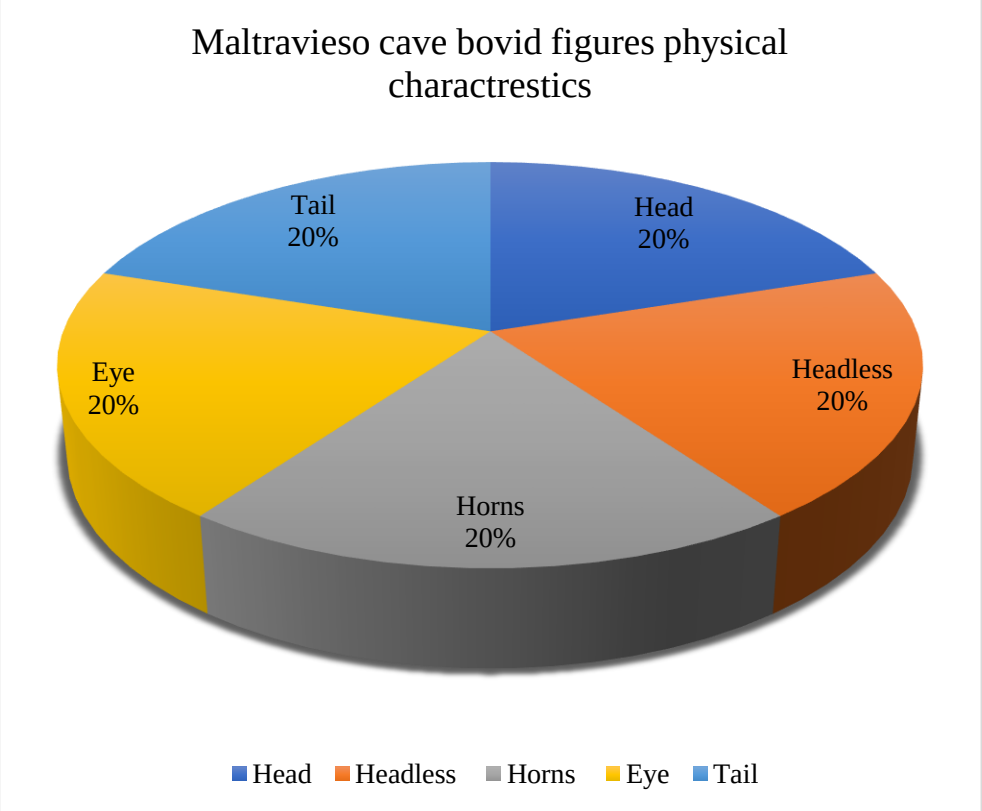


Figure 143, Chart represents the physical characteristics of the bovid figures in Maltravieso cave (Hasnaa Askalany).

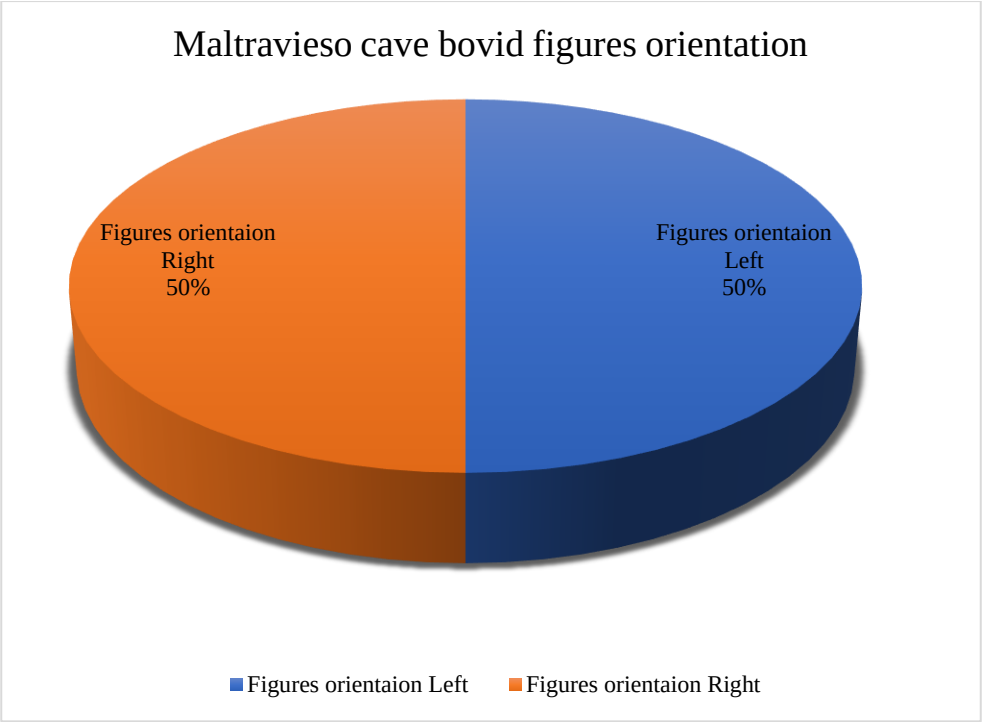


Figure 144. Chart represents the technique of bovid figures in Maltravieso cave (Hasnaa Askalany).

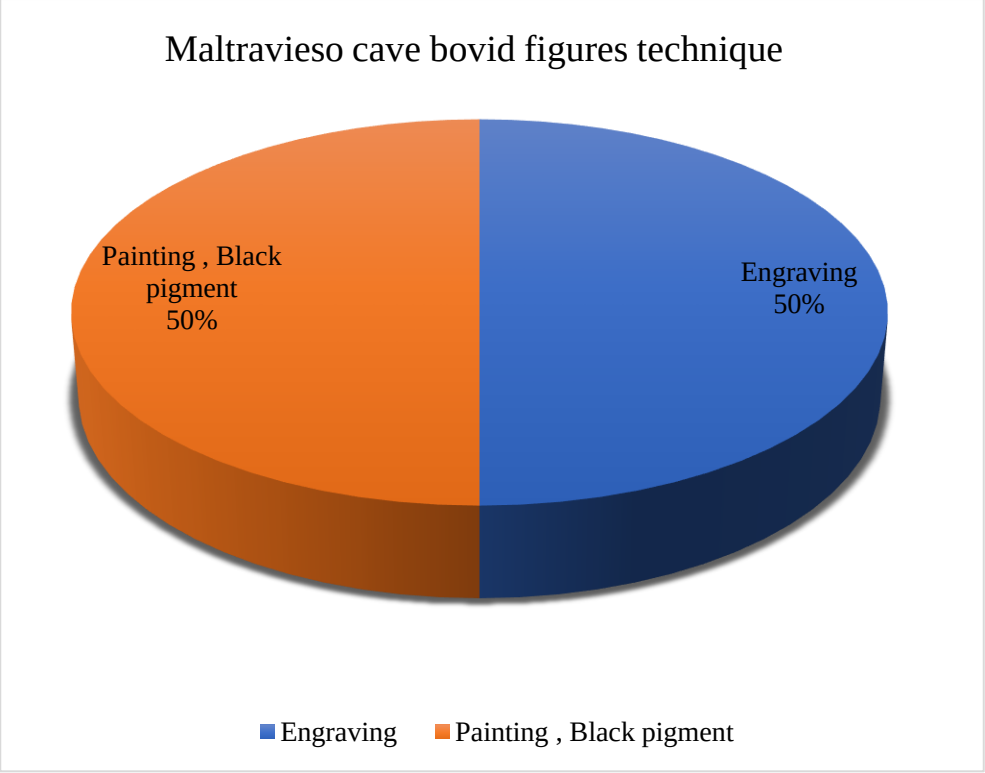


Figure 145. Chart represents the colors of pigments used in Maltravieso cave (Hasnaa Askalany).

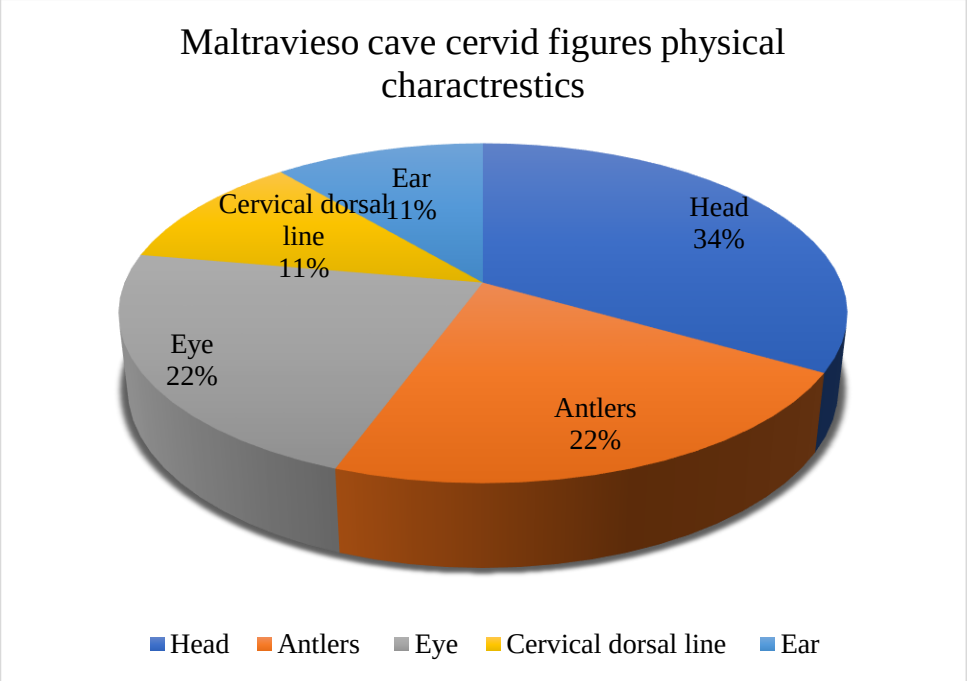


Figure 146. Chart represents the physical characteristics of the cervids figure in Maltravieso cave (Hasnaa Askalany).

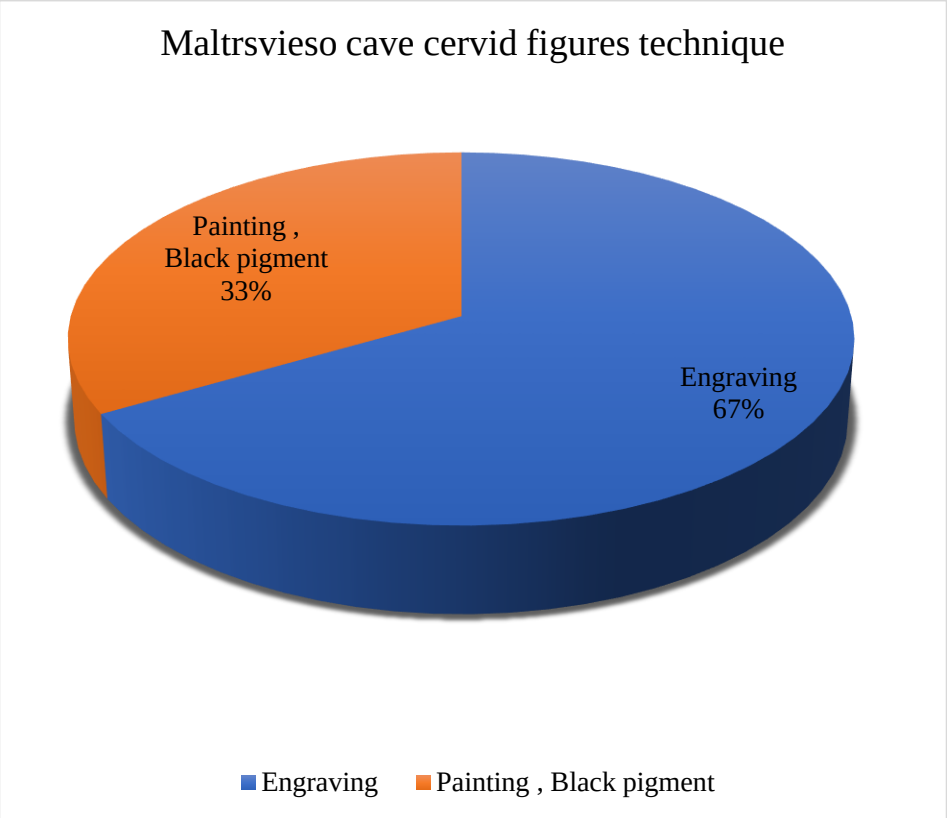


Figure 147, Chart represents the technique in cervids figures of Maltravieso cave (Hasnaa Askalany).

7.3. Mina de Ibor cave

❖ The identified figures are five, while the unidentified one are only two figures. All figures distributed in the panel are very equal. Except the equid was only one figure (Figure 147). The bear was the first to see in Mina de Ibor cave in figures 2,7. Nevertheless, there was an absence of the bovid and goat. Both equid and cervid remain the main iconic figures represented in the cave.

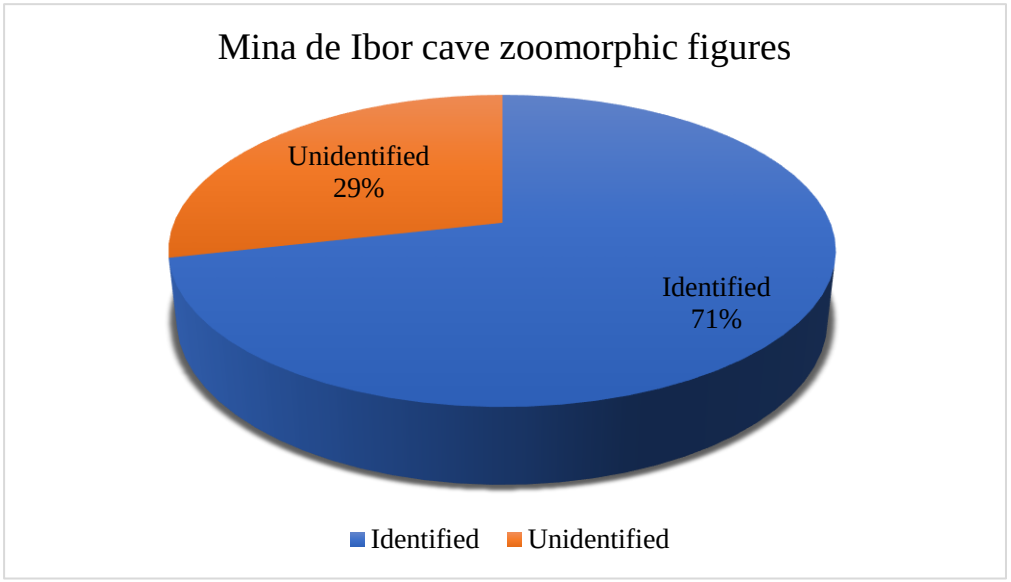


Figure 147.Chart represents the identified and unidentified zoomorphic figures in Mina de Ibor cave (Hasnaa Askalany).

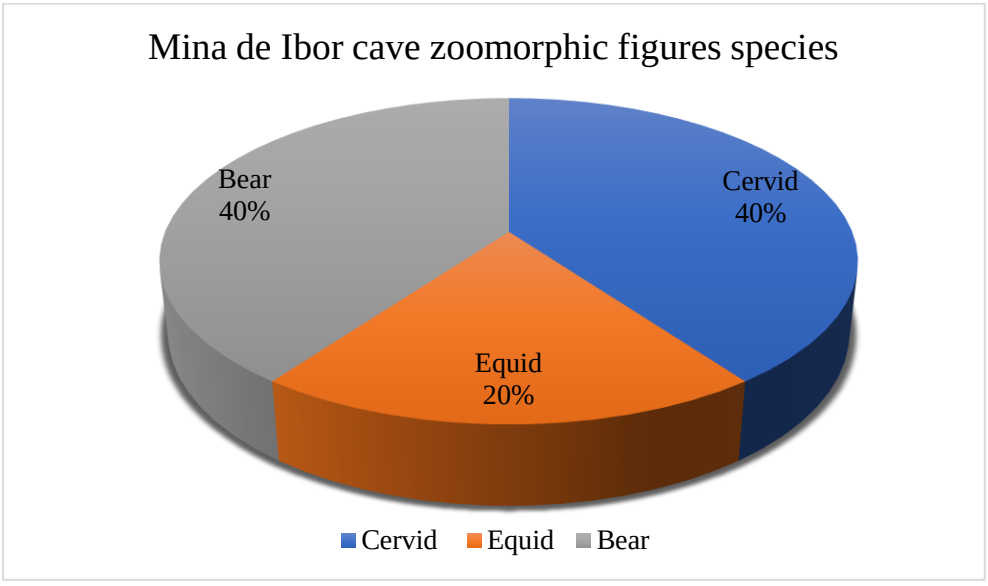


Figure 148. Chart represents the figures species in Mina de Ibor cave (Hasnaa Askalany).

❖ In terms of technique in Mina de Ibor cave, all the figures were done by engraving, incisions. There are no details in the figures, only in the cervid with antlers and the ears of the bears (Figure149).

❖ There is no use of any colored pigments in Mina di Ibor cave.

❖ The physical characteristics of the zoomorphic figures in Mina de Ibor cave are incomplete. The figures with heads are four (31%) (figures 1,2, 6, and 7). Only three figures have front leg (23%) (figures 2,3, and 5). The cervical dorsal line is only represented in one figure (8%) (Figure 2). One figure has hind leg (6%) (figure 4). Antlers are represented in only two figures (figure 1, and 6), they are represented with multiple lines (Figure 150).

❖ The representation of the nose (snout area) is in a sub-triangular shape for the cervid in figures (1, and 6). While in the bear is almost rectangular shape (figure 2) and rounded shape in the other bear (figure 7). There is special use of the rock support to give volume to figures (2, and 7).

❖ The superimposition in Mina de Ibor cave panel resembles Maltravieso cave Panel CH III.

❖ The orientation of the zoomorphic figures can be noticed in only two figures that are oriented to right (43%), and the rest are in left (57%) (Figure 151).

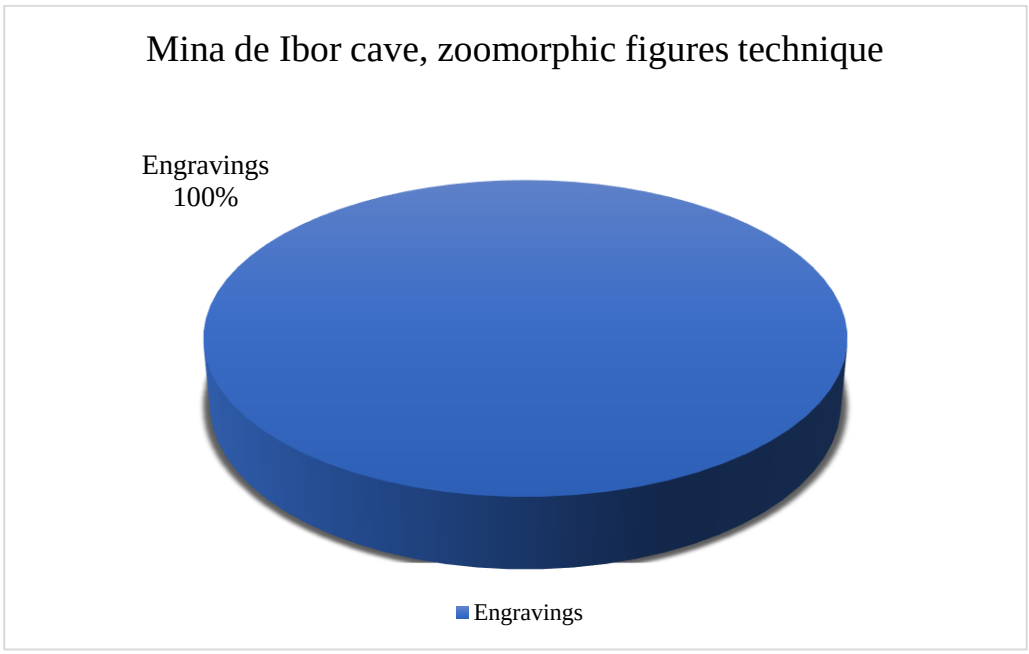


Figure149. Chart represents the technique of the zoomorphic figures in Mina de Ibor cave (Hasnaa Askalany).

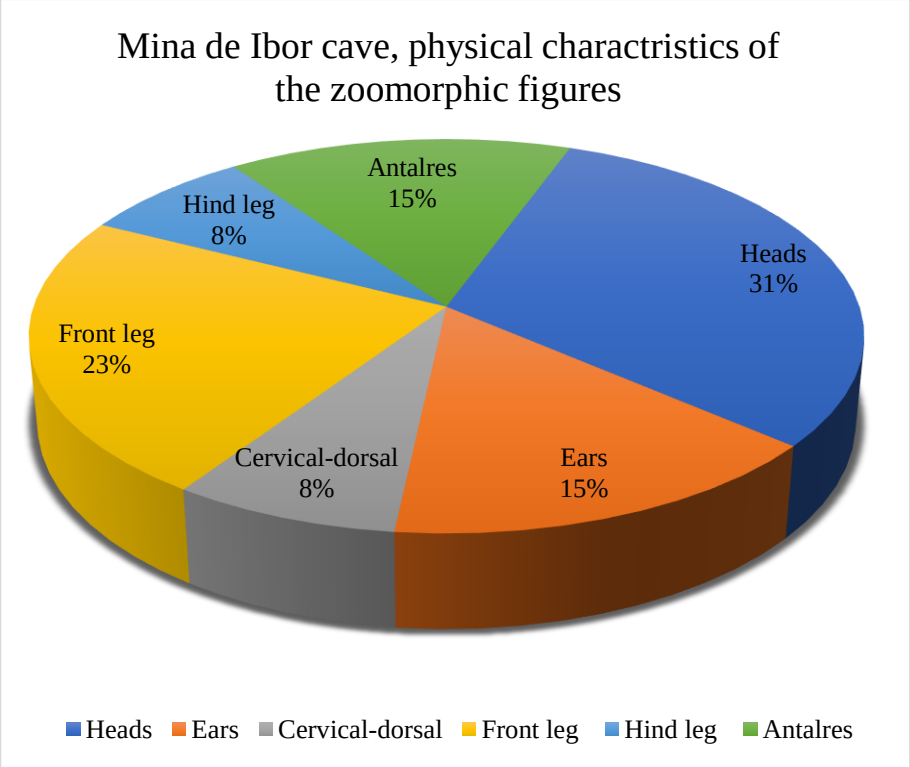


Figure 150.Chart represents the physical characteristics of the zoomorphic figures in Mina de Ibor cave (the scholar design).

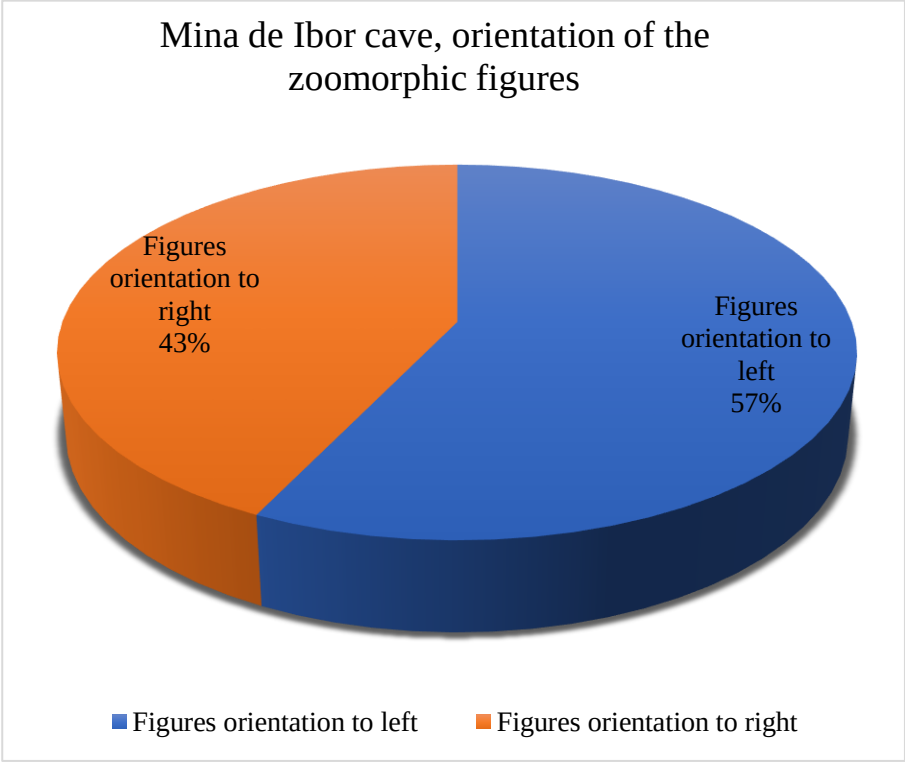


Figure 151.Chart represents the orientation of the zoomorphic figures in Mina de Ibor (Hasnaa Askalany).

7.4. Guadiana river

The general view

From the 22 zoomorphic figures that have been identified so far in the open air sites Molino Manzánez, Moinhola rock no 30, and Porto Portel. There are four known species: bovids, caprids, equids, and cervids (Figure152). In terms of art chronology Guadiana River figures has two figures chronologically back to upper Solutrean, Early Magdalenian and the rest of the figures between middle and upper Magdalenian (Collado et al., 2006). Unlike other open sites as Siega Verde, where it obtains almost 443, it has for upper paleolithic zoomorphic figures with a total numbers 241 figures, approximately 25 figures, that chronological early figures correspond to early Solutrean, the later figures between the end of the Solutrean and Lower Magdalenian periods (Alcolea & Balbin, 2006).Also Domingo García that have 87 zoomorphic figures and chronologically correspond to the end of the Solutrean and Lower Magdalenian periods (Ripoll & Municio, 1999)

- The Cervid predominate over the other species. There is one figure in Porto Portel, while in Molino Manzánez are nine representations (47% of the total), (2 in station XV "Esquinera"; 1 "in station XXVI" Boceto "; 1 in station DLVII" Paletín "and 1 at station CCXCIV “Muflón”, 1 at station CCLXXVI “Bonito Día”; 1 at CDXCVII “Sete” station; 1 at CVII “Cangrejos” station and 1 at station CDVII “Hiperlavado”) (Collado et al., 2006, Collado, 2013).

- The equids are present with seven figures (32%). There is one figure in Moinhola rock no 30 and on six stations in Molino Manzánez (3 in the XCII “Heineken” station; 1 in the XV “Esquinera” station; 1 in the DLVII “Paletín” station and 1 in the CDXXIV “Noel” station) (Collado et al., 2006; Collado, 2013).

- The goats are present on two occasions (11%) (1 in the XXII station “El Globo” and 1 in the LXXIII station “Tanios”. Finally, the bovids, with two representation (10%), one in (Station CCXIV “Toro Pelón”), and the other in Station CDXCVII, not clear but possibly bovid figure: “Sete” (Collado et al., 2006; Collado, 2013).

- Isla Molino sector has two other animal figures that, due to their fragmentary state or their partial nature, prevent a secure faunal attribution (1 in the station LXXVI “La Cuchara” and 1 at the CCCIII “Chupacabras” station) (Collado et al., 2006; Collado, 2013).

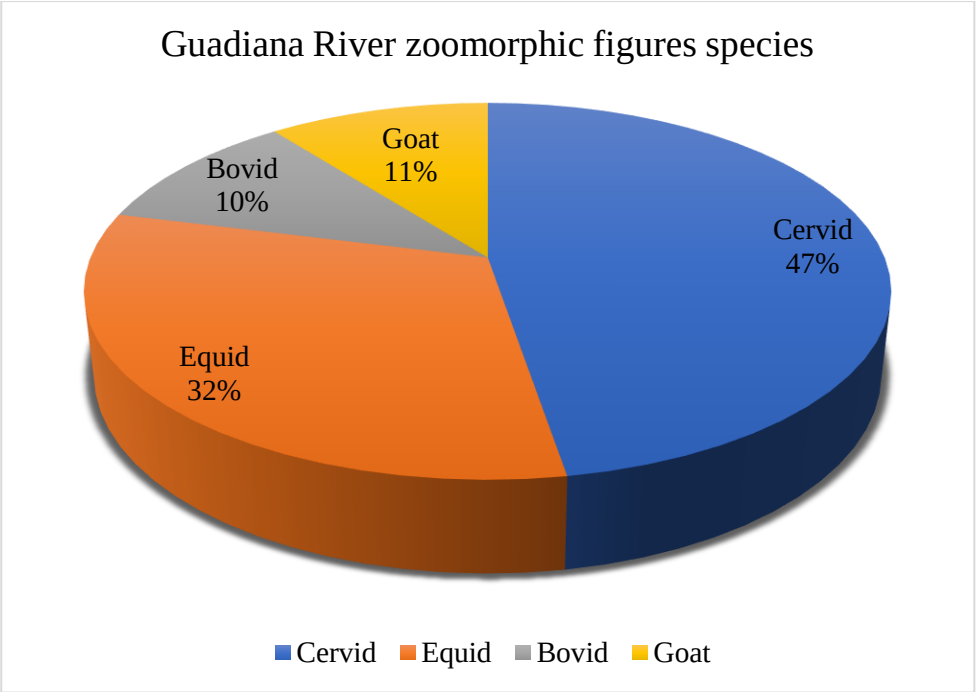


Figure 152. Chart represents the zoomorphic species Guadiana River (Hasnaa Askalany).

In terms of physical characteristics

❖ The head is the most represented element in the site, as it appears in 15 of the 20 recorded animals. Regarding the termination of the snout and muzzle area, of the 15 representations, 12 are closed (Station XV, Station CDXCVII, Station XXVI, Station LXXVI, Station CDVII, Station CVII, Station LXXVI, ,Station XCII, Station CDXXIV, Station DLVII, Station CCXIV, Station CCXCIV) and 2 open, and 1 indeterminable (Figure 153) (Collado et al., 2006; Collado, 2013).

❖ The antlers are represented in eight figures (11%). There is one figure in Porto Portel, while Molino Manzánez (2 Station XV, Station XXVI, Station XXII, Station DLVII, Station CCXIV, Station CCXCIV). The ears are present in 12 figures (16%) (2 Station XV, Station CDXCVII, Station CCLXXVI, Station XXVI, Station XXII, Station CVII, Station CDXXIV, Station CDVII, 2 Station DLVII, Station CCXCIV) (Figure 153) (Collado et al., 2006; Collado, 2013).

❖ Cervical-dorsal line is present in 17 figures (20%), except in Manzánez Mill (Station CDXCVII, 1 Station XXII, Station CDXXIV, and Station DLVII) (Figure 153) (Collado et al., 2006; Collado, 2013).Ventral line is present in nine figures (11%) in Molino

Manzánez (2 Station XV, Station XXVI, Station XXII, Station LXXVI, Station XCII, Station CVII, Station CDVII, Station CCXIV, Station CCXCIV) (Figure 153) (Collado et al., 2006; Collado, 2013).

- ❖ Front leg is present in nine figures (11%) and hind leg in ten figures (12%). In the Manzánez Mill there are only five of the animals represented conserve both front and hind leg: the Station CCXIV, Station CDVII, Station LXXVI, Station XXII, Station XV (Figure 153) (Collado et al., 2006; Collado, 2013).
- ❖ There are figures present attitudes of zoomorphic figures in the Molino Manzánez to appear bellowing or browsing from a hypothetical bush (Station CVII, Station CDVII) (Collado et al., 2006; Collado, 2013).
- ❖ The orientation of the figures is more to the left with 12 figures (57%) than the right nine figures (43%) (Figure154).

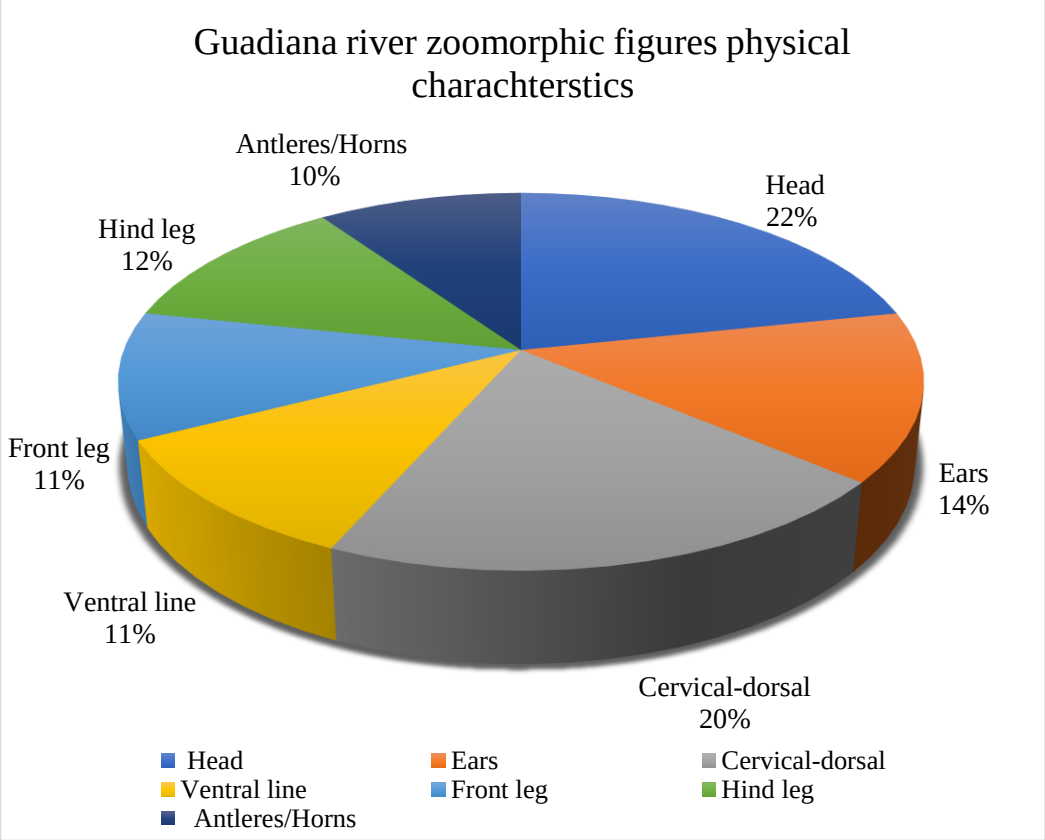


Figure 153. Chart represents the physical characteristics of the zoomorphic figures in Guadiana River (Hasnaa Askalany).

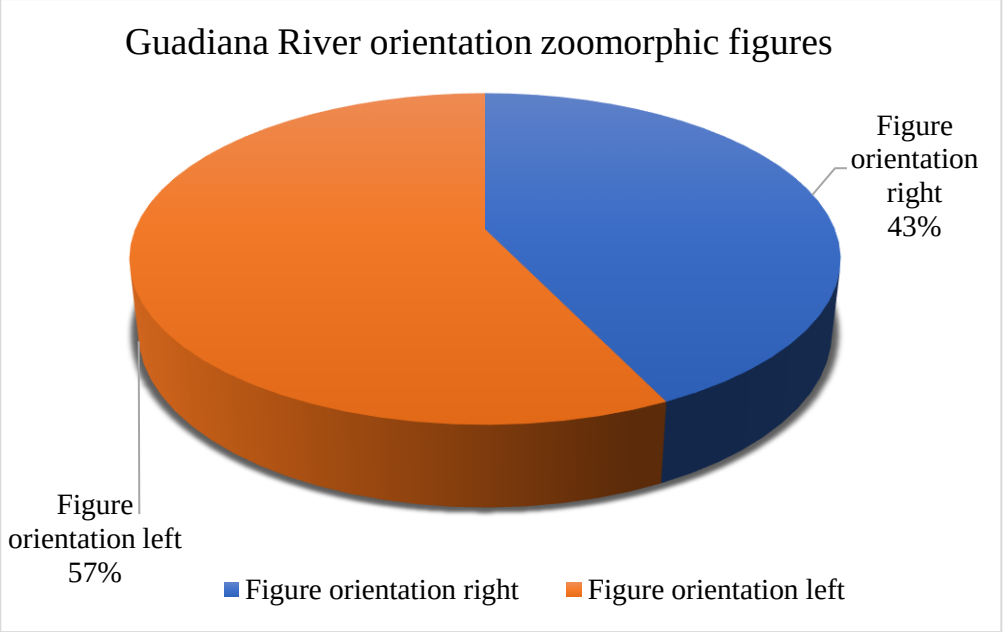


Figure 154. Chart represents the orientation of the zoomorphic figures in Guadiana River (Hasnaa Askalany).

The figure of the cervid

❖ The Cervid predominate over the other species. There is one figure in Porto Portel, while in Molino Manzánez are nine representations (47% of the total), (2 in station XV "Esquinera"; 1 in station XXVI" Boceto "; 1 in station DLVII" Paletín ", 1 at CCXCIV "Muflón" station, 1 at CCLXXVI "Bonito Día" station; 1 at CDXCVII "Sete" station; 1 at CVII "Cangrejos" station and 1 at CDVII "Hiperlavado" station) (Collado et al., 2006; Collado, 2013).

❖ The heads are present in nine figures (25%) except one figure in XV "Esquinera. The antlers are present in all figures (17%) except in (stations CCLXXVI, CDXCVII, CVII, CDVII) (Figure 155).

❖ The dorsal line is in all figures except (stations CCLXXVI, CDXCVII)

❖ The ventral line is present in six figures (17%) (2 in station XV, station XXVI, CDVII). Front and hind leg are present in three figures (8%). Both legs are present clearly in (stations XV, XXVI, CDVII). The majority of the cervid orientation is to the left (67%), while in the left only figures (33%) (Figure 156).

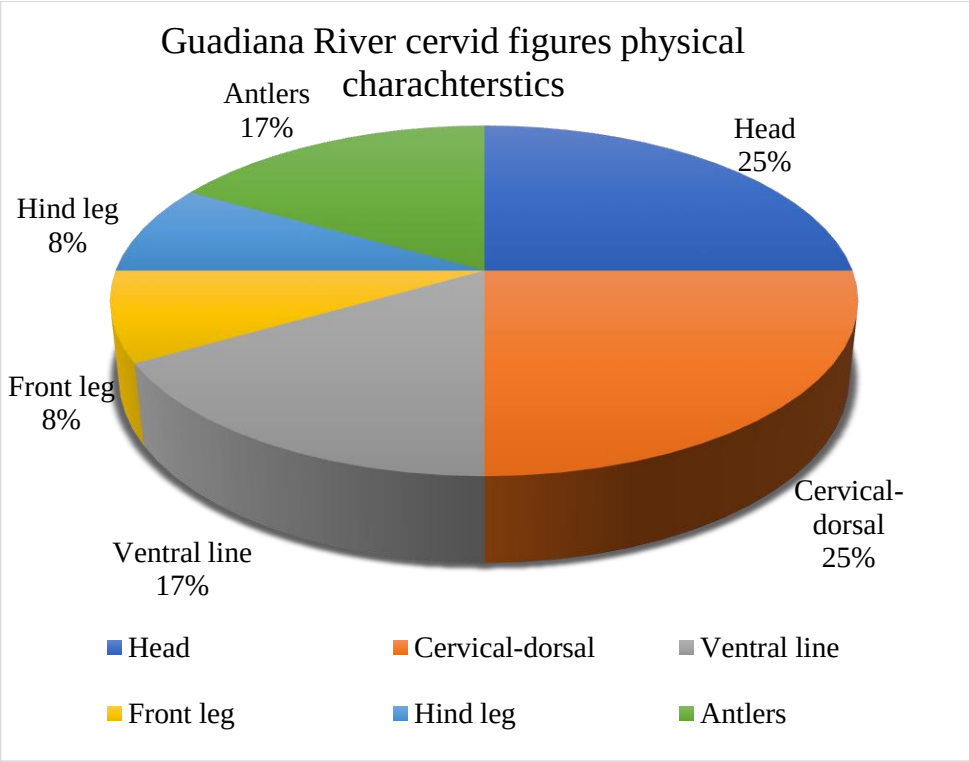


Figure 155.Chart represents Guadiana River cervid figures physical characteristics (Hasnaa Askalany).

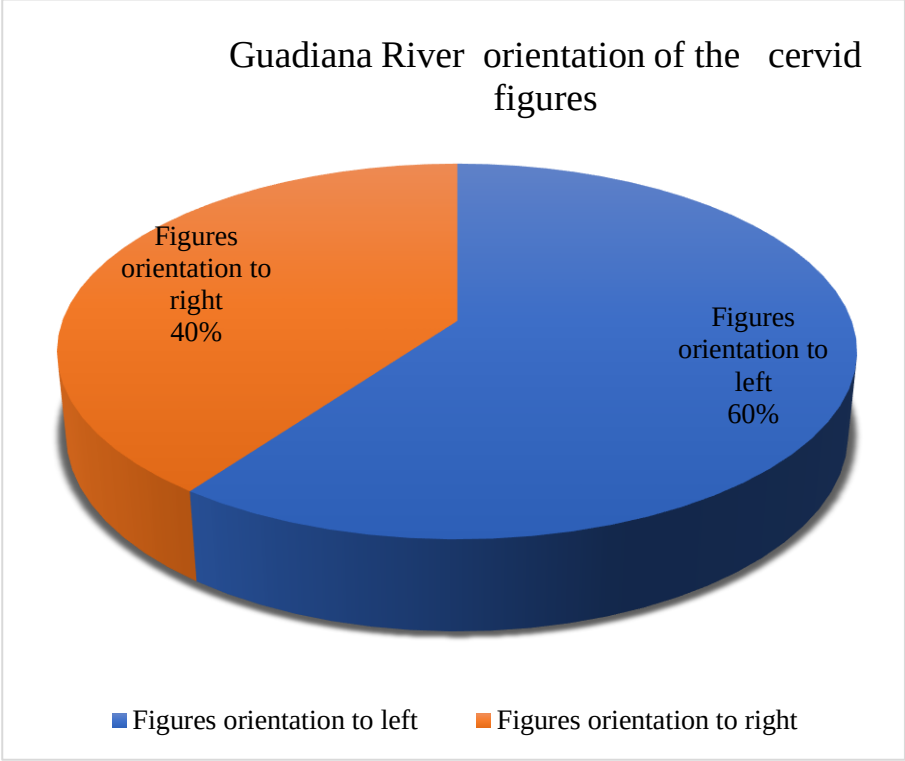


Figure 156. Chart represents orientation of the cervid figures in Guadiana River (Hasnaa Askalany).

The figure of the equid

❖ The equid was represented only seven times (37%), Station XV, 3 Station XCII, Station CVII, Station CDXXIV, station DLVII. There is only one figure in Moinhola rock no 30 with only the head and no other details. The heads mainly tend to have a traingular head-shape. The ears are only in three figures (16%) (Station XV, Station CDXXIV, and Station DLVII) They are simple lines (Figure 157).

❖ The cervical line was only in four figures (21%) (Station XV, Station XCII, and two figures of Station XCII). The ventral line (5%) is only in the two figures of Station XCII. these last figures have also tail (11%) (Figure 157).

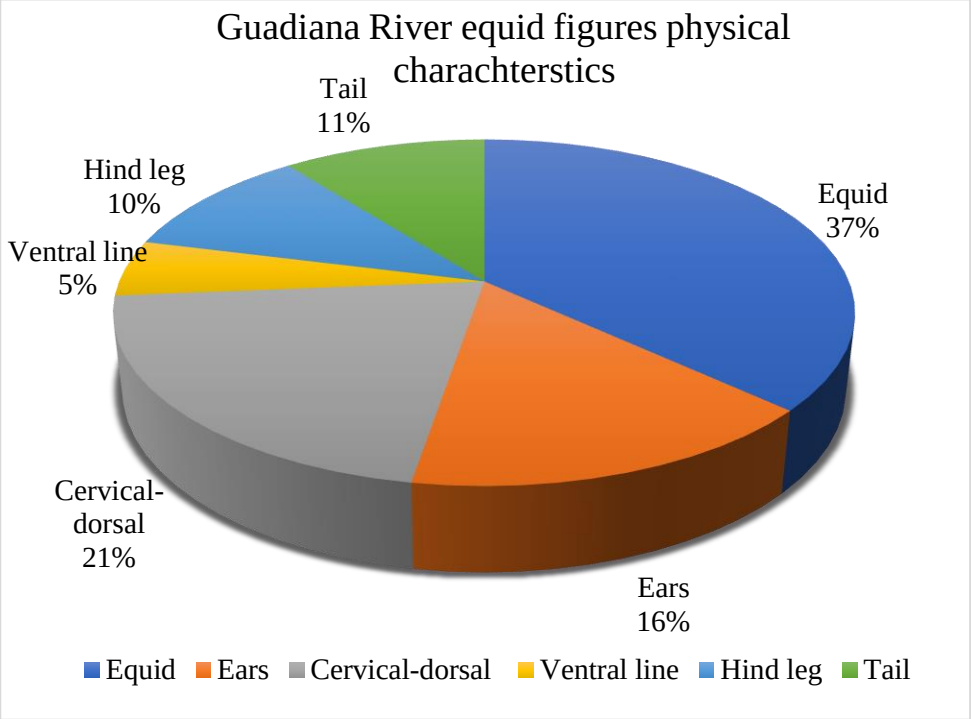


Figure 157. Chart represents the equid figures physical characteristics in Guadiana River (Hasnaa Askalany).

The Caprid

❖ There are two caprids (33%) in Station XXII, one figure only has the head. The other is headless but has a part of the horns (17%), the cervical dorsal line (16%), ventral line (17%) and both the front leg (17%) and the hind leg (17%) (Figure 158).

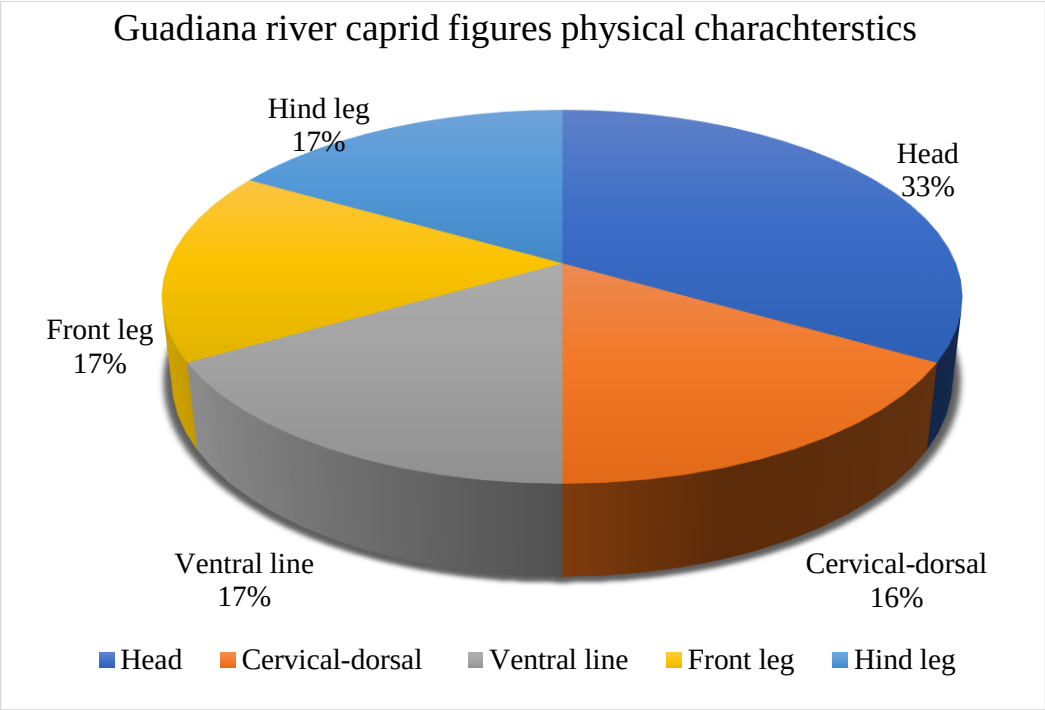


Figure 158.Chart represents the caprid figures physical characteristics in Guadiana River (Hasnaa Askalany).

❖ Finally, the bull was the most complete figure in Guadiana in terms of physical characteristics. It has the head, the horn, cervical dorsal line, ventral line, both front and hind leg and the tail.

CHAPTER 8, DISCUSSION & CONCLUSION

8.1. General view SW of Iberian Peninsula sites

❖ From the previous analysis of the zoomorphic figures of SW of Iberian Peninsula sites (Escoural cave, Maltravieso cave, Mina de Ibor cave, and Guadiana River), the total zoomorphic figures are 71, categorized as follows; the identified zoomorphic figures are 59, the unidentified are 12. Escoural cave has the highest zoomorphic figures representation and Mina de Ibor cave has the least figures (Figure 159).

8.1.1. In terms of species.

❖ The Equid is the dominant species in all sites with 32 figures. The highest representation is in Escoural cave, and the least is Mina de Ibor cave. In Escoural cave it is represented 16 times in figures (P1.4, fig. 5), two (Pl.5, fig. 6), (pl.8 fig. 10), (PI.24, fig. 37), (PI.26, fig. 39), (PI.27, fig.40), (P1.28, fig. 42), (P1.29, fig. 44), two (P1 .30, fig. 47), (P1.36, fig. 60), (P1.45, fig. 72) (Figure 160).

❖ There is in Escoural cave also three headless equid figures (P1.19, fig. 30), (Pl.35, fig. 57), and (P1.46, fig. 75). Then the equid is represented in Maltravieso cave nine times in figures (CIII-1, SACI-1, CHIII-5, CHVII-1, CHVII-2, GSIX-2, CHIII-2, CHIII-3, and CHIII-4). Then in Gudiana River it is represented seven times in figures (Station XV, three in Station XCII, Station CVII, Station CDXXIV, station DLVII) and one figure in Moinhola rock no 30. Finally, there is one figure Mina de Ibor cave.

❖ The cervid is present with 15 figures. They are the second dominant species; however, it is not present all sites. The highest representation is in Guadiana River and the least is Mina de Ibor cave. Guadiana River has ten cervid figures (two in Station XV, 1 in Station XXVI, 1 in Station DLVII, 1 at Station CCXCIV, 1 in Station CCLXXVI, 1 in Station CDXCVII, 1 in Station CVII and 1 in Station CDVII), there is one cervid figure in Porto Portel. Maltravieso cave has three figures in (CIII-2, GSVIII-1, and CHIII-5). Finally in Mina de Ibor cave there are two figures.

❖ Bovid comes in the third place with nine figures in SW of Iberian Peninsula. It is not represented in all sites. The highest representation is in Escoural cave while there are no bovids in Mina de Ibor cave. It is represented in Escoural cave five times in figures (Pl. 16, fig. 24), (P1.34, fig. 55), (P1.44, fig. 71) with two new figures (Pl.64 A) and (P1. 70A).

Then Guadiana River there are two figures in (Station CCXIV, and Station CDXCVII). In Maltravieso cave is represented two figures (CV-1, and CHIII-4).

❖ The goats with three figures are not represented in all sites. The highest representations are in Guadiana River Station XXII, and Station XXII. The least is in Maltravieso cave in PIV-8.

❖ Finally, the bear figure is not represented in all sites but only two figures in Mina de Ibor cave.

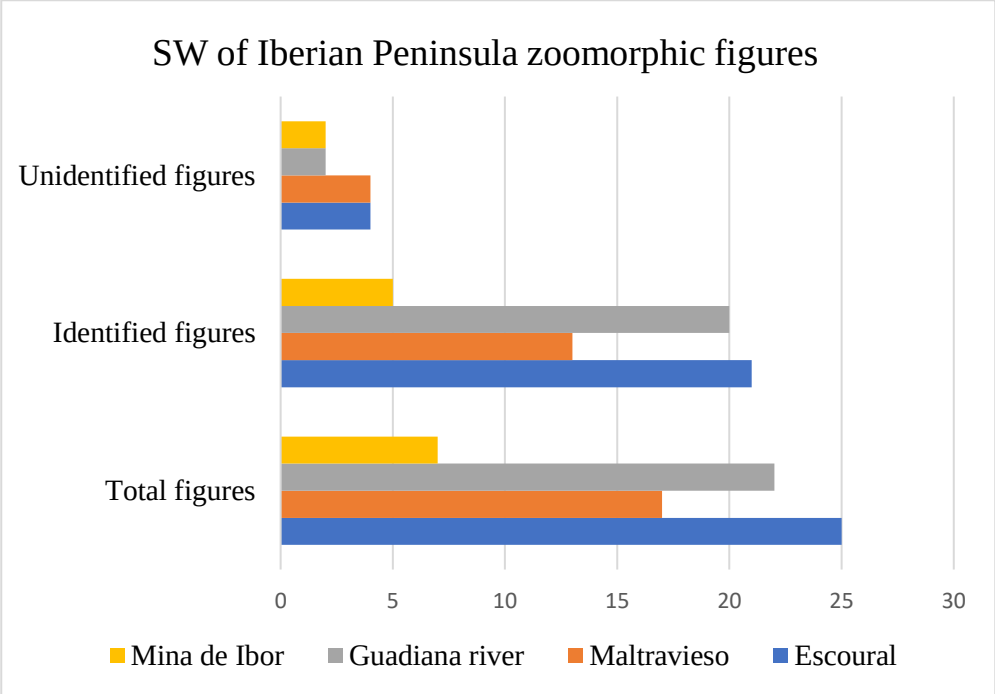


Figure 159.Chart explains the total figures of the SW of Iberian Peninsula sites (Hasnaa Askalany)

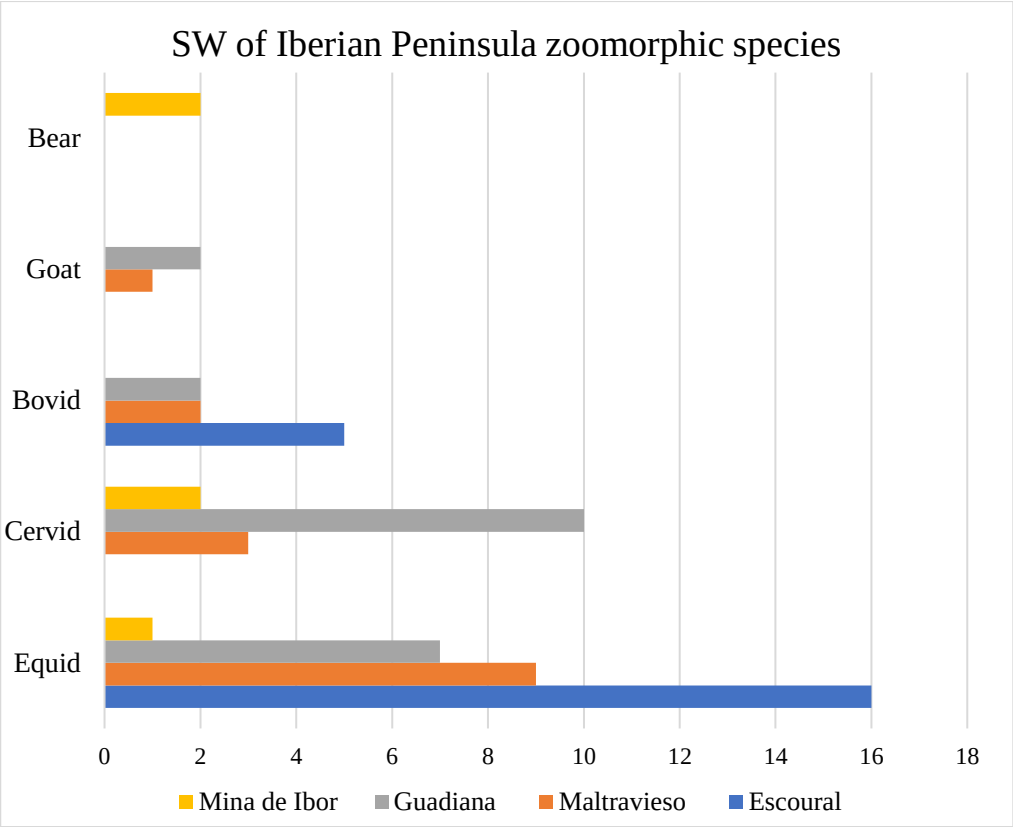


Figure 160, Chart represents the zoomorphic species of SW of Iberian Peninsula sites (Hasnaa Askalany)

8.1.2. In terms of technique

❖ Engraving is the highest technique used in zoomorphic figures of the sites with a total number of 57 figures. The highest engraving representation is in Guadiana river with all 22 figures, following is Escoural cave that has 15 figures (pl.2 fig. 2), (P1.4, fig. 5), two (Pl.5, fig. 6), (PI.24, fig. 37), (PI.26, fig. 39), (PI.27, fig.40), (P1.28, fig. 42), two (P1 .30, fig. 47), (Pl.34, fig. 55), (Pl.35, fig. 57), (P1.44, fig. 71), (P1.46, fig. 75), (Pl.70 A). Then Maltravieso cave has 13 figures in (PIV-8, GSVII-2, GSVIII-1, GSIX-1, GSIX-2, SACI-1, CHIII-1, CHIII-2, CHIII-3, CHIII-4, CHIII-5, and CHVII-1, and CHVIII-2). Mina de Ibor has seven figures (Figure161 , Figure 162).

❖ The painting technique is used only in Escoural cave with 11 figures, three figures in red pigment (pl.8 fig. 10), (P1.45, fig. 72), and (P1.64A) and eight figures are in black pigment (PI.12, fig. 19), (Pl. 16, fig. 23), (Pl. 16, fig. 24), (PI.16, fig. 25), (P1.19, fig. 30), (P1.29, fig. 44), (Pl.36, fig. 59), and (P1.36, fig. 60). Maltravieso cave has four figures, two

in red pigment (CIII-1, and CIV-1), and two figures are in black pigment in (CIII-2, CV-1). There is no painting in both Mina de Ibor cave nor in Guadiana river (Figure161).

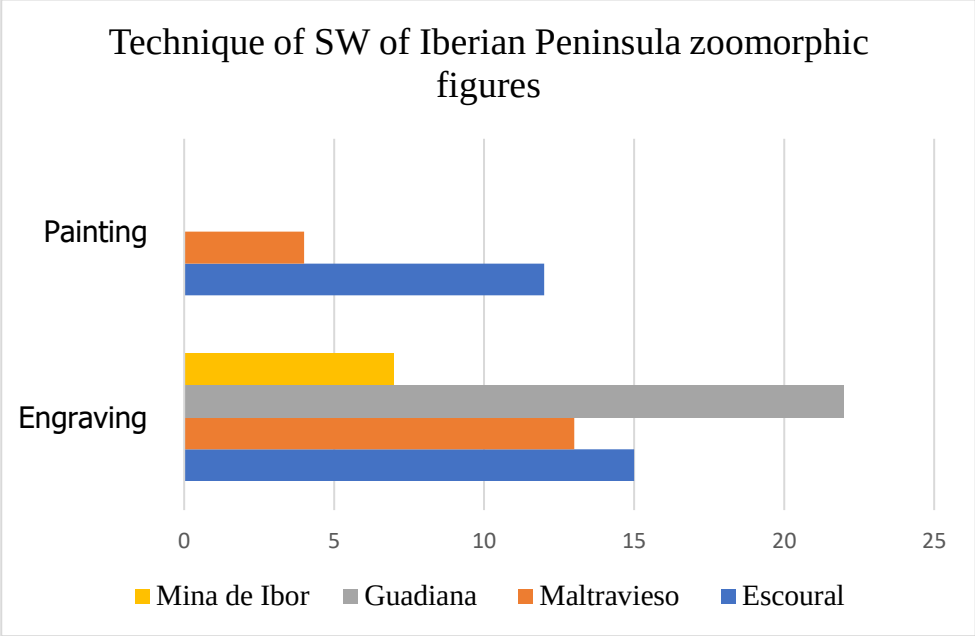


Figure161 , Chart represents the technique of the zoomorphic in SW of Iberian Peninsula sites (Hasnaa Askalany)

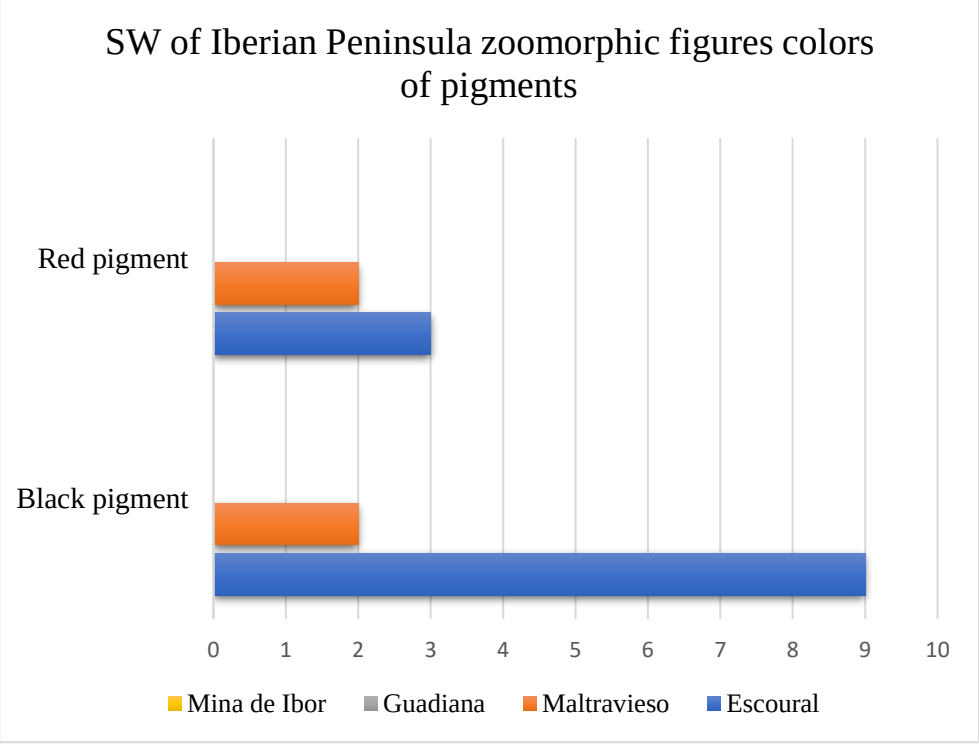


Figure 162. Chart represents the colors of pigments used in SW of Iberian Peninsula (Hasnaa Askalany).

8.1.3. Physical characteristics

❖ Guadiana is the most diverse site in physical characteristic details with the head, antlers, cervical dorsal line, ventral line, front, and hind leg, which is in the contrary from physical characteristics figures of Escoural cave, Maltravieso cave, and Mina de Ibor cave (Figure163).

- The muzzle area shape

❖ Escoural cave has different muzzle shape. The square muzzle shape is represented in two equids figures (Pl.5, fig. 6) and (P1.28, fig. 42). The duck bills shape is in figures (pl.8 fig. 10), (P1.29, fig. 44) and (P1.45, fig. 72). The triangular muzzle shape is in figures (P1.4, fig. 5), (PI.24, fig. 37), and (PI.26, fig. 39), (P1 .30, fig. 47). The rounded muzzle shape is in shape (P1.36, fig. 60).

❖ Maltravieso cave has muzzle squared shape in figures C IV-1, and PIV. There is also ducks' bills in figures CH VII-1, and CH VIII-2. The triangular muzzle shape is represented in figures C III-1, and CH III-5. The rounded muzzle shape is in figures CV-1, GS IX-1, and CH III-3. Some figures do not have corrected ending for muzzles shape such as figures GS IX-2, and CH III-2.

❖ Guadiana River has the most represented muzzle figure types. The triangular muzzle shape is represented in figures (Station CCLXXVI, Station LXXVI, Station XCII, Station CVII, Station CDVII, and Station CCXIV). The rectangular muzzle shape is in figures (the equids in Station XV, station XCII, in Station CDXXIV). The squared muzzle shape in (Station CDXCVII, Station DLVII). The rounded muzzle shape is only represented in one figure the cervid in Station XXVI.

❖ Mina de Ibor cave has no diversity in the shape of the muzzle, there are only two figures with rectangular muzzle shape 1, and 6 and two squared muzzle in figure 2,7.

❖In terms of figures details, some figures have linear decorations lines as Escoural cave, (P1.4, fig. 5), (Pl.5, fig. 6), (PI.24, fig. 37), (PI.26, fig. 39), (P1.28, fig. 42), (P1 .30, fig. 47), and (P1.44, fig. 71). In Maltravieso cave there is the representation of the eye in figures (CV-1, CIV, CIII-2, GS IX, GSVII-2, and GS VIII-1). In Gaudiana River the liner decoration lines are in figures (Station CVII, and station CDVII), which was the same as Escoural cave. Mina de Ibor cave only one figure has the eye (figure 7).

- The cervical dorsal line

❖ The cervical dorsal line is represented in 17 figures, mostly represented in Guadiana River. The site has the highest diversity of technique of cervical dorsal lines. The rectangular line is in figures (all station XV figures, in Station CCLXXVI, Station XXVI, Station XXII, Station LXXVI, Station XCII, Station XCII, Station CVII, and Station CCCIII). The convex line is in figures (Station XCII, CDVII Station, DLVII Station). The Concave line is in figures Station CCXIV. In Escoural cave has a rectangular cervical line in figures (pl.8 fig. 10), and (P1.46, fig. 75). The convex cervical line is in figures (PI.16, fig. 25), (Pl.35, fig. 57), and (Pl.36, fig59). One figure has concave (Pl.70 A). Maltravieso cave has a rectangular cervical line in figures (CHIII-3, CHIII-5, CHVIII-2, and SACI-1). The convex cervical line is in figure GSVIII-1. Mina de Ibor cave has a concave line in figure 3.

- The ventral line

❖ Guadiana has the highest representation of the ventral line. The convex line is in (two figure of station XV, Station XCII, Station CVII, CDVII Station, CCXIV Station, and CCXCIV Station). The rectangular line is in (station XXVI, Station XXII). In Escoural cave has rectangular line in figures (pl.8 fig. 10), (Pl.36, fig59), and (P1.46, fig. 75). The convex line is in figures (PI.12, fig. 19), (Pl. 16, fig. 24), (PI.16, fig. 25), and (Pl.35, fig. 57). Malttravieso cave has rectangular line in figure. CH VII-2. Mina de Ibor has a partial concave line in figure 2.

- Front and hind leg

❖ Guadiana river has only five figures represent front and hind leg (Station CCXIV, Station CDVII, Station LXXVI, Station XXII, and Station XV). In Escoral representation of the limbs was not frequent with the front leg only in three figures (PI.12, fig. 19) (Pl. 16, fig. 24) ,(PI.16, fig. 25) and the hind leg only in seven (PI.12, fig. 19) ,(Pl. 16, fig. 24),(PI.16, fig. 25), (P1.19, fig. 30) , (Pl.35, fig. 57), (Pl.36, fig59), (P1.46, fig. 75).

❖ Maltravieso cave has the front leg in four figures (GSVIII-1, SACI-1, CHIII-1, and CHVIII-2). The hind leg is only in one figure GSVIII-1. Mina de Ibor cave has only front leg in figures 2, 3,5, and only one hind leg such as figure 4.

❖ Guadiana river has represented the tail in figures (Station XV, Station CCXIV, Station XCII, Station XXVI, Station XXII, Station LXXVI, and Station CCXCIV).

- The ear

❖ Guadiana River has represented the ears as simple lines in figures (Station XV, Station XXVI, Station CDXXIV, and Station DLVII). The triangular ear shape is in figures (Station XV, Station CCLXXVI, and Station CVII). The simi-rounded ear shape in Station CDXCVII.

❖ Escoural cave has the triangular shaped ear in figures (P1.4, fig. 5), (the smaller equid of Pl.5, fig. 6), (PI.26, fig. 39), and (P1 .30, fig. 47). The rounded ear shape is in figure (the bigger equid Pl.5, fig. 6). The semi rounded ear shape is in figure (PI.24, fig. 37). In Maltravieso cave the traingular-shape ears is in fgures (CH III-2, CH III-3, and CH III-5), and one figure CH VII-1 has simple ear lines. Mina de Ibor cave has rounded ear shape in figure 2. Characteristics

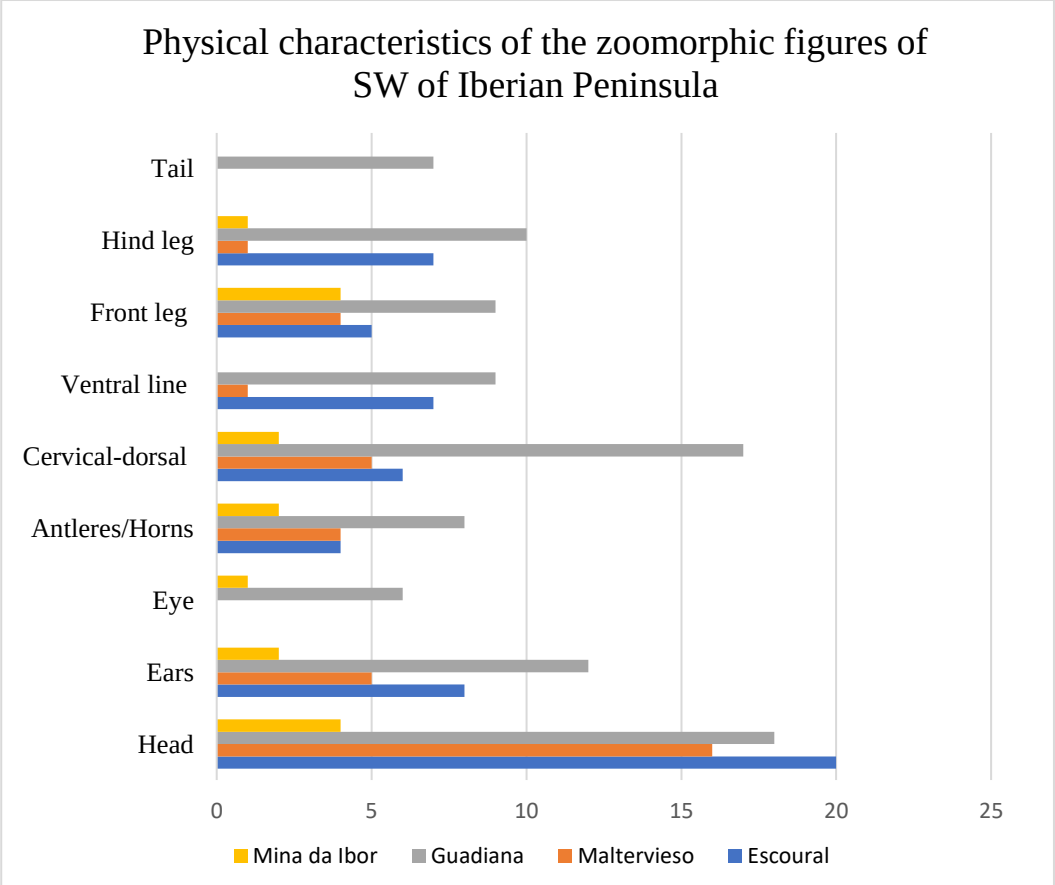


Figure 163 . Chart represents the physical characteristics of the equid figures in SW of Iberian Peninsula sites (Hasnaa Askalany).

For the orientation of the zoomorphic figures of the SW of Iberian Peninsula. Escoural cave figures are represented to the right while Guadiana River and Maltravieso cave were the highest in representing the figures into the left. There was one figure that was oriented to the ceiling in Maltravieso cave GSVII. Mina de Ibor cave has only three figures to the right and four to the left, which is balanced orientation of the figures (Figure164).

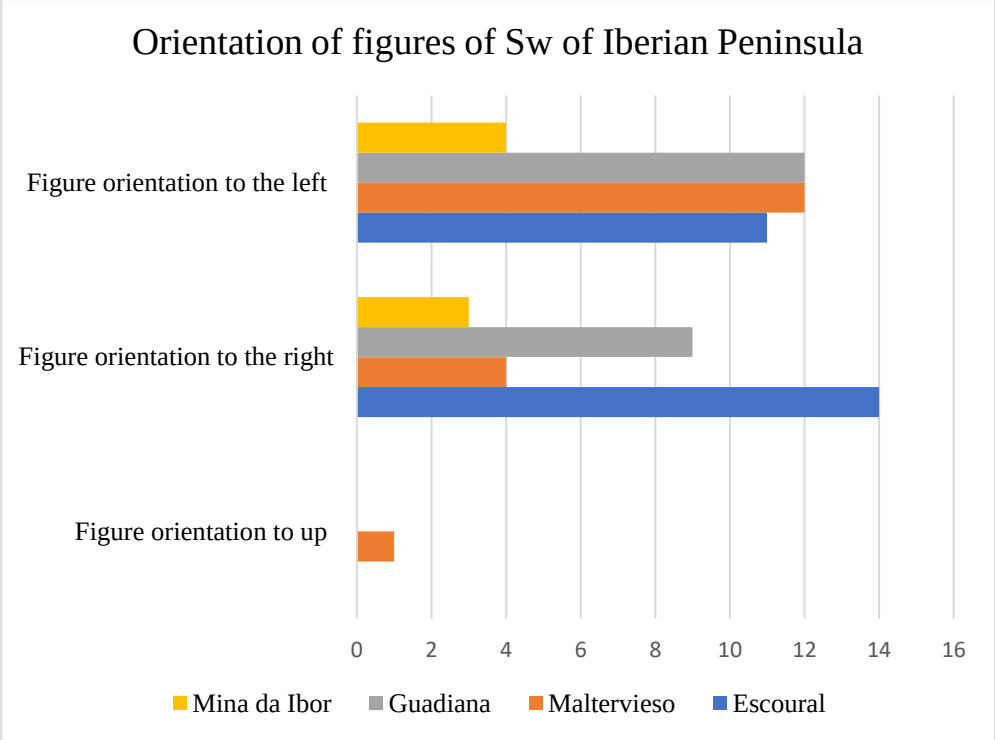


Figure 164 .Chart represents the orientation of the zoomorphic figures in SW of Iberian Peninsula (Hasnaa Askalany).

8.2. Comparisons with other sites

There is the difficulty of establishing chronological sequence. With not enough presence of archaeological sites or direct dating to resolve this problem, the study focused on style that could span in geographical area. Even with the difference in technique but it could demonstrate a unity at least in cultural meaning. In this case rock art can establish links between places that marked by shared visual symbols. The figures that have stylistic similarities could indicate interaction between different areas, as rock art became a type of codification was used to establish areas of influence and determined cultural landscape at a specific moment and sociohistorical context (Gallardo et al., 2012; Troncoso et al., 2016; Sepúlveda et al., 2019).

In order to understand group dynamics, their social relationships, and their relationships with the environment or other territories. The following pages will present some zoomorphic figures in the Escoural cave, Maltravieso cave, and Mina de Ibor cave with sites from South of spain Cadiz and the West of Iberian Peninsula mainly in Ocreza (Portugal) and La Griega (Spain), thus will help to increase the studies in the future to see if there is an existence of a cultural unity if some similarities in zoomorphic figures is found (Figure 165).

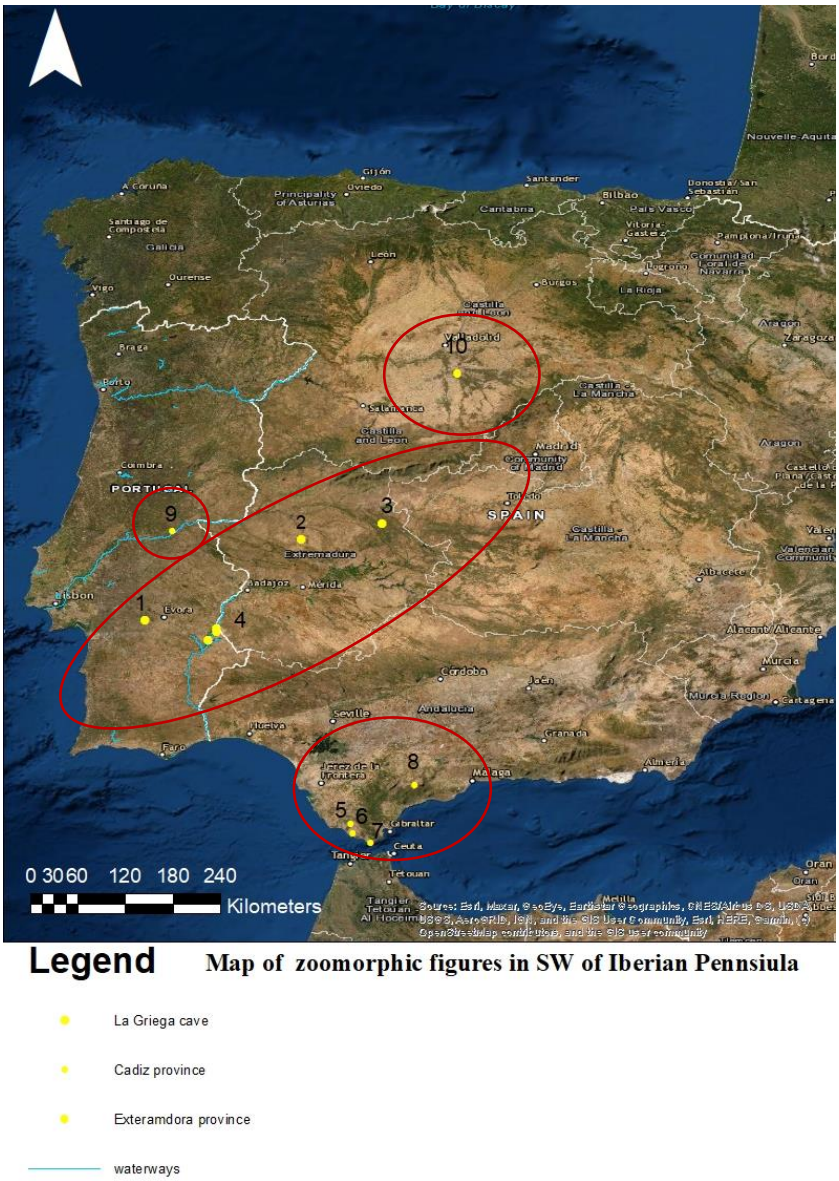


Figure 165. Map shows the location of SW of Iberian Pensiuula and central Iberian Peninsula. 1- Escoural cave, 2- Maltravieso cave, 3- Mina de Ibor, 4-Gudiana Molino Manzánez, The Moinhola rock no 30, Porto Portel,5- La Pielta cave, 6- Buitre cave, 7- Moro cave,8-Altentara, 9-Ocreze,10-La Griega cave (Hasnaa Askalany).

8.2.1. South of Iberian Peninsula Atlanterra Cave

Atlanterra cave (Tarifa), or known as Realillo I. It has confirmed paleolithic chronology by a doe and an equid figure (García, 2009, 2012). The doe is in a vertical position, the head is upwards. The ears are represented with simple lines, attached to the cervico-dorsal line, neither the hindquarters nor the forequarters, nor the belly area are present (García, 2009, 2012).

There are some similarities in terms of physical characteristics between the cervid of Maltravieso cave CH-III and Atlanterra cave.

The similraties in figure CH-III in Maltravieso cave has the muzzle with triangular shape, the presence of the cervical dorsal line. The ears are oriented backwards as they are in the position of roaring or browsing, but there is no presence also for the ventral dorsal area or hindquarters nor the forequarters (Figure 166 A, B) (Collado et al., 2006; Collado, 2013).

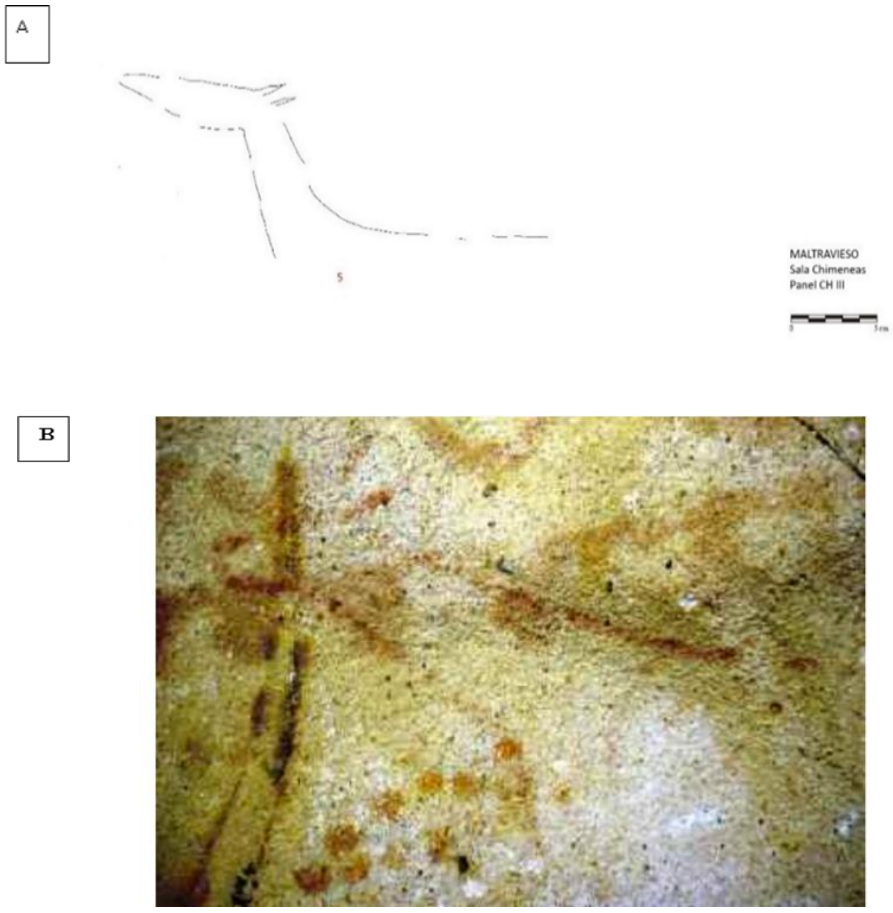


Figure 166. A is the cervid from Maltravieso cave CH-III (Collado, 2021 Unpublished). B is the cervid from Atlanterra cave, Tarifa (Cádiz) (García, 2012).

The second figure is a painted equid, with red pigment and has a thicker line. The head is present, and the muzzle area has rectangular shape and has the duck bills in lower part, and only part of the neck is present. The ears are absent (Garcia, 2012).

There are some similarities between this equid and the equid of Escoural cave (P1.36, fig. 60). The two figures have some resemblance, they both presented only the head and part of the neck and they have rectangular muzzle area, the duck bills curve in the lower jaw (Figure 167 A, B).

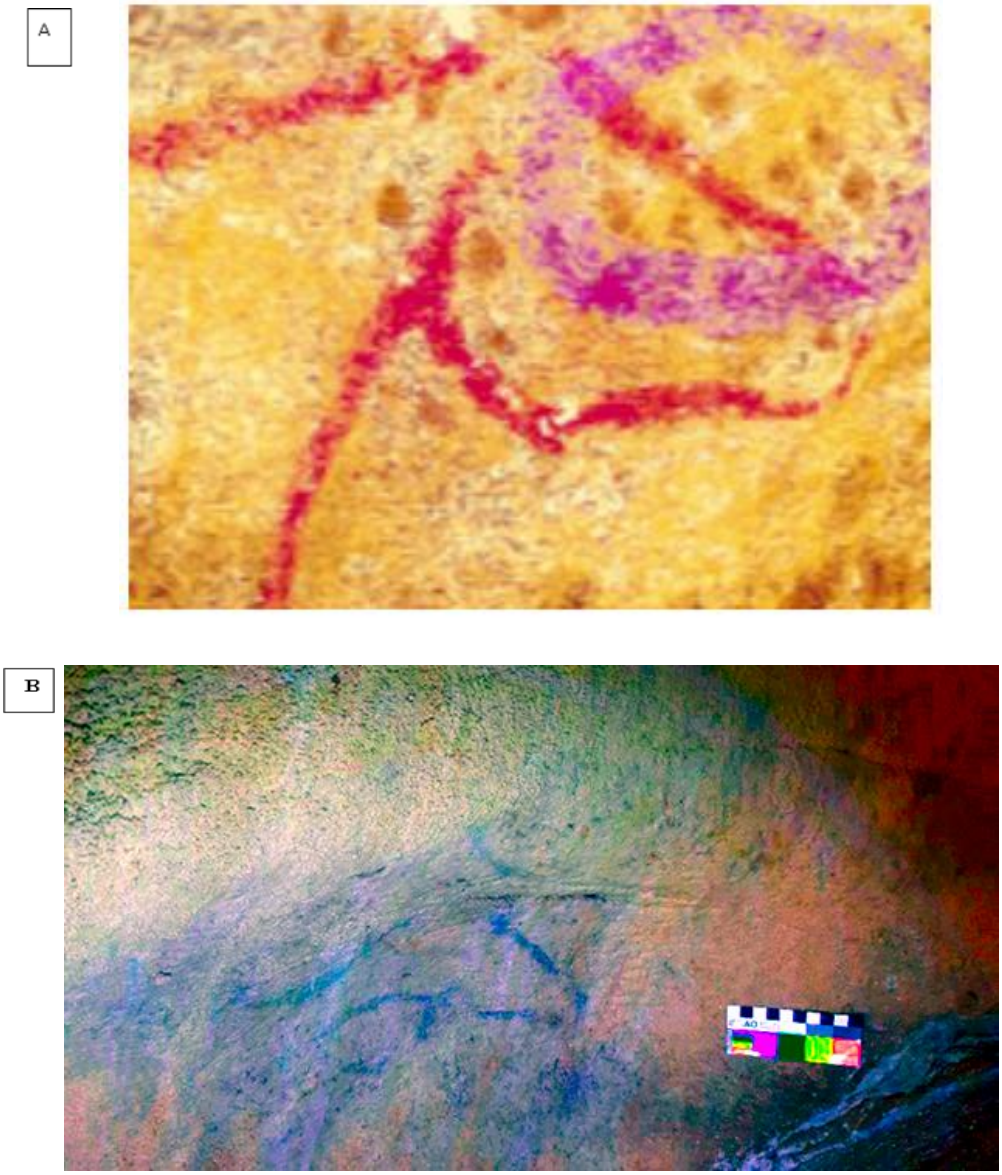


Figure 167. A, is the equid from Atlanterra Cave. B is Hall 1, Gallery 1, equid (P1.36, fig. 60) Escoural cave the photo is by using DStretch YBK filter (A, B http://www.arte-sur.com/pileta.htm, B by Hasnaa Askalany).

8.2.2. Buitre cave (Tarifa)

Buitre cave, that has the zoomorphic painting red pigment figure of bear continues by the front and ends in the muzzle that has a rectangular shape (García, 2019).

Though the technique of the figure is different from in Mina de Ibor cave, that has the figure of the bear but with engraving, there is some resembling between the bear both caves. In terms of physical characteristics specifically in the head. It is only simple line to define the head without any anatomcal details such as the ears (Figure 168 A, B).

Figure 168. A is the bear from Buitre cave, (Tarifa). B is the bear from Mina de Ibor cave (A http://www.arte-sur.com/pileta.htm, B is by Collado, 2009).

8.2.3. The Ciervo cave

The Ciervo cave is located in the municipality of Los Barrios. It is a small rock shelter , the entrance is one 130 m above sea level. The cave has a representation of a cervid made in red-orange pigment, which was discovered in 2002 (García, 2009, 2012). The head has a traingular shape, and the antlers are represented in multiple lines. It has a very marked cervico-dorsal line that extenced to see the beginng front leg, as well as a a part of the ventral line and the begiing of the front leg.The figure is in the absolute profile with no anatomical details appearing, it is associated with the Solutrean period (García, 2009).

There is a strong resemblance between the cervid of Ciervo cave and Mina de Ibor cave regarding the triangular shape head , muzzle shape and the representation of the antlers. However the technique is different the cervid in Ciervo cave is painting and using red pigment, while the cervid in Mina de Ibor cave is engraved (Figure 169).

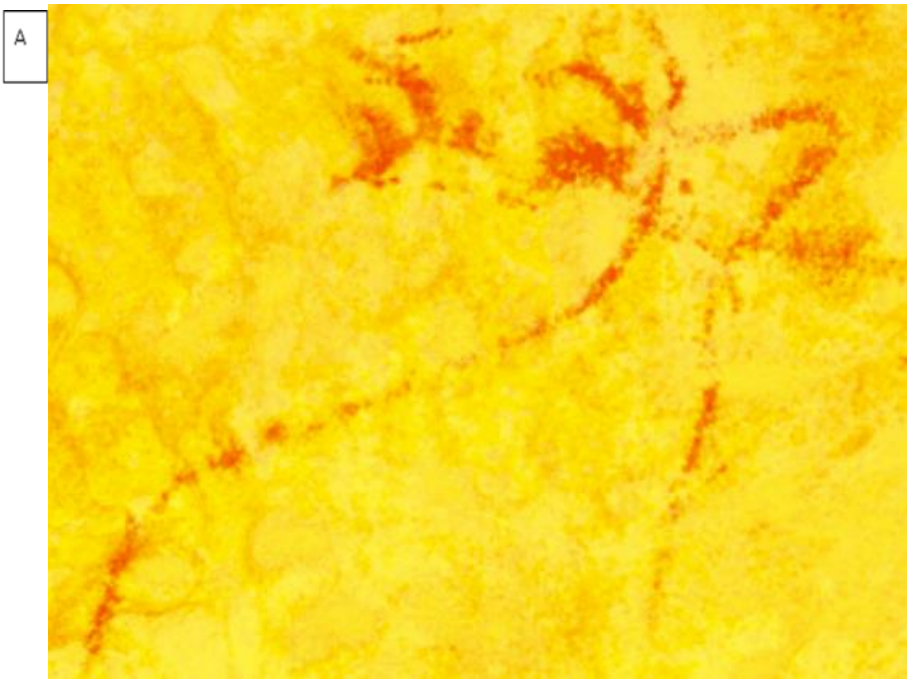


Figure 169. A is the cervid of Ciervo Cave (http://www.arte-sur.com/pileta.htm). B is the cervid of Mina de Ibor cave (Collado, 2009).

8.2.4.Moro cave

The Moro cave represent the art Paleolithic cave in the southernmost area of the Iberian Peninsula. The cave has four equids with one nearly complete equid (García, 2012). The heads do not have any detailes such as they eyes. The muzzle area has the characteristic of the "duckbill", which is a characteristic of the Solutrean . The ears are represented as separated from each other (García, 2012).

There is a resemblance in the equid figures in Moro cave with ducks bills characteristic of the Solutrean and in Esoural cave and Maltriveso cave also. The engraving techique and the physical charaterstic such as the head and the ears that are represented, separated from each other. Another equid in the Moro cave has resembling with Escoural cave but the diffrence in the technique . In Escoural cave is painting , while in Moro cave is engraving. The rerepsentation of the mane is present in both caves (Figure 170 A, B), (Figure 171 A, B)

A

B

Figure 170. A is an equid from Moro cave, (Tarifa ,Cadiz).B is Maltravieso cave, an equid from Pabel CH VIII (http://www.arte-sur.com/pileta.htm, Collado, 2021 Unpublished).

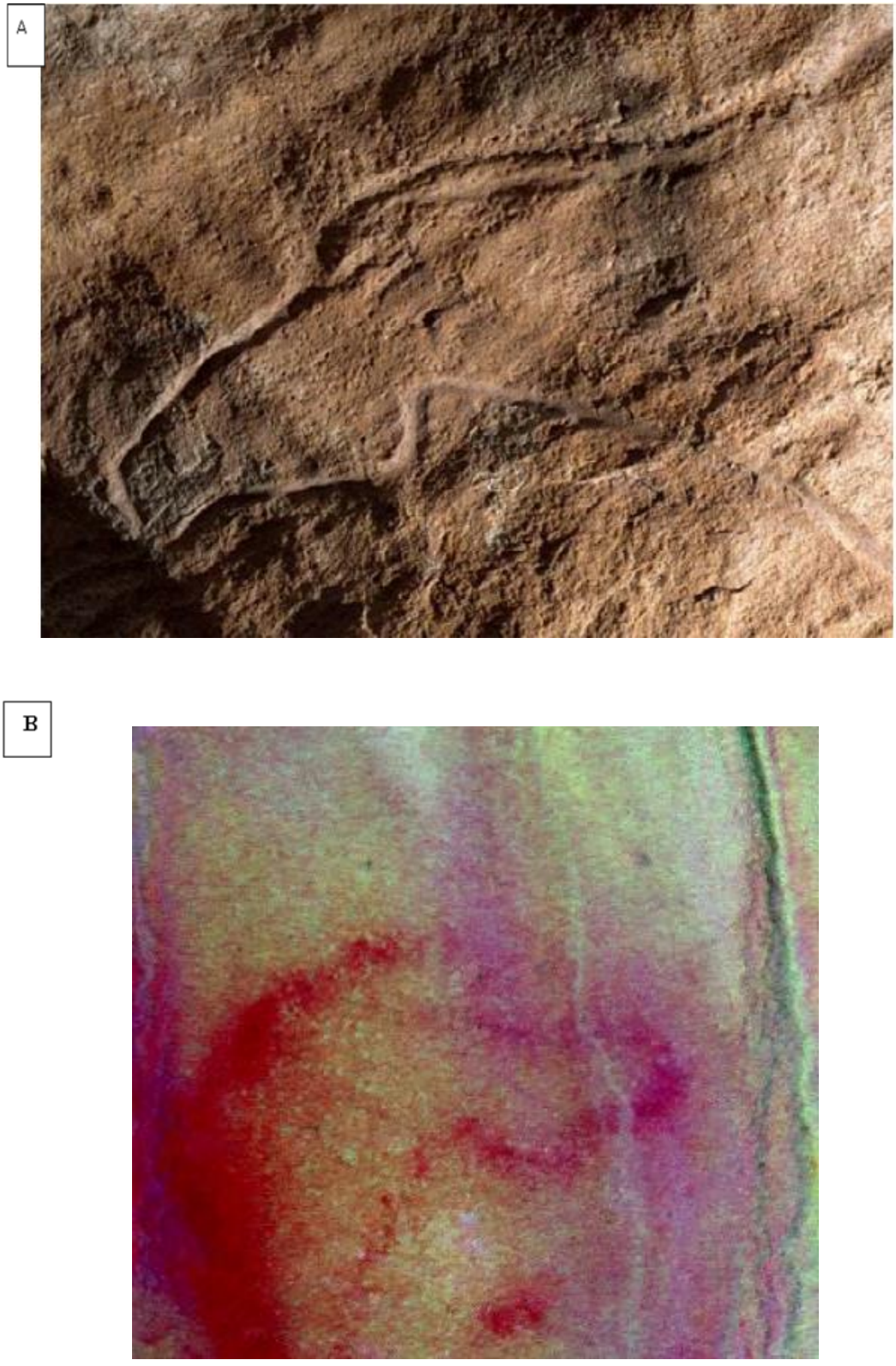


Figure 171, A is an equid from Moro cave, (Tarifa, Cadiz). B is Escoural cave, an equid from (pl.8 fig. 10) by using DStretch YRD filter (A http://www.arte-sur.com/pileta.htm, B Hasnaa Askalany).

8.2.5. The Caminante cave (Tarifa)

the cave has an equid figure that represent the head, the neck, cervical dorsal line is completed by a natural protrusion of the rock and the beginning of the front leg (Ruíz et al., 2014). The resemblance of this equid can be seen in Escoural cave Gallery 6 (P1.46, fig. 75), however the incision in Escoural cave is thinner than the Caminante cave. They both have cervical dorsal line that ends with a straight convex shape, and the lower neckline (Figure 172 A, B).

Figure 172. A is the equid of Caminante cave. B is the equid of Escoural cave. (P1.46, fig. 75) (http://www.arte-sur.com/pileta.htm , photoshop tracing by Hasnaa Askalany).

8.2.6. La Pileta cave (Benajan, Malaga)

Another area has parietal art, painted, or engraved, in cave or outdoors that appear in the Andalusian geography province of Malaga. La Pileta cave is at the western of the province of Malaga. It contains zoomorphic figures such as equids, cervid, aurochs, goats. Breuil, who framed this artistic representation in the Solutrean based on the black pigment on that is used in the figures (García, 2012).

La Pileta shows many resemblances with Escoural and Maltravieso cave. It also could approve Glory`s opinion, as he noticed that the location of the cave fits the paleogeographic context of the extreme western tip of Iberia, and the two closest decorated caves are la Pileta, to the east, and the Cave of Maltravieso of Cacerés, at a distance of 185 km (Glory et al., 1965).

There are similarities in the bovids between Escoural cave and la Pileta cave in terms of technique. Both bovid figures are in black painting, and they have physical characteristic resemblance in the rectilinear convex cervical dorsal line and the neck shape, and the convex ventral line (Figure 173 A, B).

A

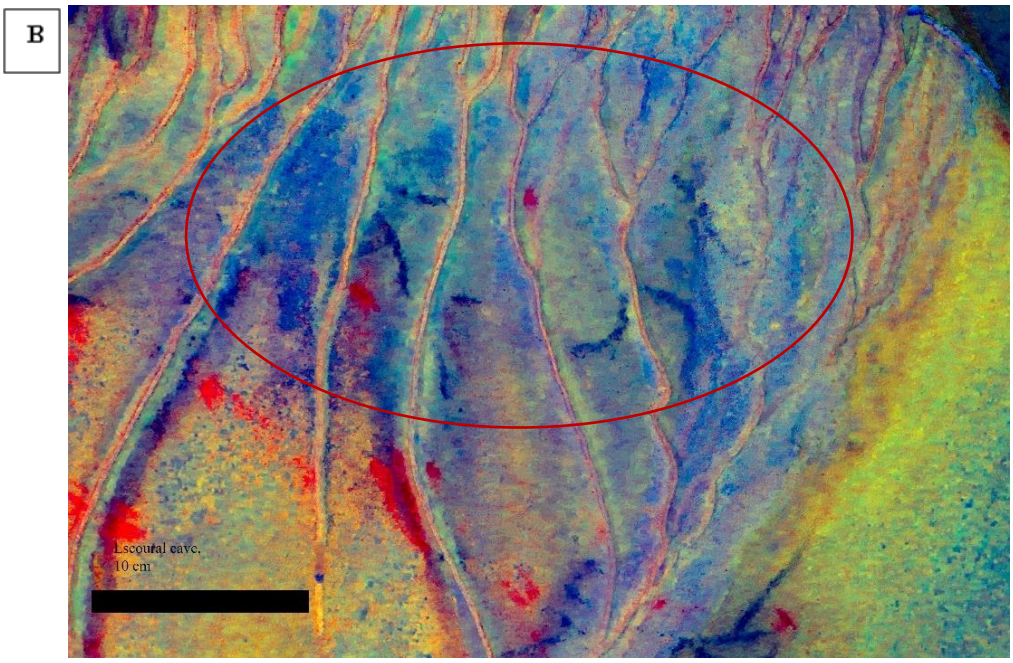


Figure 173. A is the bovid is from la Pileta cave. B is bovid from Escoural cave in main corridor (Pl. 16, fig. 24) after DStretch LDS filter (http://www.arte-sur.com/pileta .htm , Hasnaa Askalany).

There is also resemblance in the equid of La Pileta. It has the head, the msnout and the muzzle area has the duckbill (García, 2012). The equid from Escoural in that they both have the painting same technique pigments and in terms also of physical chrasterstic the forhead line and the snout and the muzzle area has the duckbill (Figure 174 A, B).

B

Figure 174. A is the equid of La Pileta cave. B is the equid of Escoural cave (P1.29, fig. 44) after DStretch IBK filter (http://www.arte-sur.com/pileta.htm, Hasnaa Askalany).

Another equid figure has resemblance in the physical characteristics, the rectilinear convex cervical dorsal line in La Pileta cave and Maltravieso cave panel SAC I-1. The mane line could also be considered one of the resemblances. However, in the ventral line is pronounced in La Pileta cave and not exist in Maltravieso cave. The technique is different in both figures, Maltravieso cave is engraving and in the la Pileta cave is painting (Figure 175 A, B).

A

Figure 175. A is the equid from La Pileta cave B. is the incomplete figure of Maltravieso cave the equid SAC I-1 (http://www.arte-sur.com/pileta.htm, Hasnaa Askalany)

8.2.7. Ardales (Ardales, Malaga)

Malaga area where we can see a figure believed to be female figure dated to Gravettian-Aurignacian period (Figure 176 A, B, C) (García, 2019). The resembling of this figure in Escoural cave (Pl. 16, fig. 23) there is a resemblance especially in the lower part of the figure. Which could explain the physical characteristic of the Half equid / half human in Escoural cave.

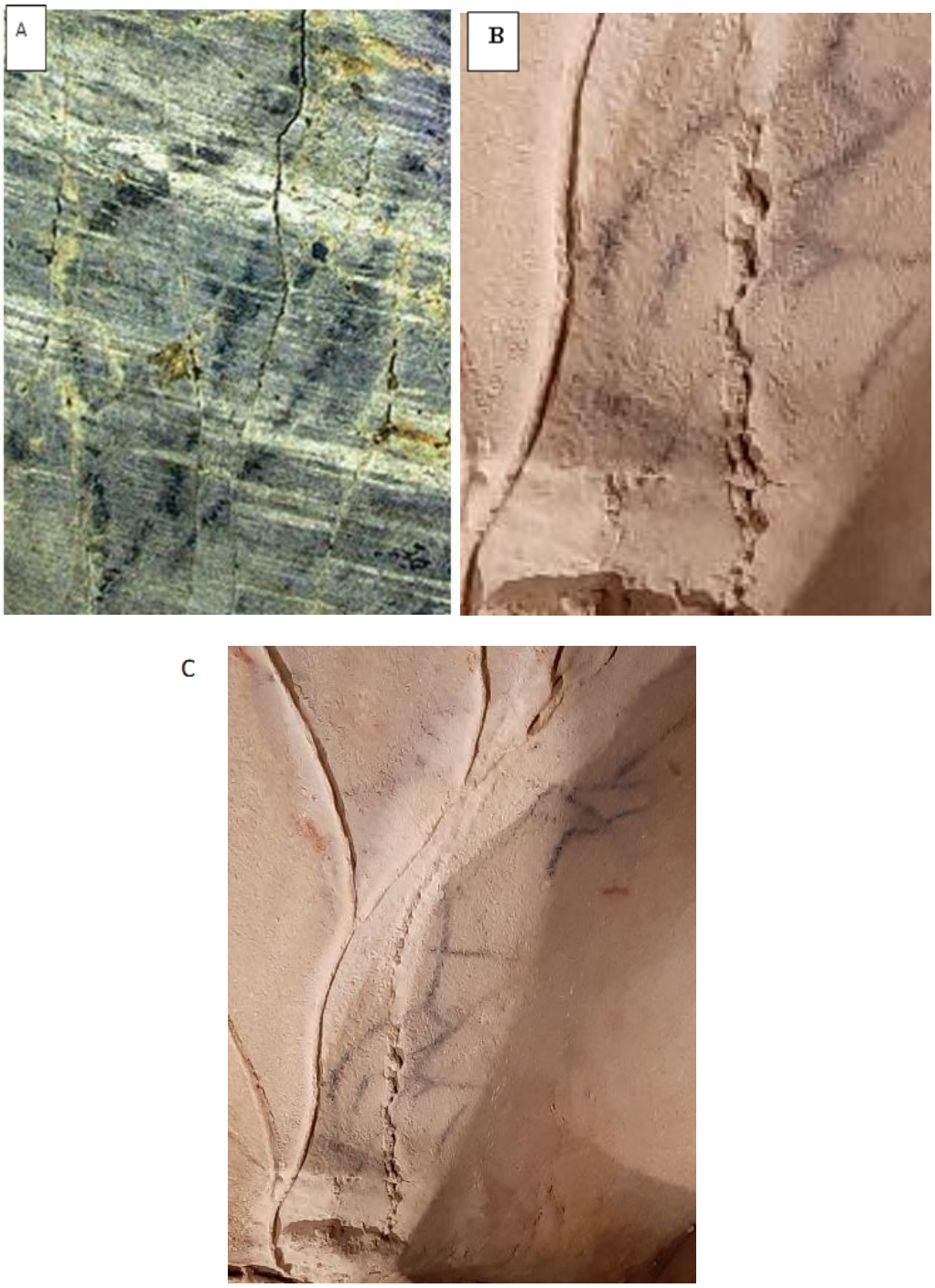


Figure 176.A is the female figure from Al Malga (García, 2019). B is the detail figure the unidentified (hybrid) figure (Pl. 16, fig. 23). from Escoural cave, C is the complete figure p (Pl. 16, fig. 23) Escoural cave (Collado, 2021)

8.3. The west of Iberian Peninsula

8.3.1. Ocreza

There could be some resemblance, in outlines of the two figures in terms of physical characteristics. The Ocreza equid has the cervical dorsal line rectilinear convex line, the wide line of the neckline, and the convex ventral line. The equid was executed by pecking technique has (Green et al., 2019). These resembling also exist in Escoural cave equid, but the technique in Escoural cave is thinner incision. In terms of profile the Ocreza equid seems in position of moving while Escoural cave equid seems standing (Figure 177 A, B).

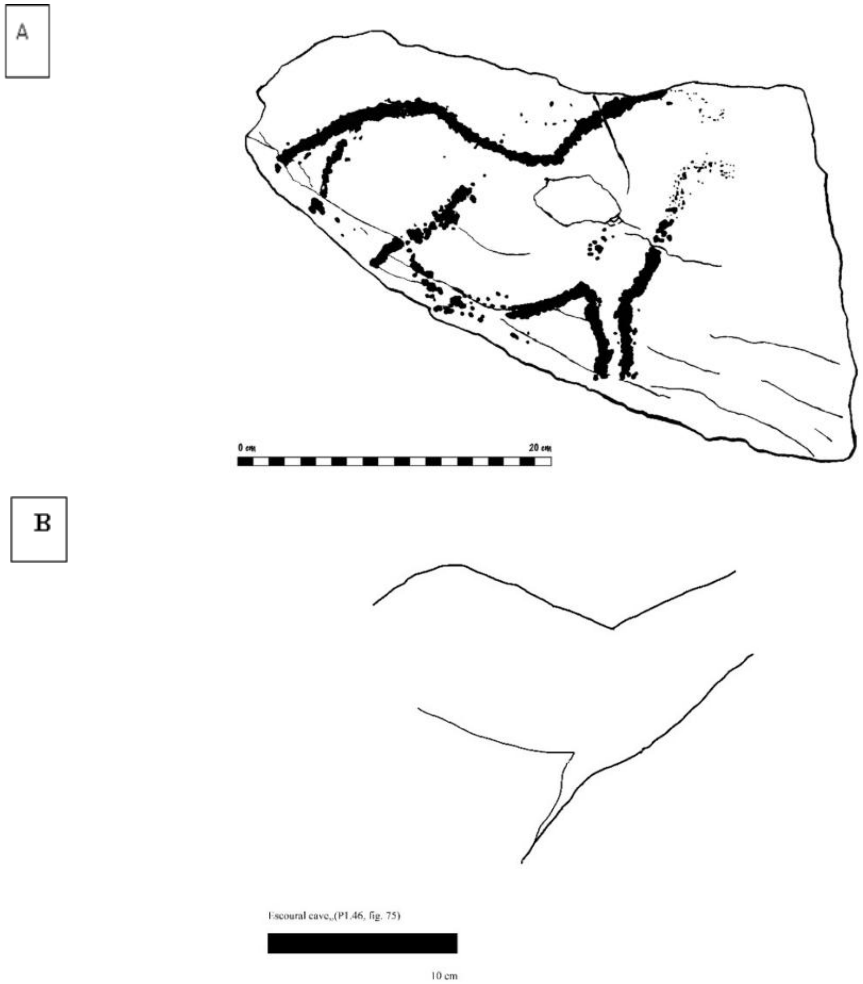


Figure 177. A is the equid of Ocreza (Green et al., 2019). B is the equid of Escoural cave (P1.46, fig. 75) (tracing Hasnaa Askalany).

8.3.2. La Griega

La Griega cave (Pedraza, Segovia, Spain) is considered an important site as it includes around 400 engravings that extends from the Solutrean to the 1st century AD. the cave has karstified yellowish limestone, attributed to the Cenomanense. (Corchón et al., 2012). The engraving of the site is mainly equine then cervid. They are simplified profiles, lacking in details body such as eyes, ears, or tails, legless, with elongated snouts and short vertical step manes. The time range established from the analysis of these superpositions, ranges from the full Solutrean to the Lower Magdalenian (Corchón et al., 2012).

There is figure in La Griega cave (S.II-17) (Corchón et al., 2012), that could half resemble with with Maltravieso cave equid head CH VII-1. The forehead, the separate ears that has the shape as two lines, also the duck bills shape in both figures (Figure 178 A, B).

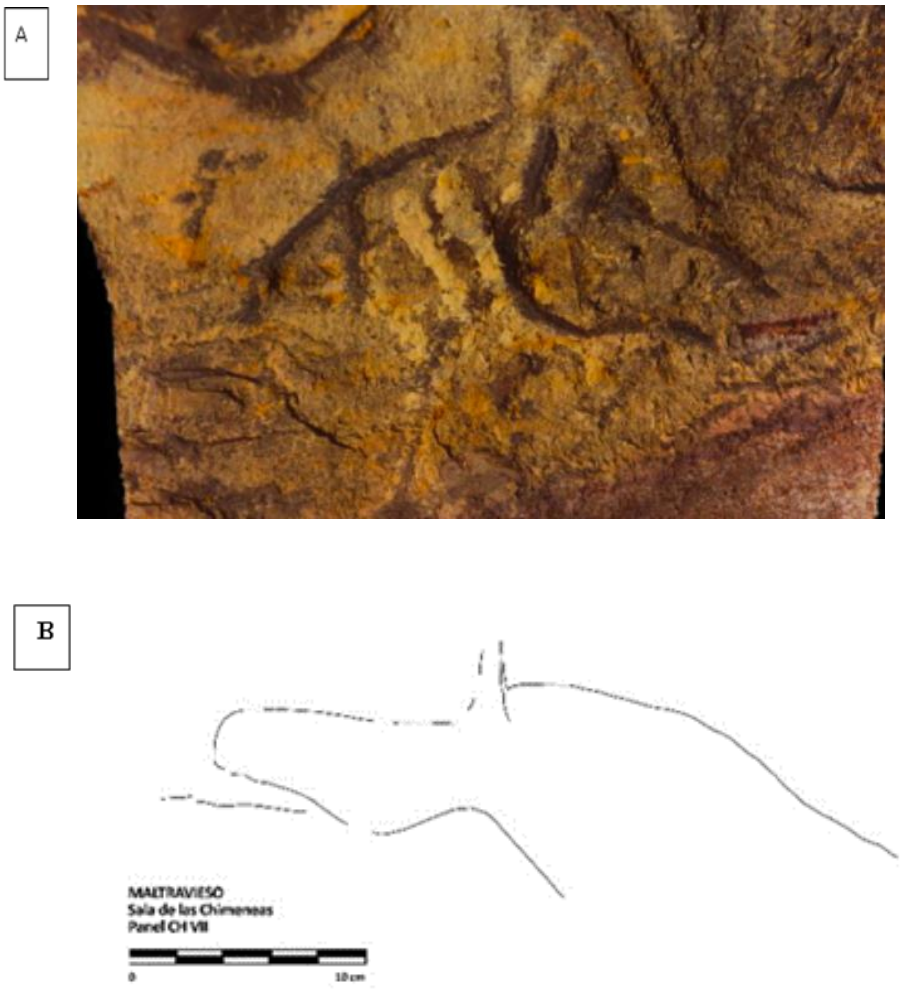


Figure 178.A is detail of an equid in La Griega site. B is equid head CH VII-1 Maltravieso cave (Corchón et al., 2012, Collado, 2021).

The equid from G27 from La Griega cave the forehead , has no eras and the lower jaw has duck bills (Corchón et al., 2012). It resembles the equid from Escoural cave, Hall 1(pl.8 fig. 10). The diffrence is that La Griega cave is represented with engraving technique and Escoural cave is represented with painintg (Figure 179 A, B).

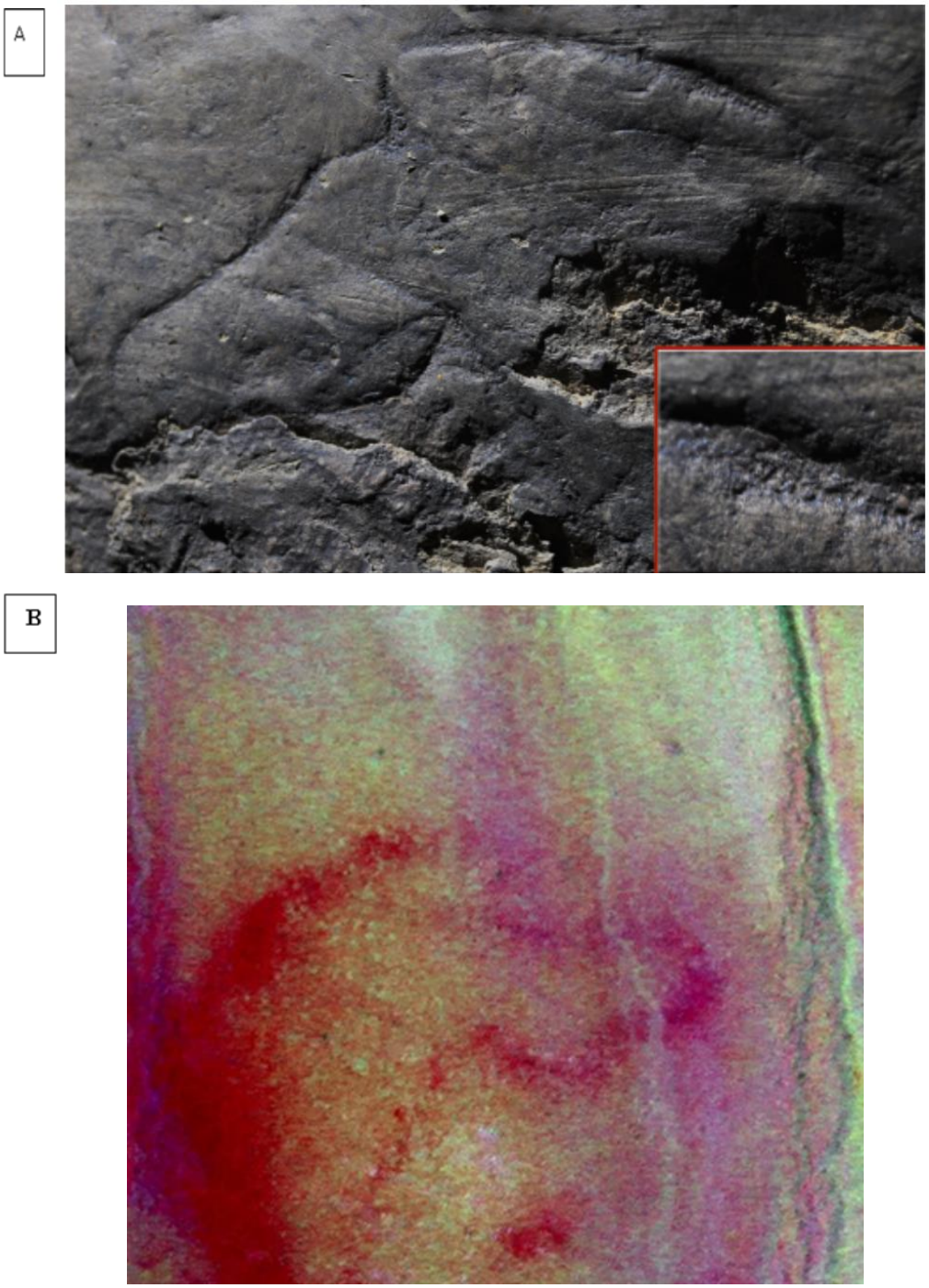


Figure 179. A is the equid from G27 from la Griega cave. B is the equid from Escoural cave, Hall 1(pl.8 fig. 10)((Corchón et al., 2012, Hasnaa Askalany).

Detail of an equid from sector VII (set 25), and another equid from sector III in La Griega cave. They both have the head that does not represent any detail such as, the ears and eye, and the muzzle is duck bill. They both have cervical dorsal line but there is no trace for ventral line (Figure 180 A, B, C) (Corchón et al., 2012).These two equids resembling the equid from Escoural cave (pl.8 fig. 10) that also has the same execution of the head, no ear or eye. The muzzle area that has duck bills. the dorsal and ventral line present. The only difference that the equids in La Griega cave are engraving while in Escoural cave is painting.

A

B

C

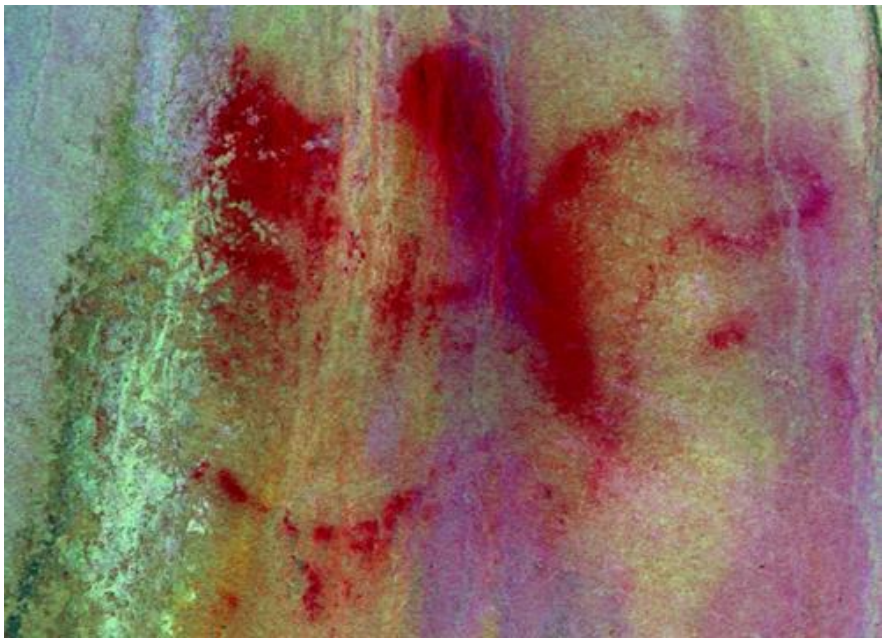


Figure 180.A is equid from sector VII, B is equid from sector III in La Griega cave. C is the Equid from Escoural cave , Hall 1(pl.8 fig. 10). (Corchón et al., 2012, Hasnaa Askalany).

Another resembling is a pair of cervids from sector III. One of the cervids is represented as a complete figure and in absolute profile as the antlers and the four limbs are present. The other cervid is also in absolute profile it has both antlers. They both have the muzzle area as a triangular shape (Corchón et al., 2012). The representation of the cervids is more resembling to Guadiana River particularly cervid station CDVII HI and cervid station DLVII

A

Figure 181. A is cervid from sector III La Griega cave, B is cervid station CDVII HI. C is cervid station DLVII in Guadiana river (Corchón et al., 2012, Collado, 2013).

CONCLUSION

During the study research the main purpose is to answer the questions: is there a pattern in the representation of the zoomorphic figures in the SW of Iberian Peninsula or not? If a pattern is identified, can it indicate a relationship between the three caves and the open-air site?

In order to accomplish this purpose, the study followed fundamental axes. First is the bibliographic analysis, to have a better understanding of the sites (Escoural cave, Maltravieso cave, Mina de Ibor cave, Guadiana river- open-air site Molino Manzánez, Moinhola rock no 30, and Porto Portel) and see the previous studies of the sites. Secondly is to do a field visit to Escoural cave in order to photograph and use 3D modeling and take samples of pigments from the cave paintings to obtain the first absolute dates if possible. The third axis is to apply some methods such as DStretch® and Adobe Photoshop® to see better view of the painted figures that are distributed in the four sites. Also, Adobe Photoshop® is applied to trace the engraved figures. The GIS is used to locate the sites of SW of Iberian Peninsula.

These tools helped to have better view of identification the figures, in this case Escoural cave, Hall 1, entrance (pl.8 fig. 10) is better example. Also, they can detect superimposed of some figures in that case Maltravieso cave Hall of Columns. Panel C III is an example indicating which figure was painted first in that case the equid was the first to paint then the cervid was painted after (Collado, 2021 unpublished).

The final important axis is to establish two types of statistics. The first is for each site individually and the second is for all sites together. In order to establish both types of statistics, there are five criteria to follow: the species of the representations of zoomorphic figures, the most represented and the less represented species, the identified and the unidentified species, the type of technique that is used whether it is engraving or painting, in case of painting then which pigment is used black or red pigments, then the physical characteristics of which part is represented. Last we tried to see if there are any similarities between motifs from other sites.

From the previous methodology, the study of the sites that obtained zoomorphic figures in SW of Iberian Peninsula were the Escoural cave, Maltravieso cave, Mina de Ibor cave, and an open-air site in that case is Guadiana River. The total of zoomorphic figures of the

four sites is 71. The identified zoomorphic figures are 59, the unidentified are 12. Escoural cave has the highest zoomorphic figures representation and Mina de Ibor cave has the least figures. Maltravieso cave and Guadiana River have almost the common paleolithic species represented the equid, the cervid, the bovid, the goat.

The equid was the iconic represented figure in all sites with 33 figures. The highest representation was in Escoural cave, and the least was in Mina de Ibor cave. Other species were not represented in all sites such as the cervid, the bovid, the goat and the bear. The cervid was the second represented species with 15 figures. The highest representation was in Guadiana the open-air site, while the least was in Mina de Ibor cave. The Bovid was represented with nine figures. The highest representation was in Escoural cave while the least was in Mina de Ibor cave. The goat was represented in three figures, two figures in Maltravieso cave and one figure in Guadiana open-air site. Finally, the bear was not represented in all sites but only two figures in Mina de Ibor cave.

In terms of technique engraving was the most common technique used with a total number of 57 figures, Guadiana River was the highest site that used engraving technique in all the 22 figures. Escoural cave was the second site that had 15 engraving figures. Then Maltravieso cave had 13 figures and finally Mina de Ibor cave had seven engraving figures. In the contrary painting technique was only used in Escoural cave with 11 figures and in Maltravieso cave with four figures There was no painting neither in Mina de Ibor cave nor in Guadiana River.

In terms of other different techniques in the SW of Iberian Peninsula, Mina de Ibor cave used natural reliefs in the bear figure for the compositions to give the effect of the two-dimensional factor and the artist's ability to take advantage of this surface (Collado, 2009). Some sites showed the intention of the artist to correct the figures in Matravieso figure Panel GH III-2, however in the end the figure ended up with anatomical fault in the muzzle area. Superimposition figure was noticed in Mina de Ibor cave and Maltravieso cave. In Maltravieso cave there was only one figure that used airbrushing technique in painting, which was not repeated in the other sites.

Though Guadiana River is in the same area of Extremadura region and has the same geological formation of the three caves but in terms of art it is different (Collado et al., 2006; Collado, 2013), it is the most diverse site in animals' physical characteristic details, in

general most of the figures are complete to see the head, antlers, cervical dorsal line, ventral line, front, and hind leg and sometimes the representation, the hock and hoof, and the details in the ear, as they appear in a triangular ear shape and oriented backward to indicate the attitude of bellowing or browsing, that suggests the Magdalenian period (Collado et al., 2006; Collado, 2013). The Upper Paleolithic witnessed increasing of population and the advance of lithic technology, and distance hunting which became more important to use the territory space (López, 2017). The main reason to occupy the territory would be to obtain resources such as aquatic resources, animals, or raw material. These resources sometimes are near to the area of living where it facilitates the process of cutting animals or food consuming (González, 2011).

According to some authors (Castañeda, 2017), the importance of the territory could be marked by rock art, which can be found in caves, shelters, and open-air sites to indicate the strategic importance of the area. Rock art can be a key to establish links between places marked and shared by visual symbols.

Other authors believe that (Troncoso et al., 2016; Sepúlveda, et al., 2019). Rock art can also contribute to detect similarities and differences with other regions and communities and help to understand the links or co-existence between groups in terms of territory and mobility of a community that can be observed thanks to stylistic and compositional characteristics of motifs

Escoural cave, Maltravieso cave and Mina de Ibor cave could be the case, The three caves share similarities in representing the zoomorphic figure, the most figures are partially represented, as it is rare to see complete figures with more anatomical detail such as cervical and ventral line, front and hind leg. The technique of engraving that is simply consist of outline of the figure cranial part mostly can be seen in the head, the ear, the antlers, and the eye. The painting technique that was found Maltravieso cave and Escoural cave is composed of two colors black and red pigment. These rock art zoomorphic figures visual styles could refer to interaction happened between groups.

Referring to some authors views (Troncoso et al., 2016; Sepúlveda et al., 2019) regarding rock art as key of understanding territory, it could suggest an existence of interterritorial exchange between the groups, that recurrently occupied an area who gave this expression of cultural traditions of the modes of artistic representation and appropriation of the space.

According to (González, 2011), that caves that have lower number of figures could indicate that this cave was used seasonally for resting or for hunting.

This opinion could resemble Maltravieso cave, as it could be the main cave of settlement as it has not only zoomorphic figures but handprints and other type of motifs (Collado, 1997; 2012). It could indicate that this cave was frequently visited, while Escoural cave (it has some other geometric motifs beside the zoomorphic figures (Lejeune, 1995) and Mina de Ibor cave (that has only the zoomorphic figures). In the case of Escoural and Mina de Ibor caves, it could also indicate that Escoural cave has higher visiting rates than Mina de Ibor cave as the latter has less motifs.

In another meaning, in some author opinions, (Niskanen, 2019 and Sepúlveda et al., 2019), it can be considered that the spatial distribution of rock art indicates group rights to resources as landmarks. Whereas more homogeneity of style in less fertile regions with lower population densities reinforces cohesion, alliances, and networking between groups

In this case, Mina de Ibor cave that could have less population in the region, there will be less need for such landmarks due to the less resource. In contrast to Escoural cave to and Maltravieso cave.

Stating from (Sepúlveda et al., 2019), that the figures of rock art that have stylistic similarities could indicate interaction between different areas

In that case the comparison between sites in the South and the West of Iberian Peninsula with the sites of the SW of Iberian Peninsula we can see a resemblance in the zoomorphic figures between the sites.

Taking into consideration that all compared caves, it could suggest that there are some uniformities in some figures such as representation of the equid, the cervid and the bovid. Compared with other open-air sites like Domingo García that has 87 paleolithic zoomorphic figures and chronologically it corresponds to both the upper Solutrean and the lower Magdalenian (Ripoll & Municio, 1999), and open sites as Siega Verde, where it obtain approximately 25 zoomorphic figures, that has early figures belong to lower Solutrean, and the later figures between upper Solutrean and lower Magdalenian periods (Alcolea & Balbin, 2006), with Guadiana river , that obtain two figures chronologically back to upper Solutrean, early Magdalenian and the rest of the figures between middle and upper Magdalenian (Collado et al., 2006). We can say that paleolithic motifs in Guadiana

are fewer (the site has almost 19 figures of paleolithic figures and 5000 motifs of post paleolithic rock art and only two figures correspond to final Solutrean, and the initial Magdalenian and the rest of the figures correspond to middle and upper Magdalenian (Collado et al., 2006; Collado, 2013). This could indicate that the site starts to be occupied in the end of the Upper Paleolithic probably, where we start to see much more rock art sites (Ripoll & Municio, 1999).

In the end of the study, it will be recommended to carry further studies between the SW of the Iberian Peninsula and other sites from the South, West of the Iberian Peninsula and open-air site, mainly Côa valley to have a better understanding of to have better understanding of the difference's dynamic between the north and the south. it will be also recommended to run further research with the new panel that was discovered recently in Ocreza river that contains some new zoomorphic figures to see if it obtains similarities or difference with the sites of the SW.

This may be considered a promising aspect in the future with the FIRST-ART project according to (Garcês et al., 2020), after studying of the pigments samples of Escoural cave and obtain the first dates if possible by using the uranium-thorium dating technique one could create a chronological connection between Escoural cave and Maltravieso cave caves in the Southwest Peninsula's oldest paleolithic rock art caves.

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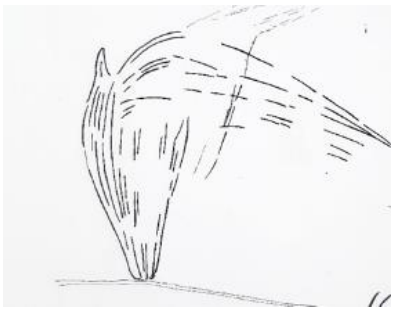
APPENDIX

1-Escoural

Panel	Equid figure	Head
(P1.4, fig. 5)		
(Pl.5, fig. 6)		
(PI.26, fig. 39)		

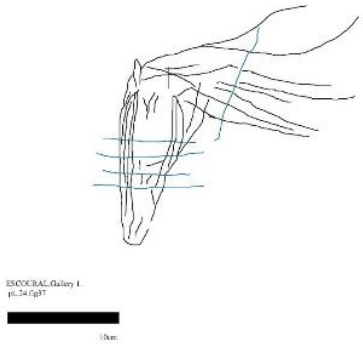
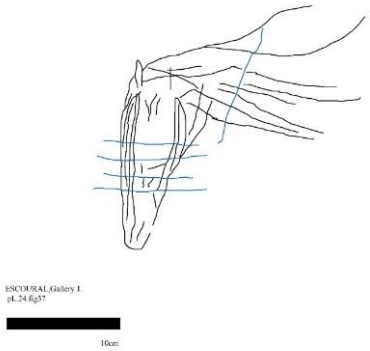
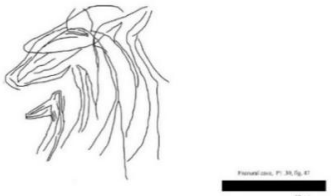
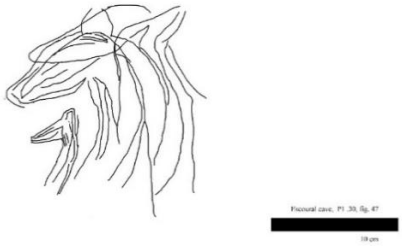
(PI.24, fig. 37)		
(P1.30, fig. 47).		
(P1.28, fig. 42)		

Table 1. Escoural cave, equid anatomical engraved figures (catalogue by Hasnaa Askalany).

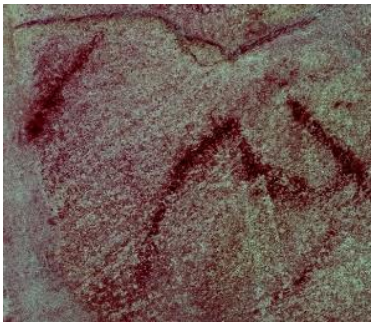
Panel	Equid figure	Head
(P1.45, fig. 72)		
(P1.29, fig. 44).		
(P1.36, fig. 60)		

Table 2. Escoural cave, equid anatomical painted figures (catalogue by Hasnaa Askalany)

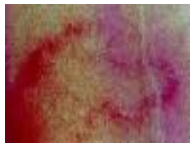
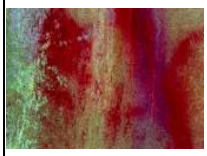
Panel	Figure	Head	Cervical dorsal line	Ventral line	Front leg
(pl.8 fig. 10)					

Table 3. Escoural cave, equid anatomical painted figures (catalogue by Hasnaa Askalany).

Panel	Headlees Equid Figures	Cervical dorsal line	Ventral line	Front leg
(P1.46, fig. 75)				

Table 4. Escoural cave, anatomical headless engraved equid without hind leg (catalogue by Hasnaa Askalany).

Panel	Headlees Equid Figures	Cervical dorsal line	Ventral line	Hind leg
(P1.19, fig. 30)				

Table 5. Escoural cave anatomical dorsal part of painted equid figure (catalogue by Hasnaa Askalany).

Panel	Headlees Equid Figures	Cervical dorsal line	Ventral line	Hind leg+ tail
(Pl.35, fig. 57)				

Table 6. Escoural cave anatomical dorsal part of engraved equid figure (catalogue by Hasnaa Askalany).

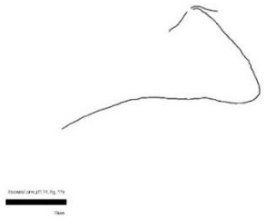
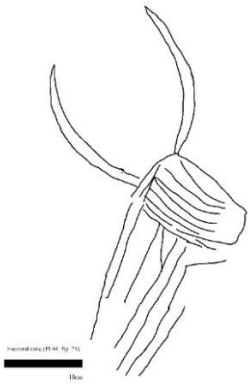
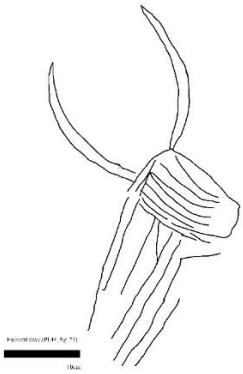
Panel	Figure	Head
(Pl.34, fig. 55)		
(P1.44, fig. 71).		

Table 7. Escoural cave anatomical bovid heads engraved figures (catalogue by Hasnaa Askalany).

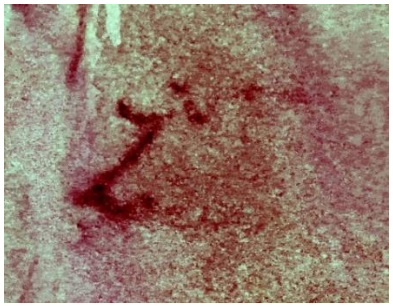
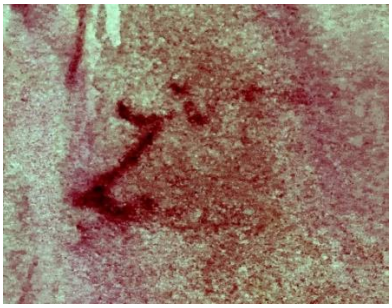
Panel	Figure	Head
(P1.64A)		

Table 8. Escoural cave anatomical painted bovid head figure in (catalogue by Hasnaa Askalany).

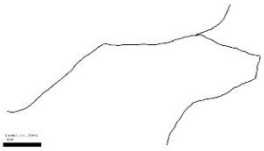
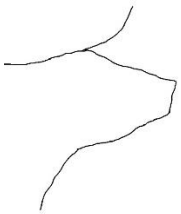
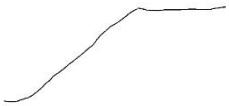
Panel	Figure	Head+ horn	Cervical line
(Pl.70 A.)			

Table 9. Escoural cave anatomical engraved bovid figure (catalogue by Hasnaa Askalany).

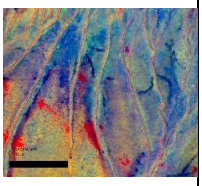
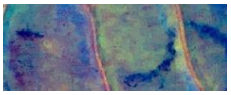
Panel	Headlees Equid Figures	Cervical dorsal line	Ventral line	Front leg	Hind leg
(Pl. 16, fig. 24).					

Table 10. Escoural cave anatomical painted bovid figure (catalogue by Hasnaa Askalany).

Panel	Figure	Ventral line	Front leg	Hind leg
(PI.12, fig. 19)				

Table 11 . Escoural cave anatomical unidentified painted figure (catalogue by Hasnaa Askalany).

2-Maltravieso

Panel	Figure	Head
GS IX-2		
CH III-1		

CH III-2		
CH III-3		
CH VII-1		

Table 12. Maltravieso cave anatomical engraved equid heads (catalogue by Hasnaa Askalany).

Panel	Figure	Head	Cervical dorsal line	Front limb	Ventral line
CH VII-2					

Table 13. Maltravieso cave anatomical engraved equid (catalogue by Hasnaa Askalany).

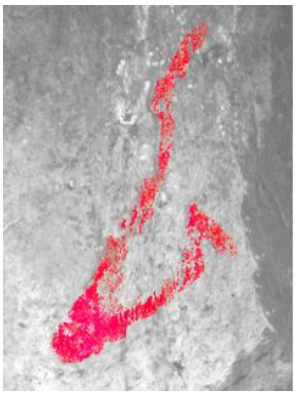
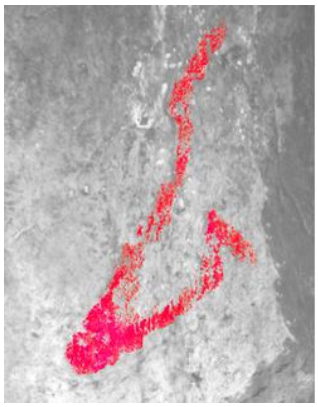
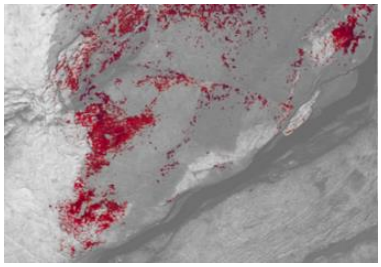
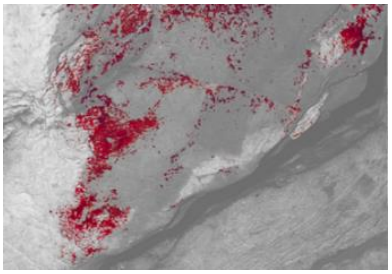
Panel	Figure	Head
C III-1		
C IV		

Table 14. Maltravieso cave anatomical painted equid heads (catalogue by Hasnaa Askalany).

Panel	Figure	Head	Cervical dorsal line	Front leg
SAC I-1				

Table 15. Maltravieso cave anatomical engraved equid (catalogue by Hasnaa Askalany).

Panel	Figure	Head	Cervical dorsal line	Hind leg
GSVIII-1				

Table 16. Maltravieso cave, anatomical engraved cervide (catalogue by Hasnaa Askalany).

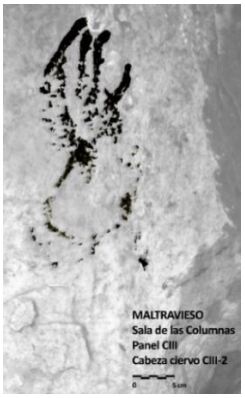
Panel	Figure	Head
C III-2		

Table 17. Maltravieso cave anatomical painted cervide catalogue by (Hasnaa Askalany).

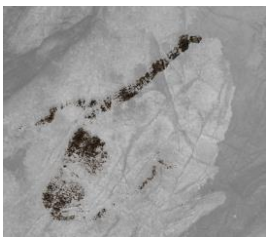
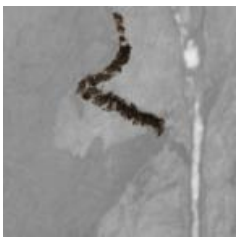
Panel	Figure	Head	Tail
CV-1			

Table 18. Maltravieso cave anatomical painted bovid (catalogue by Hasnaa Askalany).

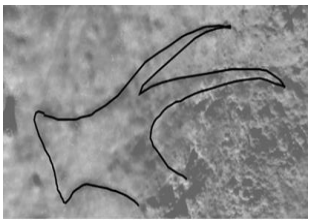
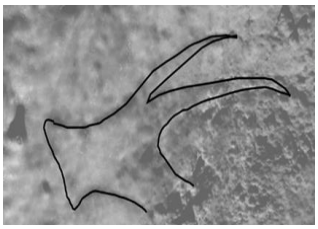
Panel	Figure	Head
PIV		

Table 19. Maltravieso cave anatomical engraved goat (catalogue by Hasnaa Askalany).

3- Mina de Ibor

Panel	Figure	Head+antlers
Cervid		

Cervid		

Tabela 20. Mina de Ibor cave anatomical engraved cervid (catalogue by Hasnaa Askalany).

Panel	Unidentified figure	Front leg
		
		

Tabela21.Mina de Ibor cave anatomical front leg of unidentifed engraved figures (catalogue by Hasnaa Askalany).

Panel	Figure	Head	Cervical dorsal line	Front leg
Bear				

Table 22 . Mina de Ibor cave anatomical engraved bear figure (catalogue by Hasnaa Askalany).

4-Gudiana River

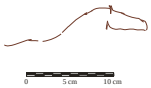
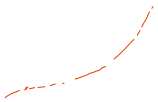
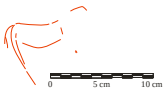
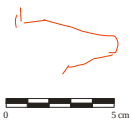
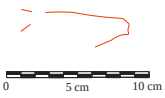
Station	Figure	Head	Cervical dorsal	Ventral line	Hind leg
XV Esquiners					
XCII Heineken					
XCII Heineken					
XCII Heineken					
DLVII Paletin					
CDXXIV Noel					

Table 23. Manzánez Mill equid anatomical engraved figures (Collado, 2006).

Cervid male						
Station	Figure	Head	Cervical dorsal	Ventral line	Front leg	Hind leg
XV Esquinera						
XV Esquinera						
XXVI Boceto						
DLVII Paletin						
CCXCIV Muflon						

Table 24. Manzánez Mill anatomical engraved cervid (Collado, 2006).

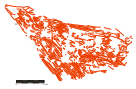
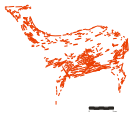
Cervid female						
Station	Figure	Head	Cervical dorsal	Ventral line	Front leg	Hind leg
CCLXXVI Bonitadia						
CDXCVII Sete						
CVII Cangrejos A						
CDVII Hiperlava						

Table 25: Manzánez Mill anatomical cervid engraved figures (Collado, 2006).

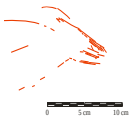
Caprid						
Station	Figure	Head	Cervical dorsal	Ventral line	Front leg	Hind leg
XXII El globo						
LXIII Tanios						

Table 26: Manzánez Mill anatomical engraved goat figures (Collado, 2006).

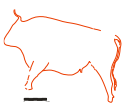
Bovid						
Station	Figure	Head	Cervical dorsal	Ventral line	Front leg	Hind leg
CCXIV Toropelon						

Table 27. Manzánez Mill anatomical engraved bovide figure (Collado, 2006)

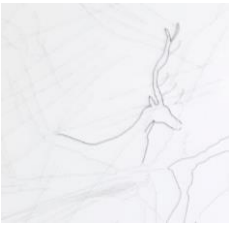
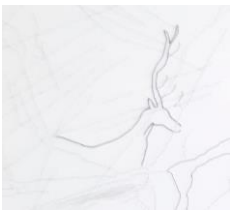
Porto Portel	Figure	Head+ antlers	Cervical line
Equid			

Table 28Porto Portel anatomicalengraved cervid (catalogue by Hasnaa Askalany).