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Pico San Vicente (909 m, at the eastern end of the Sierra del Hornijo) viewed from the interior of El Mirón Cave. Photo: L. G. Straus.

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“Poor” archeological levels not to be forgotten: units of Middle and early Upper Magdalenian age in El Mirón Cave (Ramales de la Victoria, Cantabria, Spain)

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ABSTRACT
This succinct contribution focuses on description and preliminary interpretation of “minor” occupations of the large, strategically located El Mirón Cave on the edge of the Cantabrian Cordillera in eastern Cantabria (Spain) during the Middle and early Upper Magalenian that followed upon the massive, culturally rich, faunally dense, functionally complex deposits of the Initial and Lower Magdalenian. The ten levels analyzed here date to the Late Glacial, *c.* 15.5-12.5 uncal kya BP. At a time when the classic Middle Magdalenian of the nearby French Pyrenees developed and major residential sites with clear social links to it (via the key site of Isturitz) were occupied in the lowland coastal zone of Cantabria and Asturias (e.g. La Garma, Llonín, La Viña), El Mirón had reverted for the most part to the role of a short-term, special-purpose, perhaps logistical campsite, rather than as a long-term, large-scale hub residential base. It is tempting (and indeed traditional) to focus on levels with large numbers of lithic and osseous artifacts, as well as works of portable art and personal ornaments, which are so characteristic of the most famous Magdalenian occupations. However, in hunter-gatherer subsistence systems, the “minor” locations played a significant role in the human exploitation of territories (especially ones with such complex, high relief as Cantabrian Spain). The levels in question here include some that can be interpreted as hunting camps (suggested by high percentages of worked and unworked bladelets and some antler points within the small assemblages), partially reminiscent of the use to which the cave may have been put during pre-Initial Magdalenian times, notably during the Solutrean, which was relatively rich in stone points.

KEY WORDS
Magdalenian,
El Mirón Cave,
Cantabrian Spain,
minor special-purpose
occupations,
Late Glacial.

RÉSUMÉ

« *Pauvres* » *niveaux à ne pas oublier : les unités d'âge Magdalénien moyen et supérieur ancien de la grotte d'El Mirón (Ramales de la Victoria, Cantabrie, Espagne).*

Cette courte contribution présente une description et une interprétation préliminaire d'occupations "mineures" de la grande Grotte d'El Mirón située stratégiquement en bordure de la Cordillère Cantabrique, en Cantabrie orientale, Espagne, attribuées au Magdalénien moyen et supérieur ancien. Ces ensembles succèdent aux dépôts massifs, culturellement riches, denses en restes fauniques, fonctionnellement complexes du Magdalénien initial et ancien. Les dix niveaux analysés livrent des dates de la fin du LGM et du Tardiglaciaire, à peu près 15,5 - 12,5 kya BP (non calibré). À l'époque, lors du développement du Magdalénien moyen « classique » des Pyrénées françaises voisines et de sites de résidence majeurs dans la basse zone côtière de Cantabrie et des Asturies (e.g. La Garma, Llonín, La Viña) qui maintinrent des liens sociaux manifestes (probablement au travers du site clé d'Isturitz), El Mirón est redevenue, pour une grande part, un lieu d'occupations de courte durée, de fonction limitée, peut-être logistique (campement), plutôt qu'une vaste base de résidence de longue durée. Il est tentant (et en fait traditionnel) de se concentrer seulement sur des niveaux riches en artefacts lithiques et osseux, et en œuvres d'art mobilier ou ornements personnels, si caractéristiques de la plupart des plus célèbres occupations magdaléniennes. Cependant, dans les systèmes territoriaux de subsistance des chasseurs-collecteurs, les localisations "mineures" ont joué un rôle majeur dans l'exploitation humaine du territoire (surtout dans le cas d'un relief si complexe et si haut que celui de l'Espagne Cantabrique). Certains niveaux en question comportent ce que l'on pourrait interpréter comme des bivouacs de chasse (suggéré par de forts pourcentages de lamelles travaillées ou brutes et quelques pointes de corne au sein des petits assemblages), ce qui fait penser en partie à l'utilisation qu'a pu avoir la grotte pendant les temps pré-Magdalénien initial, notablement au Solutréen, si relativement riche en pointes lithiques.

MOTS CLÉS
Magdalénien,
grotte d'El Mirón,
Espagne Cantabrique,
occupations mineures
de fonction limitée,
Glaciaire tardif.

INTRODUCTION

Many Upper Paleolithic studies have traditionally focused on those archeological levels that yielded the richest assemblages of faunal remains, manuports and especially artifacts. Attribution of levels to specific cultural periods is often a major goal of analysis, and that is generally dependent upon the presence of temporally diagnostic artifacts ("*fossiles directeurs*"), which in turn is often made possible by having a large sample of finds. In the paradigm of culture history, levels poor in artifacts often have been of limited interest. Such levels have very low densities of materials. However, with the shift toward a paleoanthropological or "processual" perspective, the fact that there are levels or indeed sites with sparse cultural remains is intrinsically interesting. The recognition that hunter-gatherer bands can occupy sites of several different types for various durations, including many short-term, special-camps (e.g. "logistical" loci) where relatively small numbers of food and technology items were abandoned, means that more attention must be paid to assemblages far poorer than the usually emphasized sites that were often the product of multi-purpose, long-term (and/or repeated) residential occupations. While the latter often form massive, dense palimpsests, rich in artifacts, bones, heaths with charcoal and fire-cracked rocks ("horizons"-"*foyers*" in the classic descriptions of French sites), the former are thin, can be discontinuous, and have limited numbers of finds, sometimes lacking hearths or other features. But, to fully understand the settlement-subsistence systems of highly mobile Last Glacial foragers, both residential and logistical sites must be excavated, analyzed and published.

Caves, especially large ones with favorable location, orientation, access, and physical characteristics, can harbor many different types of occupations for varying durations, from over-night bivouacs to central base or hub campsites to ceremonial "sanctuary" loci, with groups of people ranging from (presumably) adult male hunting parties to multi-family bands consisting of men, women and children, from multi-band aggregations to individuals or very small sets of ritual specialists ("cave artists") (Straus 1986, 1990; Utrilla 1994). Simply because a particular cave contains some thick, find-dense archeologically rich horizons signifying sometime use as a major, multi-functional, long-term, residential locus does not mean that it could not also have been the convenient shelter for much more ephemeral, limited-activity, small-group visits that left behind modest physical evidence, i.e., manufacturing debris, discarded tools/weapon elements, faunal and fire remains. The indicators of such "minor" occupations deserve archeological attention, even if they lack culturally-temporally diagnostic artifacts, spectacular works of portable art, or ornaments.

In the context of the Magdalenian in the classic Cantabrian region of northern Atlantic Spain, the existence of many sites or layers that are poor in finds and often lacking diagnostic artifacts poses significant classificatory problems. (Indeed, in areas of lithology poor in flint – notably in eastern Asturias – some older collections with many large, "crude", non-flint, flake-based artifacts were incorrectly attributed to the Middle Paleolithic, when in fact they would be Middle Magdalenian.) Without such diagnostic artifacts as proto-harpoons, *contours découpés* or (less securely) decorated flat-bone discs and in the

absence of radiocarbon dates, it is virtually impossible to assign artifact assemblages to this period if Cantabrian Lower and Upper Magdalenian diagnostics (e.g. striation-engraved red deer scapulae, nucleiform "endscrapers", microlithic triangles vs "true" antler harpoons respectively) are also missing. Indeed, until the late 1970s-early 1980s, with discoveries in such sites as La Viña, Llonín, Las Caldas and Tito Bustillo in Asturias and later La Garma in Cantabria, the existence of a classic (i.e., French Pyrenean and Aquitanian) Middle Magdalenian was virtually unknown, save for hints (three proto-harpoons) at the site of Ermittia in Guipúcoa, excavated in 1924-1926 (Barandiarán 1967:135; see also Utrilla 1981). And this was despite the proximity of the extraordinary Middle Magdalenian "super-site" of Isturitz only a few kilometers across the international border in the French Basque Country. The finally-common application of radiocarbon dating in modern excavations (and the dating of specific osseous artifacts from old collections) makes possible a more refined and definitive chrono-stratigraphic sequence for the Cantabrian Magdalenian (see González Sainz 1989; Utrilla 1996; Corchón 2005, 2017; González Sainz & Utrilla 2005). An interesting question that remains is why classic Cantabrian Lower Magdalenian sites (e.g. El Castillo, Altamira, El Juyo, La Lloseta, El Rascaño, El Pendo, Santimamiñe, Urtiaga, El Mirón) are seemingly so numerous and archeologically rich, while Middle Magdalenian ones (in comparison to the situation in the French Pyrenees) still seem to be relatively scarce, with few truly "major" loci (e.g. La Viña, Las Caldas, Llonín, La Garma). It is possible that many assemblages lacking in diagnostic artifacts (some from levels below harpoon-bearing Upper Magdalenian ones) have been generically labelled "Lower Magdalenian". In short, the period between about 14.3 kya (*c.* 17.5 cal kya) and about 13.2 kya (*c.* 16.3 cal kya) may be artificially underrepresented in the Cantabrian record. The aim of this brief contribution is to present some of the artifact assemblages from apparently "minor" occupation layers of the large, commodious, strategically located El Mirón cave that are stratigraphically positioned between the spectacular, ultra-rich Lower Magdalenian horizon (with its unique human burial and remarkable portable and rupestral art) and the poor Upper Magdalenian and Azilian levels. (For a recent example of analyzing a minor, sporadic site dated to the Upper Magdalenian essentially by radiocarbon dates, namely Armiña Cave in Vizcaya, see Ríos-Garaizar *et al.* 2020.) The data described here complement others published earlier (e.g. González Morales & Straus 2005, 2009, 2012a; Straus & González Morales 2007, 2012a, 2018, 2019, 2020, in press; Straus *et al.* 2008, 2014, 2015a, 2016, 2018; Fontes *et al.* 2015, 2016, 2017) on the Initial, Lower, Upper and Epi- (Azilian) Magdalenian artifact assemblages from El Mirón. Also included here are some materials that stem from times between the main Lower and Middle Magdalenian levels and between the Middle and Upper Magdalenian ones at the site to round out presentation of the basic facts. The relative abundances of archeological materials between the "poor" levels described here and very "rich" ones such as Initial Magdalenian (117-119) and Lower Magdalenian (17, 110, 115) levels can be judged from information in several of the publications cited above (i.e., Straus *et al.* 2008, 2014, 2016, 2018; Fontes *et al.* 2015, 2016, 2017; Geiling *et al.* 2016; Straus & González Morales 2018, 2020, in press). While faunal data are not yet available for all these "minor" occupations described here, those that have been published by Marín Arroyo (2010) are also summarized here.

EL MIRÓN CAVE

El Mirón Cave, located above Ramales de la Victoria within a major cluster of Upper Paleolithic cave art loci centered on the middle ("Ruesga") valley of the Asón River and the lower course of its eastern tributary the Carranza along the border between the provinces of Cantabria and Vizcaya, was excavated under the direction of the authors between 1996-2013 (Fig. 1). The lower valley of the Asón also has a number of Magdalenian (and Azilian) sites (El Otero, La Chora, La Fragua, El Perro), while others may well have existed on the narrow, now-inundated continental shelf of the Cantabrian Sea north of the river's present mouth at Santoña. In between Santoña and Ramales is the major cave site of El Valle, one of the key loci excavated in 1909-1911 by researchers from the Institut de Paléontologie Humaine in collaboration with local amateur archeologists H. Alcalde del Río and L. Sierra (the scientific discoverers of El Mirón and the adjacent cave art sites of Covalanas and La Haza in 1903). El Valle contains a sequence of Upper Magdalenian and Azilian levels that are extraordinarily rich in osseous artifacts and, in the case of the former layers, works of portable art (Obermaier 1924: 157-158; Cheynier & González Echegaray 1964; Straus *et al.* 2002; García-Gelabert & Talavera 2004).

El Mirón's setting, location, physical characteristics, excavations and stratigraphy are described at length in two monographs (Straus & González Morales 2012b; Straus *et al.* 2015b). Located at 260 m a.s.l on the western cliff-face of Pando Mountain *c.* 150 m above the confluence of the Calera and Gándara tributaries of the Asón, the cave is surrounded by *c.* 1000 m peaks of the northern front range of the Cantabrian Cordillera, about 20 km from the Holocene shore (about 25 km from the Last Glacial shore). The cave mouth is about 20 m high by 16 m wide and dominates the whole Ruesga valley. The vestibule is consistently about 13 m high and measures 30 m deep from the dripline to its rear, never less than *c.* 8 m wide, for a sheltered area of about 250 m². It is fully sunlit and dry, except for a small area under an at least present-day drip from its flat ceiling. The stratigraphy of Magdalenian and post-Paleolithic levels in the front and middle of the vestibule is horizontal (Figs 2; 3), while the Magdalenian layers at the rear slope gently upward toward the cave rear, as they are banked upon the lower section of an ancient (Middle Pleistocene?) eroded slope of alluvium that fills the inner cave (Fig. 4). That narrow, inner cave extends straight eastward some 100 m from the vestibule rear to a point at which it is completely filled to its ceiling with the alluvium (Fig. 5).

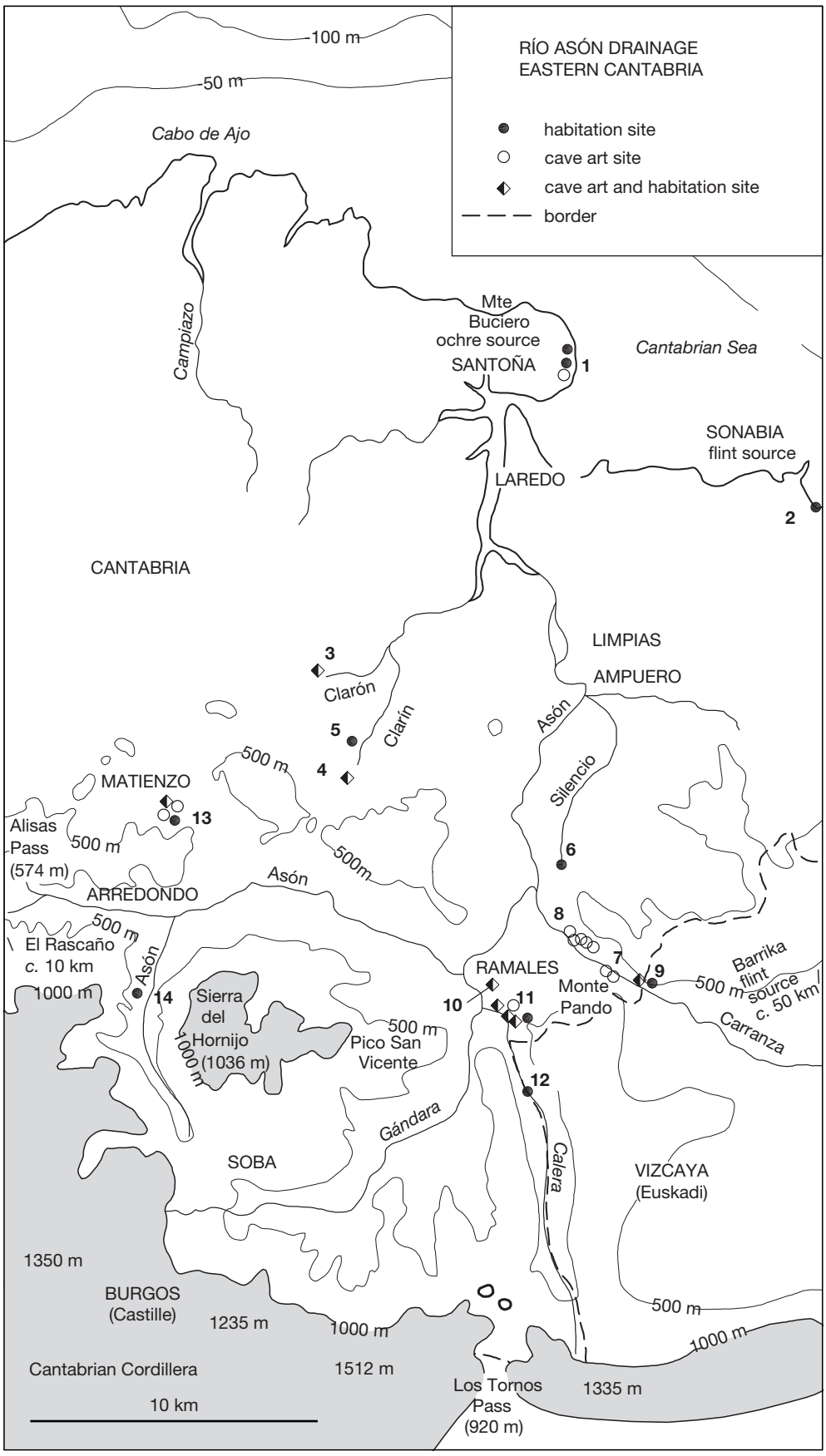


Fig. 1. — Map of the Asón River valley showing the location of El Mirón Cave (at no. 11) and other Paleolithic and Mesolithic sites (L. G. Straus and R. L. Stauber).

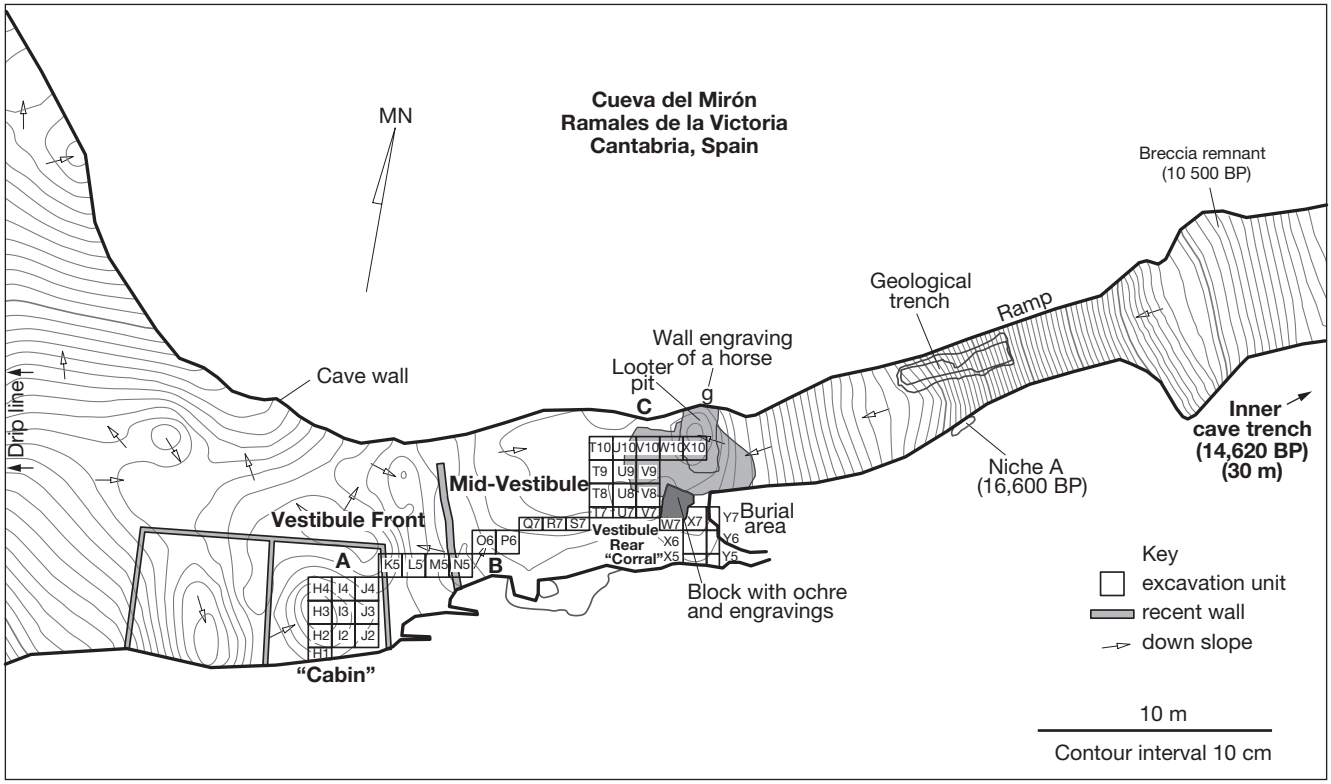


Fig. 2. — Plan of El Mirón Cave showing excavation areas (L. G. Straus and R. L. Stauber, based on topography by E. Torres).

THE "POOR" MAGDALENIAN LEVELS

Overview

Magdalenian levels have been found in all excavation areas of the vestibule: the vestibule front ("Cabin" area) and rear ("Corral" area), the Mid-Vestibule Trench, and the southeastern rear corner ("Red Lady Burial" area) (Fig. 5). In addition, a remnant deposit of organically-rich sediment in a niche in the southern cave wall of the passage (the "Ramp") leading up from the vestibule to the inner cave yielded a radiocarbon date on bone collagen that is of Lower or Initial Magdalenian age. This niche fill (and a breccia remnant adhering to the cave wall above the present surface of the Ramp [i.e., the erosional slope of the alluvium] and C14-dated to the Azilian *c.* 10 500 uncal. BP) indicate that the Magdalenian deposits had once been banked up higher atop the ancient alluvial slope. And, in a 1 m² test pit we dug below the base of a pre-existing trench across the middle of the Inner Cave (probably made in the 1950s by workers for a civil engineer/amateur archeologist), we found a small number of lithic artifacts of Magdalenian aspect associated with charcoal dated to 14 620 ± 80 uncal. BP – Middle Magdalenian at the top of Level VIII. In contrast. the richest Magdalenian levels are those of the Lower Magdalenian in the Cabin, Mid-Vestibule, Corral and Burial areas that together form a major horizon characterized by dark, "chocolate" brown silty loam, dense in both dispersed and hearth-infilling charcoal and fire-cracked rocks, faunal remains, lithic and osseous artifacts (manufacturing debris and finished tools/weapon elements). Although undoubtedly continuous throughout the whole vestibule, this remarkable palimpsest horizon (reminiscent of the Magdalenian Beta level in El Castillo or the massive deposits in Altamira and El Juyo in central Cantabria near Santander) goes by different level designations in the various excavation areas of El Mirón: Level 17 in the Cabin, 312 in the Mid-Vestibule, 110-116 in the Corral and 503.1-505 in the Burial Area. This horizon (and the Initial Magdalenian layers below it at least in the Corral) attest to repeated, closely spaced, large-scale occupations, marked by repeated living floors with, densely packed artifacts and bones, cobble "pavements", stacked hearths, organic-rich sediments and no trace of intervening "sterile" lenses. But here we focus on some of the far poorer levels that overlie the Lower Magdalenian horizon: Level 109 in the Corral, 311.1-307 in the Mid-Vestibule and 14-13 in the Cabin, plus mention of finds from Level VIII in the Inner Cave. These levels are defined by very low densities of artifacts, "manuports" (i.e., fire-cracked rocks and utilized cobbles), and faunal remains and have very few or no features (e.g. hearths) at least in the areas where they were excavated. Naturally, we can only deal with the limited samples of these levels from the excavation areas: 9.25 m² in the Cabin, 2 m² in the Mid-Vestibule, *c.* 3 m² in the Corral, and 1 m² in the Inner Cave. It is conceivable that these levels might be culturally and faunistically richer in other areas that we did not excavate, although it is unlikely that they would come anywhere close to the density found in the massive Lower Magdalenian horizon that seems to

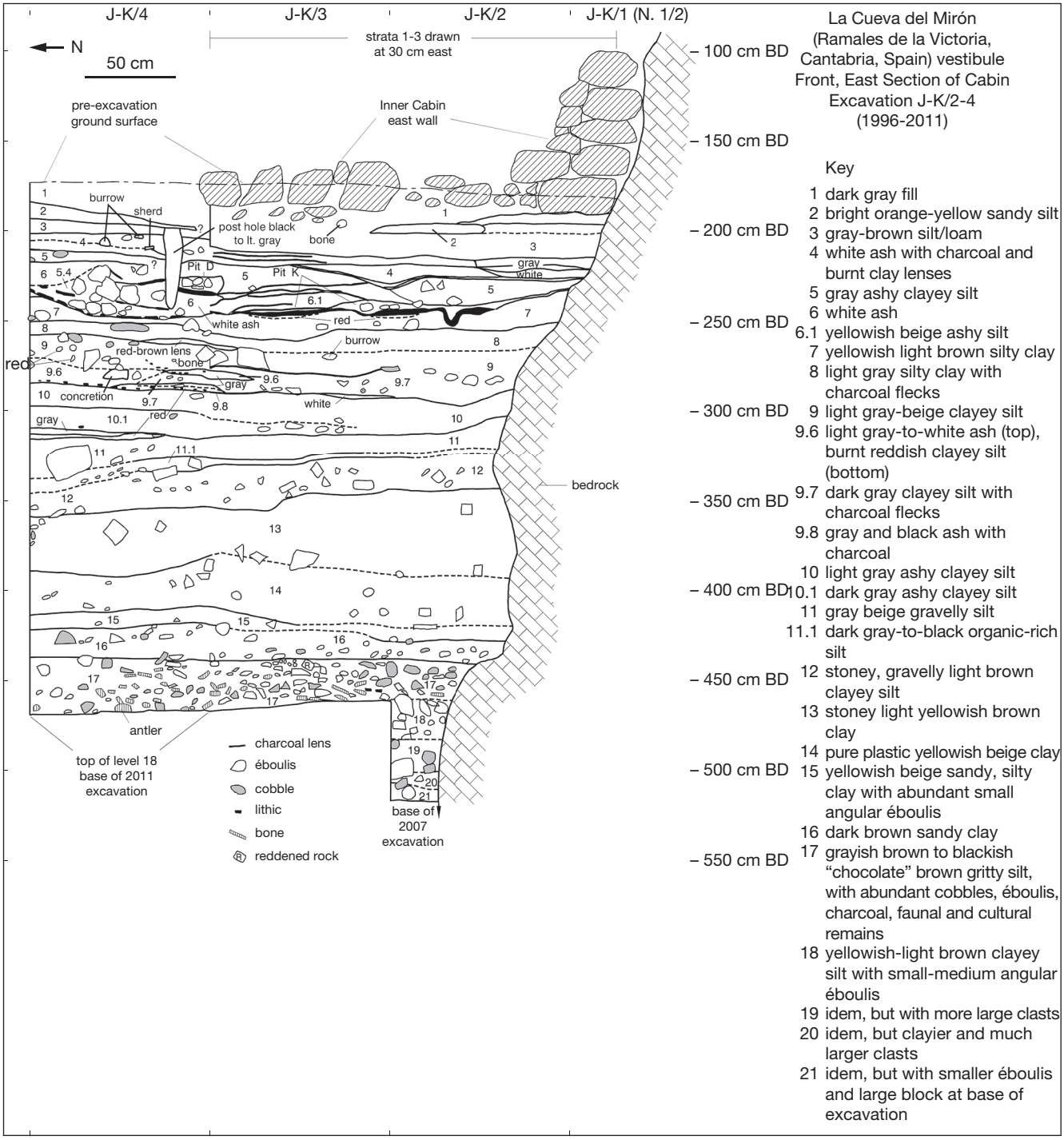


FIG. 3. — East stratigraphic section, Vestibule front ("Cabin") area (L. G. Straus and R. L. Stauber).

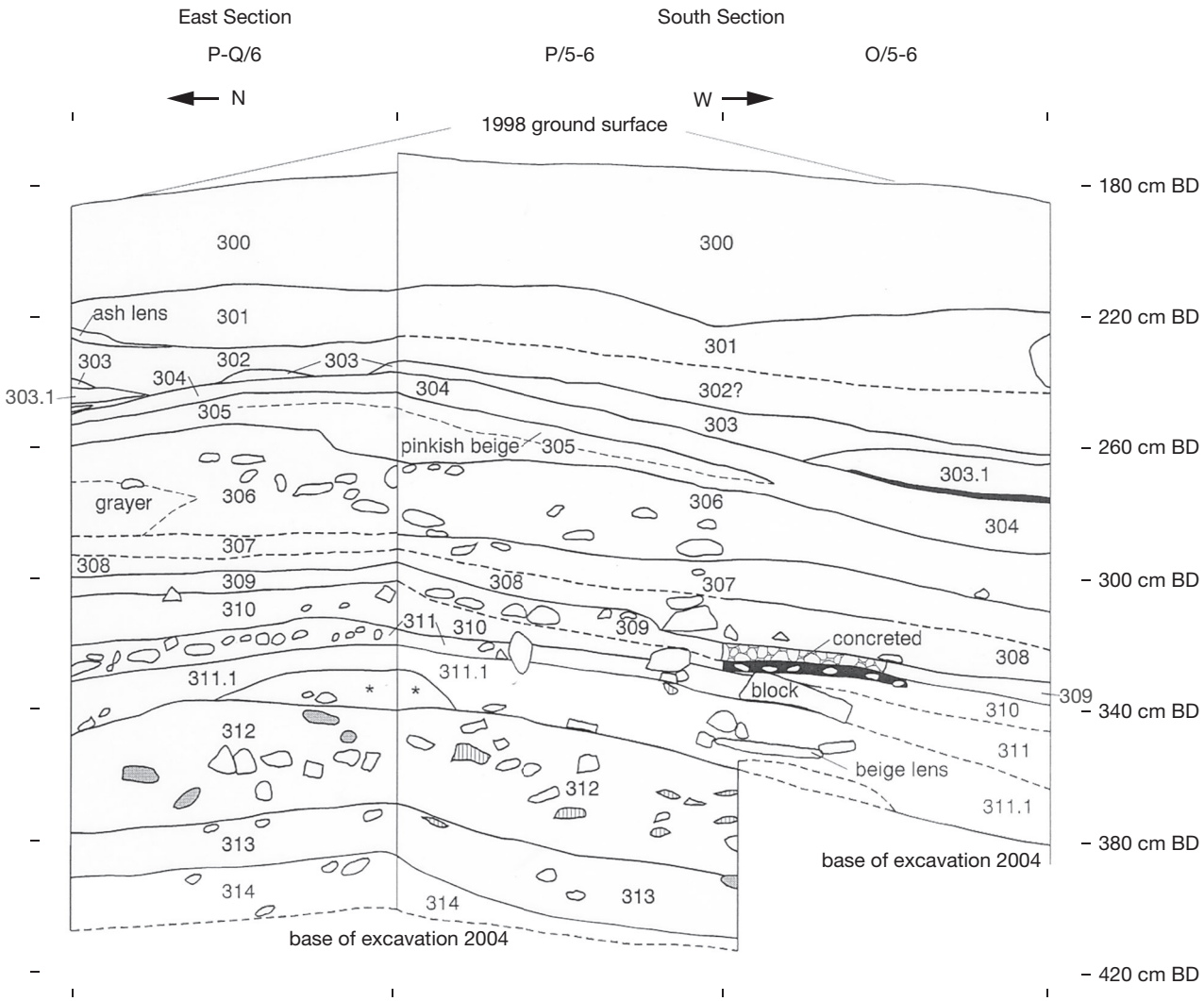
fill the cave vestibule from front to rear; and from side to side. Levels were defined by color, matrix texture, relative abundance and size of limestone clasts ("éboulis") both by us and (more formally) by project geomorphologist, the late William Farrand.

LEVEL DESCRIPTIONS

From east to west, the levels in question are described as follows (Farrand 2012; Straus & González Morales 2012c):

Inner Cave Level VIII

Inner Cave Level VIII is yellowish-brown silty clay with very fine sand, granules and small, rounded cobbles. It is 10-20 cm thick, but the sparse artifacts, bones and ochre and charcoal chunks were confined to the top (spit 10), right below Level VII. The latter is a mondmilch layer, the bottom of which (spit 9) is less "pure" than the top and that has orange-brownish streaks and nodules and yielded a few artifacts (including a blade core) that probably pertained in reality to the occupation at the top of Level VIII.



Key

300	loose open rubble with cobbles and éboulis
301	brown silt with cobbles and éboulis
302	reddish yellow-brown clayey silt with fewer stones
303	yellowish beige clayey silt
303.1	gray clayey ash
304	white mondmilch
305	pinkish beige-light gray granular silt
306	orange-yellowish brown sandy, granular silt
307	dark gray loose, gritty, sandy silt with angular éboulis and cobbles
308	light gray clayey granular silt
309	light yellow-beige sandy silt with small white stones
310	dark gray-light brown, pasty, clayey silt with angular éboulis and cobbles
311	light brown compact clayey silt, with some éboulis
311.1	greenish gray fine clayey silt
312	chocolate brown to black organic silt with many bones and some éboulis
313	alternating yellowish orange-brown and dark brown silt with some bones and weathered white éboulis
314	loose gravelly silt, light yellowish gray with angular éboulis
*	unnumbered wedge of light yellowish beige sandy silt

50 cm

La Cueva del Mirón
(Ramales de la Victoria,
Cantabria, Spain)
Mid-Vestibule (2001 and 2004)
(O-P/6 Trench)

éboulis
cobble
bone
charcoal lens

FIG. 4. — East and south stratigraphic sections, Mid-Vestibule Trench, O-P/6 squares (L. G. Straus and R. L. Stauber).

Vestibule Rear Level 109
Vestibule Rear Level 109 could be defined only the southeast third of the Corral area. Only 5-10 cm thick, it is a dark brown loam with a few white éboulis. The granulometry, organic and $CaCO_3$ content are similar to underlying but archeologically much richer Level 110.

Mid-Vestibule Level 311.1
Mid-Vestibule Level 311.1 is light yellowish sandy, silty clayey loam; 10-20 cm thick. The sedimentary matrix is similar to that of underlying 312, but the $CaCO_3$ content is somewhat lower.

Level 311
Level 311 is of the same color and sedimentary content, but less sandy; 5-10 cm thick.

Level 310
Level 310 is gray-light brown clayey loam with small éboulis; 5-15 cm thick.

Level 309
Level 309 is yellowish-beige sandy silt with small gravels; 5-10 cm thick.

Level 308
Level 308 is a dark brown, granular, clayey silt with angular éboulis; 5-15 cm thick.

Level 307
Level 307 is stony (cobbles but fewer éboulis than in underlying levels; loose gritty, sandy silt; lower $CaCO_3$ than in underlying levels; 5-15 cm thick.

Vestibule Front Level 14
Vestibule Front Level 14 is dark brown-brown ("khaki"), compact, silty clay with a few rocks; 15-30 cm thick. The artifacts are concentrated at the base of the level, particularly in meter square J2.

Level 13
Level 13 is brown to dark brown silty clay, rockier than 14, with some large limestone blocks at base; 23-50 cm thick. The few artifacts are found at the base of the level. Levels 13 and 14 are compositionally and granulometrically similar to underlying Levels 15-17, but are somewhat higher in calcium carbonate content. The density of archeological materials declines among these levels with height (i.e., time) from Level 17 through 13. The distinction between Levels 14 (somewhat richer) and 13 (even poorer) is more archeological than sedimentological.

Sedimentology, dating, environments and human activity

According to Farrand's (2012) sedimentological analyses, in descending order, Levels 307 on the one hand and 308-309 are in distinct stratigraphic complexes. Levels 13, 14, 310-311.1l form a stratigraphic complex (brown-dark brown silty clay with small-medium size éboulis). Level 109 is in a different complex that antedates the others.

There are only a few radiocarbon dates from these "poor" levels:

Level VIII
14 620 ± 80 BP (AMS on charcoal, GX-22347) 17 240-17 770 cal BP (± 1σ).

Level 308
12 350 ± 180 BP (conventional on charcoal, GX-2810) 14 120-15 350 cal BP (± 1σ).

Level 13
14 930 ± 70 BP (AMS on a bone, OxA-22089) 18 270-18 490 cal BP (± 1σ).

Level 14
14 600 ± 190 BP (conventional on bones, GX-32383) 17 160-17 820 cal BP (± 1σ).

Level 109
Level 109, with no date, is over- and underlain by archeologically rich and more extensive levels 108 and 110 with dates of approximately 14 000 and 15 000 uncal. BP respectively, meaning that it might date to *c.* 14.5 uncal kya. Level 307 is overlain by Level 306 which is dated to 11 650 ± 50 uncal. BP, while Level 311.1 is underlain by 312 with a date of 15 850 ± 170 uncal. BP, meaning that levels 311.1-309 probably date between *c.* 15.5-12.5 uncal kya and 307 must be around 12 uncal kya. All but 307 and 308 (of Upper Magdalenian age) are thus of Middle Magdalenian age. Farrand (2012: 65) noted a stratigraphic unconformity between Levels 14 and 15 and between 311.1 and 312.

Of the levels discussed here, 109, 14 and 13 (plus 108 – a major layer in this time range) were sampled for micromammalian remains by Gloria Cuenca. In her analysis (Cuenca-Bescós *et al.* 2009) the Lower-Middle Magdalenian transition and Middle Magdalenian are placed within Heinrich Event 1 and the Bølling pollen zone. There are fairly high representations of montane taxa (open, rocky slopes), large (but later declining) amounts of humid meadow ones (riparian habitat along streams below the cave), significant areas of dry grasslands, but virtually no woods though with slight increase at the end of this period. The continued rigor of environmental conditions is confirmed by Farrand's (2012: 87) finding of loess sediments, although frost weathering was less intense than in underlying levels. In short, there was some climatic amelioration vis à vis the Lower and Initial Magdalenian and Solutrean levels, and yet it was in these slightly "better" times that El Mirón was generally less intensively and/or frequently occupied by humans.

To give an idea of what is meant by an "archeologically" poor level, comparisons can be made between the levels analyzed here and some of the underlying or overlying "rich" levels. For example, Vestibule Front (Cabin) area Level 17 (on

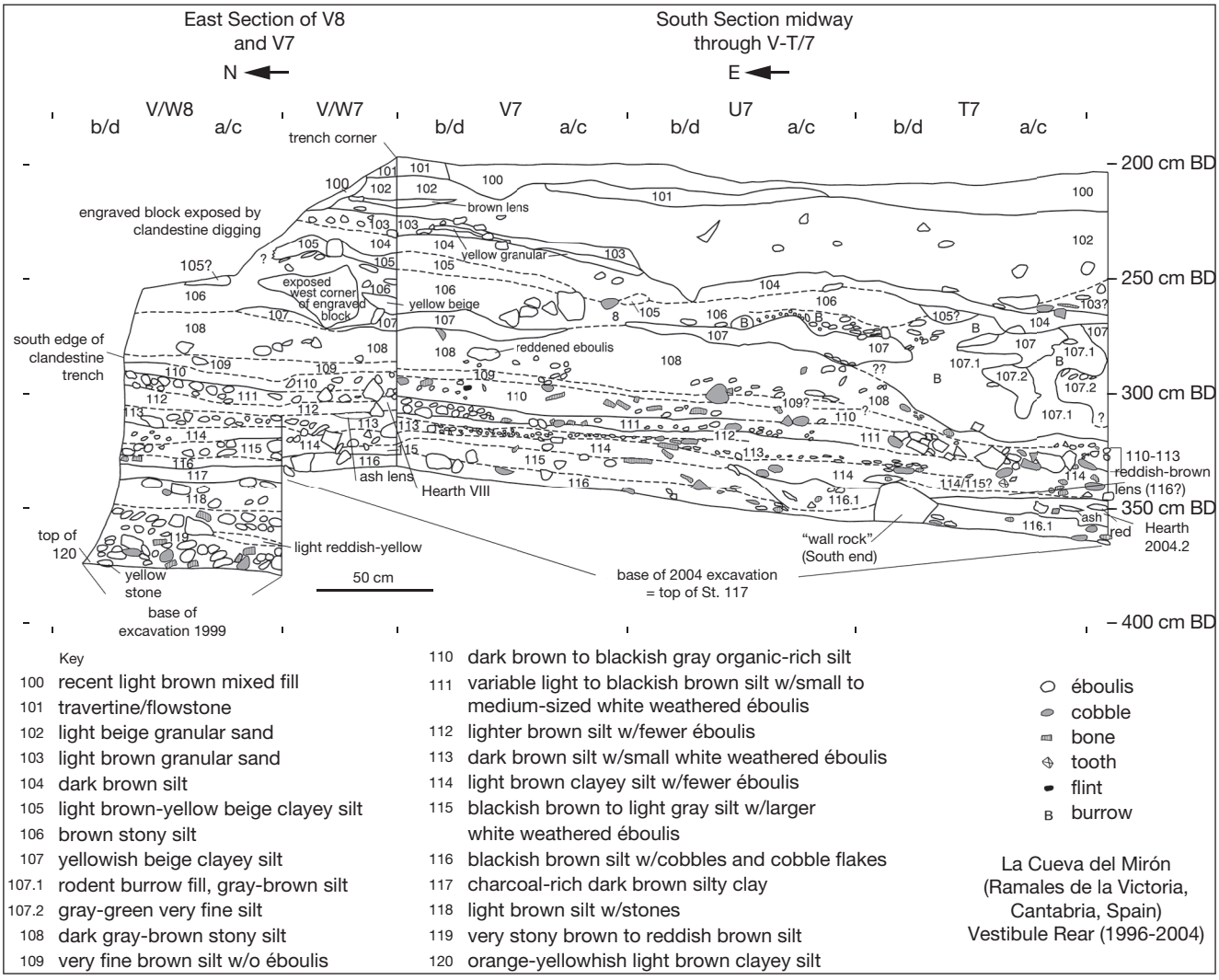


Fig. 5. — West and south stratigraphic sections, Vestibule rear ("Corral") area (L. G. Straus and R. L. Stauber).

average about 30 cm thick and composed of many stacked living floors with no "poor" lenses in the 9.25 m² that were excavated) yielded about 59 000 lithic artifacts (debris ± tools) per m³ and about 95 000 faunal remains (whole ± fragmentary bones and teeth)/m³. Contrast this with overlying Level 14 dug over the same area but with 239 lithics/m³ and 587 bones/m³ or Level 13 with 52 lithics/m³ and 199 bones/m³. In the Mid-Vestibule Trench, Level 312 (on average 30 cm. thick and dug in only 1 m²) yielded 98 090 lithics/m³, while overlying Level 311.1 (dug in 2 m²) yielded 153 lithics/m³. In the Vestibule Rear (Corral) area Level 108 (on average *c.* 10 cm. thick and excavated over *c.* 8.5 m²) produced *c.* 40 300 lithics/m³ and *c.* 102 700 faunal remains/m³, while underlying Level 109 (dug in *c.* 3 m²) produced only 946 lithics/m³. Osseous artifacts are few. Added to this evidence of scarcity, hearth and their contents (charcoal and fire-cracked rocks) are virtually absent and these levels lack works of portable art and ornaments, items also relatively common in Lower (e.g. striation engraved scapulae; engraved iron oxide stones) and Initial Magdalenian (e.g. horse head-engraved slate pendant; perforated shells and teeth in both periods) levels such as 17 and 115-119. In short, material evidence of human activity in "poor" levels is really scarce. It is detailed in the following sections.

THE ARTIFACT ASSEMBLAGES (TABLES 1; 2)

Level VIII (+VII base)

Level VIII (+VII base) in the Inner Cave test pit below the base of the 1950s trench yielded only 64 debris, but no tools. The near-lack of micro-debitage and bladelets is no doubt due to the facts that the clayey sediments were dug rapidly and water-screened through coarse mesh. More than half the debris are flakes, but there are many blades (including a crested blade), plus one core has both bladelet and blade removals and another with only blade scars. As this area, *c.* 40 east of the vestibule rear and *c.* 20 m beyond the top of the erosional slope, is in total darkness, whatever activities

Table 1. — Upper and Middle Magdalenian lithic assemblages: El Mirón Mid-Vestibule Trench.

Debris Type/Level	307	308	309	310	311	311.1
1. Plain trimming flake	509	304	71	10	5	7
2. Cortical trimming flake	3	2	–	–	–	–
3. Plain shatter	19	8	2	–	–	1
4. Cortical shatter	16	6	–	–	–	–
5. Plain flake	98	49	38	20	2	5
6. Primary decortication flake	14	2	2	1	1	5
7. Secondary decortication flake	16	13	5	1	1	5
8. Whole or proximal plain blade	15	13	9	1	1	1
9. Distal or mesial plain blade	8	1	6	–	–	2
10. Primary whole/proximal decortication blade	–	3	–	–	–	–
11. Secondary whole/proximal decortication blade	3	3	–	–	–	–
13. Whole or proximal plain bladelet	62	48	14	2	–	7
14. Distal or mesial plain bladelet	24	14	8	4	–	–
15. Whole or proximal cortical bladelet	3	–	1	1	1	4
16. Distal or mesial cortical bladelet	1	–	1	–	–	–
17. Burin spall	4	–	4	3	–	–
18. Unidirectional crested blade	–	–	2	–	–	–
19. Bidirectional crested blade	–	–	–	1	–	–
20. Flake core	–	1	–	–	–	–
21. Prismatic blade core	1	–	–	—	–	–
22. Pyramidal blade core	–	1	–	–	–	–
24. Pyramidal bladelet core	–	–	1	–	–	–
25. Mixed core	1	–	1	1	–	–
26. Non-cortical chunk	7	9	–	–	–	3
27. Cortical chunk	–	3	3	–	–	3
28. Platform renewal flake	–	2	1	1	–	1
Totals	804	501	168	46	11	44
Retouched Tools (de Sonneville-Bordes/Perrot Types)						
10. Thumbnail endscraper	–	1	–	–	–	–
15. Nucleiform endscraper	1	–	–	–	–	–
24. Atypical perforator	–	–	–	1	–	–
31. Multiple dihedral burin	–	–	1	–	–	–
59. Partially backed blade	–	–	–	1	–	–
65. Continuously retouched piece, 1 edge	–	–	–	1	–	–
74. Notch	–	–	1	–	–	–
79. Triangle	–	–	–	–	–	1
85. Backed bladelet	7	6	–	1	–	1
86. Truncated backed bladelet	–	–	1	–	–	–
89. Notched bladelet	–	–	–	1	–	–
Totals	8	7	4	4	0	2

that were conducted had to have been done by torch- and/or hearth-light (as attested by the charcoal chunks and fire-cracked rocks in this level in the Inner Cave trench). Of all the cultural deposits in El Mirón, this is the most mysterious, as clearly flakes, blades (one quite large), cores. a few ungulate (including ibex) teeth and bones (at least one cut-marked), and at least one limpet shell, three large chunks of ochre and a possibly worked quartz crystal were deliberately brought deep within the cave for activities unknown. To date, no evidence of rock art has been found on the inner cave walls, although engravings (estimated based on height about the then-ground surface or stratigraphically proven to be of Lower Magdalenian age) are present at the rear of the sunlit vestibule (Garcia Diéz *et al.* 2012; González Morales & Straus 2015).

Level 109

Level 109 is by far the richest of these units, despite the small area over which it was excavated, with 4 171 lithic debris, three quarters of which are trimming flakes and shatter ("chips" and small angular debris <1 cm, many with cortex) and 34 retouched tools (a ratio of 0.815%). In contrast, thicker, overlying Level 108, which was found throughout the whole Corral excavation area, yielded 10 047 debris and 236 formal stone tools (a ratio of 2.35%), suggesting that the occupation that formed Level 109 (or at least the area in the SE corner of the Corral area) was heavily involved in lithic manufacture. This idea is supported by the presence of 8 cores plus 123 chunks (large angular debris – many with cortex – that may include core fragments ≥1 cm), along with many cortical bladelets, blades and flakes, a few platform renewal flakes, crested blades and a splintered piece (probably a bipolar core). (Blades are defined at El Mirón as being parallel-sided, at least twice as long as wide and >2 mm in length, while bladelets are ≤2 mm long. However, almost all blades at El Mirón are very short, reflecting the fact that most are made on small flint nodules, many/most of which were transported from the coastal flysch outcrops mentioned below.) The three nucleiform "endscrapers" are also cores. On the other hand, two-thirds of the retouched pieces are backed (plus retouched) bladelets and a triangle – presumably weapon elements (projectile tip inserts). There are very few maintenance tools (endscrapers, notches, denticulates, only 1 burin and no retouched blades). The relatively ephemeral nature of the Level 109 occupation(s) is also highlighted by the density of artifacts in underlying (and only 7-15 cm-thick) Level 110 in the same 3 m² SE corner area of the Corral: 25 842 debris and 311 retouched tools (Straus & González Morales in press). Two episodes of major (presumably closely repeated) human use of the cave (Levels 110 and 108) were interrupted by a time of more minor visitation and short-term use, possibly by fewer people. Of those lithic debris measuring ≥1 cm in length, 65% are excellent-quality flint types that probably come from the massive, well-known flysch outcrop at Barrika on the present sea cliffs near Bilbao, some 60 km from El Mirón via the Asón, Carranza, Cadagua and lower Nervión river valleys. Local rocks (quartzite, quartz, mudstone and limestone) are virtually absent, supporting the idea that the people who created the Level 109 assemblage visited the site for some special purpose(s) but did not stay there for much time. They may have brought small, high-quality flint nodules with them from the coastal zone and manufactured weapon elements (backed bladelets) on-site, with little in the way of woodworking or other activities that may have been done with heavy-duty, "archaic" tools such as flake denticulates, notches and sidescrapers that are very often made on the local non-flint materials in many other levels at El Mirón.

In addition to these indicators suggestive of a Level 109 hunting camp, there are 4 fragments of antler points (*sagaies*): 2 quadrangular in cross-section (1 distal fragment with a longitudinal groove on one side, the other mesial, with longitudinal lines along 2 sides and 2 perpendicular lines across

the shaft below the tip); 1 proximal with a central flattening that is scored with oblique lines and with a conical base (Fig. 6); and 1 mesial with a round section, a longitudinal groove on one side and a possible single bevel base. Widths and thicknesses of these points in the same order are 4.0 × 5.0 mm, 8.0 × 7.5 mm, 8.0 × 7.0 mm, and 5.5 × 5.0 mm. Finally, there is a proximal bone needle fragment broken across the eye (1.6 mm in diameter). Width and thickness of the needle are 3.0 × 2.5 mm and, even broken, it is 29.5 mm long. Finally, there is one *Antalis* (*Dentalium*) tube from Level 109, possibly an element from a necklace or other ornament.

Level 311.1

Level 311.1 yielded only 44 lithic debris, including no cores, very few bladelets or blades, outnumbered by flakes, but virtually no microliths. The only two retouched artifacts are a triangle and a backed bladelet. In contrast, immediately underlying Level 312, excavated in only 1 m², yielded 28 848 lithic debris (including 257 cores and 1329 chunks!) and 579 retouched tools

Level 311

Level 311 is even poorer than 311.1: 11 lithic debris (no cores) and no tools. The human presence (at least in the mid-vestibule) was minimal at these times, in glaring comparison to 312 (the Lower Magdalenian horizon).

Level 310

Level 310 is like 311.1 in its paucity of artifactual contents: 46 debris, half of which are flakes, with only one core, plus 4 tools (one of which is a backed bladelet).

Level 309

Level 309 seems to have begun an uptick in the density of artifacts in the mid-vestibule area: 168 debris, but only 4 tools (2 of which are worked bladelets). Nearly half the debris are micro-debitage. There are a couple of cores. Flakes dominate the knapping products (nearly one third). But there are also roughly equal numbers of blades and bladelets.

Level 308

Level 308 has 501 debris, but only 7 retouched tools (all but one of which are backed bladelets). With 2 cores, 2 platform renewal flakes and 12 chunks, knapping must have been a major activity on-site. This is supported by the fact that three-fifths of the items are micro-debitage (almost all trimming flakes). Level 308 yielded one red deer canine with a perforated root: a bead. There was a small (*c.* 25 × 50 cm), possible hearth (Feature 2001.2) consisting of an oval concentration of 4 water-worn cobbles and about 8 limestone rocks in a shallow pit that had been dug from Level 308 into 309 in square P6, subsquare D (Fig. 7). Contiguous to the feature in subsquare C was a calcium carbonate concretion. There was a thin lens of charcoal at the base of 309 that might be related to this feature. There are also 5 chunks of fire-cracked rock and a stone slab from this level and possibly also related to the feature. Charcoal from 308 yielded the date cited above. One can imagine a small group of people (hunters?) clustered around a small, simple fire, preparing or repairing their weapons.

Table 2. — Middle Magdalenian lithic assemblages: El Mirón Vestibule Front (Levels 13 and 14), Rear (Level 109) and Inner Cave (Level VIII). *, 2-3 types on a single blank.

Debris Type/Level:	**13**	**14**	**109**	**VIII+VIIbase**
1. Plain trimming flake	81	167	2,466	1
2. Cortical trimming flake	–	1	113	–
3. Plain shatter	19	51	505	1
4. Cortical shatter	3	14	63	–
5. Plain flake	15	85	309	28
6. Primary decortication flake	2	6	18	–
7. Secondary decortication flake	6	30	114	6
8. Whole or proximal plain blade	1	7	26	18
9. Distal or mesial plain blade	2	2	18	3
10. Primary whole/proximal decortication blade	–	1	3	–
11. Secondary whole/proximal decortication blade	3	5	8	2
12. Mesial/distal decortication blade	–	–	4	–
13. Whole or proximal plain bladelet	8	29	147	–
14. Distal or mesial plain bladelet	5	42	210	–
15. Whole or proximal cortical bladelet	1	4	18	–
16. Distal or mesial cortical bladelet	–	–	11	–
17. Burin spall	1	7	6	–
18. Unidirectional crested blade	–	3	4	1
20. Flake core	–	–	2	–
21. Prismatic blade core	–	–	1	–
22. Pyramidal blade core	1	–	1	–
23. Prismatic bladelet core	1	–	1	–
24. Pyramidal bladelet core	–	–	1	–
25. Mixed core	1	3	2	2
26. Non-cortical chunk	8	20	75	–
27. Cortical chunk	1	5	48	1
28. Platform renewal flake	–	–	4	1
29. Splintered piece	1	–	1	–
Totals	160	482	4,171	64
Retouched Tools (Sonneville-Bordes/Perrot Types)				**(none)**
8. Endscraper on flake	1	2	–	–
11. Keeled endscraper	–	1	1	–
12. Atypical keeled endscraper	–	2	1	–
15. Nucleiform endscraper	–	–	3	–
17. Endscraper-burin	1	–	–	–
24. Atypical perforator	–	1*	–	–
30. Angle burin on break	2	2	–	–
31. Multiple dihedral burin	1	–	–	–
35. Burin on oblique retouched truncation	–	1	1	–
58. Totally backed blade	–	2	1	–
59. Partly backed blade	–	1*	–	–
62. Piece with concave truncation	–	1*	–	–
63. Piece with convex truncation	–	1	–	–
65. Continuously retouched piece, 1 edge	2	2*	–	–
66. Continuously retouched piece	–	1	–	–
70. Invasively retouched point	–	1	–	–
74. Notch	1	2	2	–
75. Denticulate	–	3*	2	–
76. Splintered piece	1	–	1	–
79. Triangle	–	–	1	–
84. Truncated bladelet	–	–	1	–
85. Backed bladelet	1	4	18	–
89. Notched bladelet	–	–	1	–
90. Retouched bladelet	–	–	1	–
91. Curved backed micro-point	–	1	–	–
Totals	10	28	34	0

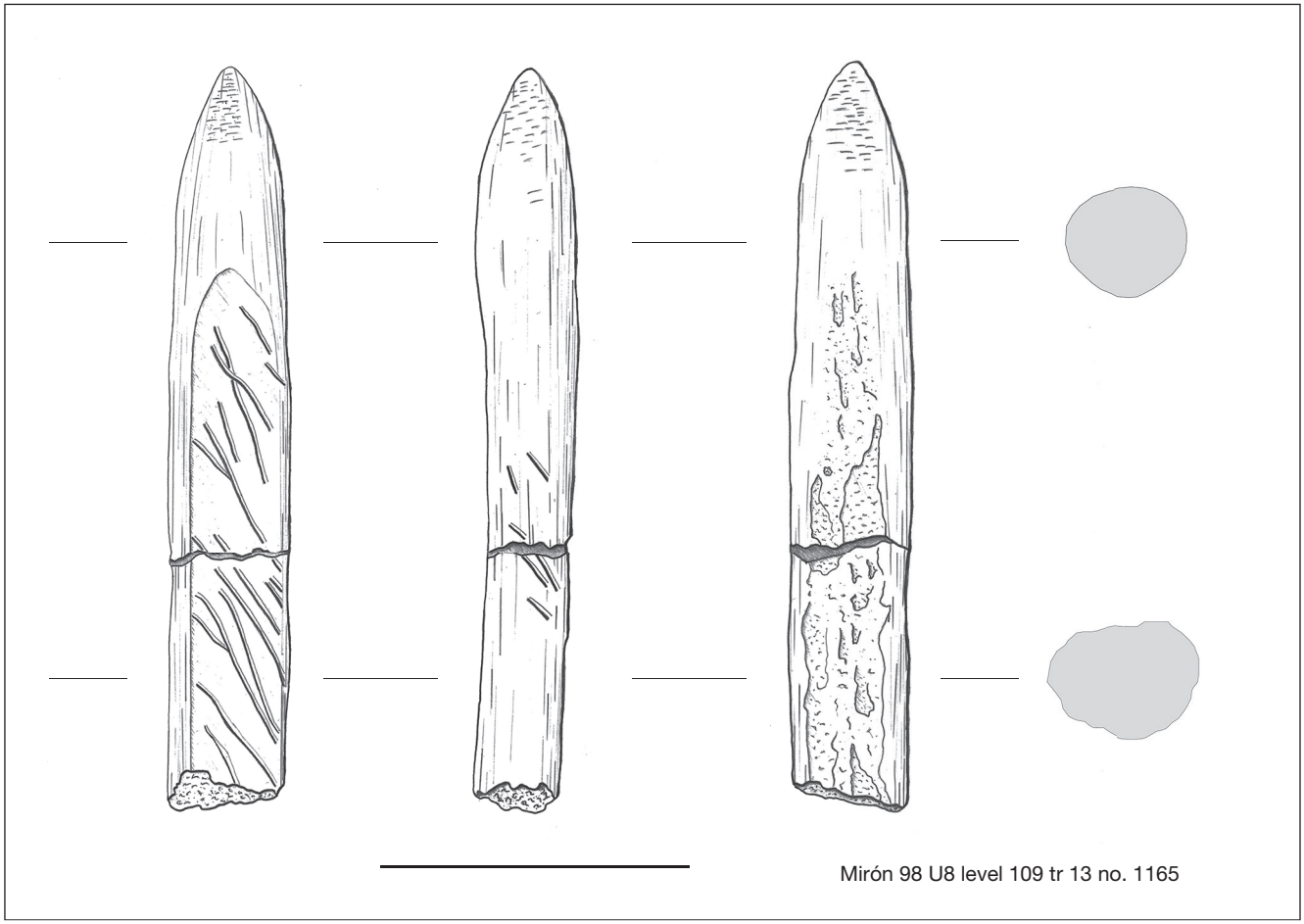


Fig. 6. — Centrally flattened antler sagaie from Level 109 — square U9d, spit 16, no. 1165 (S. Salazar). Scale bar: 2 cm.

Level 307

Level 307 is similar to the preceding Level 308: 804 debris, but only 8 tools (all but one of which is a backed bladelet). More than five-eighths of the debris are micro-debitage. Although there are numerous blades, these are far outnumbered by flakes and bladelets. As in 308, there are only 2 cores. Blank production and discard seem to have been the main (but neither very intensive nor long-term) activities in these levels in this at least this area. None of these mid-vestibule levels yielded any osseous artifacts. Hunting and maintenance tools are scarce to absent at least from this area. Evidence of activity got no more impressive in overlying Level 306; it is very scant (González Morales & Straus 2012a).

Level 14

Level 14, excavated over 9.25 m² in the Cabin area, yielded only 482 debris items and 28 tools (three of which actually have more than one tool type on the same blank). The latter include a wide variety of maintenance tools (endscrapers, perforators, a burin, backed, truncated and retouched pieces, notches and denticulates, but all in very small numbers including several items that could be interpreted as cutting/butchery tools), but only one backed micro-point and 4 backed bladelets. A curiosity is a fragment of invasively retouched point, long after the end of the Solutrean. Half of the debris are micro-debitage, with bladelets and flakes dominating the rest of the debris. Bladelets and cores (only 3) are few. A *Trivia* shell with two perforations (possibly for sewing it to clothing) was found in Level 14.

Level 13

Level 13 is even poorer in artifacts: 160 items of debris and 9 tools. The tools are a smattering of maintenance implements and nearly two-thirds of the debris are micro-debitage. Blades and especially bladelets are rare, but flakes are somewhat more common. There are only 3 cores (plus 1 splintered piece/bipolar core). In addition, there is one osseous point or awl. It is bi-pointed and quadrangular in section. It is almost whole (the tip being slightly broken). L = 40.5 mm × W = 4.0 × T = 3.5 mm.

FAUNAL EVIDENCE (TABLE 3)

Those levels whose mammalian faunal assemblages have been analyzed are 307, 308, 13 and 14 in the Mid-Vestibule and Front (Cabin) excavation areas (Marín Arroyo 2010).

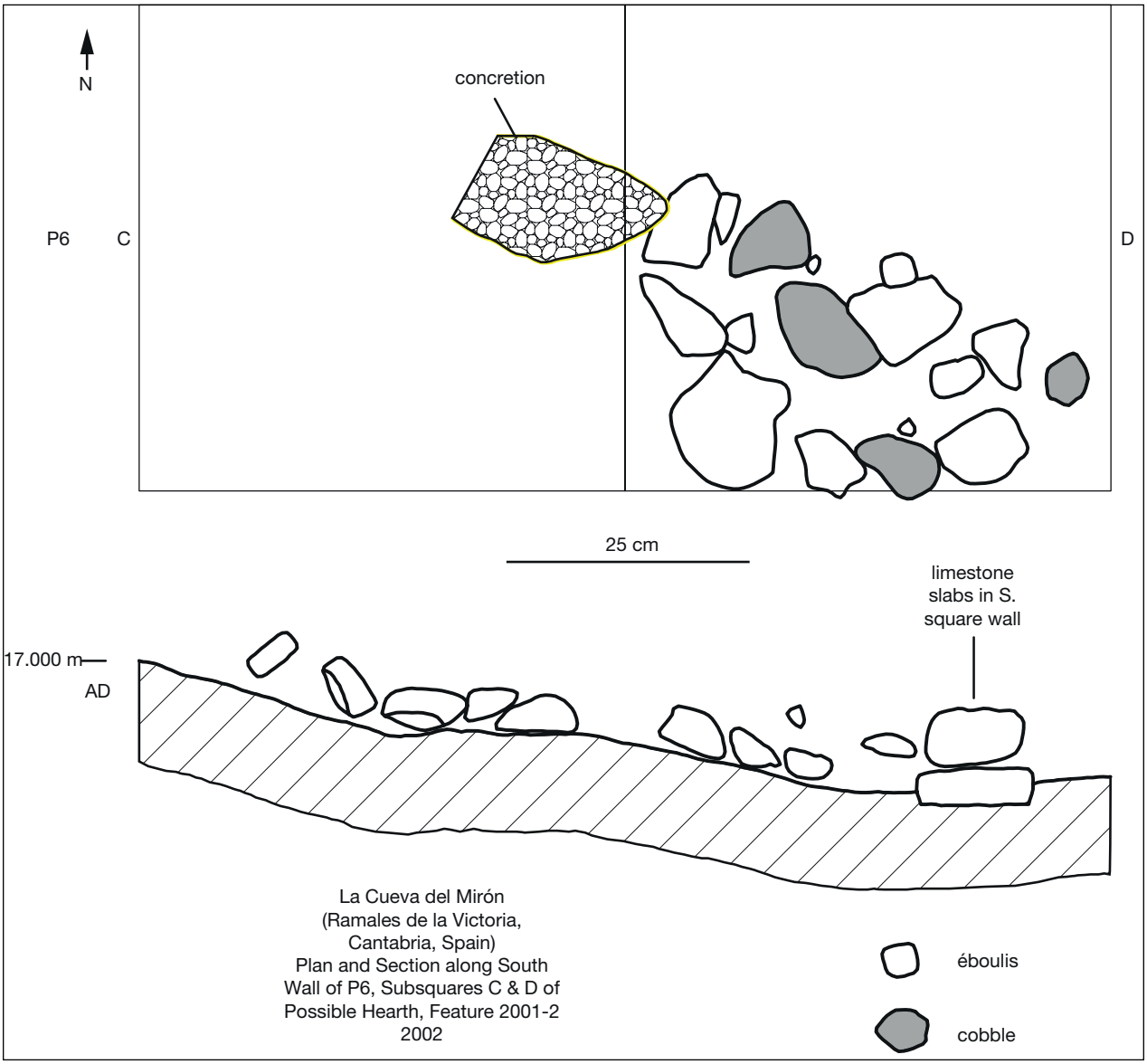


FIG. 7. — Plan and section of possible rock-filled hearth (Feature 2001-2) in Level 308 of Mid-Vestibule, square P6 (L. G. Straus and R. L. Stauber).

The common denominator of these four assemblages is the very small number of identifiable remains, with the possible exception of Level 14, which nonetheless has less than 200 (to which can be added a bit over 1000 remains of medium-size ungulates and unidentifiable mammal bones). Compare this to the 2690 taxonomically identifiable, 2618 medium-size mammal and 81 888 unidentifiable remains published by Marín Arroyo for Level 108 or the 1854 taxonomically identifiable remains and the total of 55 615 bones/teeth studied by J. M. Geiling (Geiling *et al.* 2016) from combined Levels 15 and 16, for example. Only Level 14 has (barely) enough minimum numbers of elements (MNE), namely 28 of *Cervus*, 14 of *Capra*, 8 of *Capreolus*, and 1 of *Rupicapra* to permit statistical analysis of carcass part utilization (Marín Arroyo 2010: 198-200). Although the minimum numbers of individuals (MNI) statistics could suggest the presence of carcasses at the site during the occupations considered here, the very

TABLE 3. — Mammalian faunal remains in El Mirón Magdalenian Levels 13, 14 and 308 (Marín Arroyo 2010: 77, 79). Abbreviations: **NISP**, number of identified specimens; **MNI**, minimum number of individuals.

	Level 13		Level 14		Level 307		Level 308	
Species	**NISP**	**MNI**	**NISP**	**MNI**	**NISP**	**MNI**	**NISP**	**MNI**
Horse	4	2	–	–	–	–	–	–
Red deer	15	2	56	2	31	4	21	3
Roe deer	–	–	9	1	2	1	–	–
Ibex	21	2	117	2	13	2	20	2
Chamois	7	2	1	1	4	3	7	2
Boar	–	–	3	2	2	1	–	–
Wolf	1	1	–	–	1	1	–	–
Fox	3	2	–	–	–	–	–	–
Lynx	–	–	2	1	–	–	–	–
Rabbit	6	1	–	–	–	–	–	–
Hare	2	1	–	–	1	1	–	–
Ungulate totals	8		8		11		7	

small numbers of identifiable remains (with the exception of the 117 ibex remains from at least 2 individuals and, more problematically, the 56 red deer remains also from at least 2 individuals from Level 14) could in fact indicate that only small parts ("joints") of carcasses were brought to El Mirón during these occupations – perhaps as "trail food" by humans who were making only short-term bivouacs in the cave, or just "passing through". Marín Arroyo's correlations (2010: 215, table 3.12) between %MAU and MGUI and between %MAU and element density for the Level 14 profile for *Cervus* indicates attrition as the cause, while no conclusions can be drawn for *Capra*, the other main game taxon.

Otherwise, the data from these four levels confirm what is known about the game-based subsistence of all the Magdalenian (and Solutrean) levels at the site, namely that it was dominated by red deer and ibex, followed by the much smaller chamois. Two interesting notes are the presence of woodland-adapted roe deer and boar in Levels 14 and 307 and the presence of wolf ("*Canis* sp.") and fox (*Vulpes*) in Level 13, wolf in 307 and lynx (as well as a mustelid) in Level 14. Given the minor nature of these levels, one could speculate upon the role of these carnivores either as agents of accumulation of some of the ungulate remains (in the case of wolf) or as scavengers following the short human visits, although the presence of bone digestion evidence rather than gnaw marks led Marín Arroyo to suggest a role for the bearded vulture. She determined that kills represented in Levels 307 and 308 were made in late spring/early summer, while seasonality could not be determined for Levels 13 or 14 (although there is a hint – one partly digested phalange from a newborn chamois – of late spring/early summer occupation either by humans or a non-human agent in Level 13) (Marín Arroyo 2010: 504, 508). In summary, the faunal evidence supports the idea that these levels represent short, limited-function, warm-season human visits to the site during Middle and early Upper Magdalenian times. Possibly this was when red deer were moving from the coastal zone into their higher pastures in the Ruesga valley, but ibex were still low in theirs because the higher elevations were still snow-covered (and the highest peaks of the Cordillera still glaciated).

DISCUSSION AND CONCLUSIONS

The levels briefly discussed here are not the only ones indicative of short, limited-activity occupations of El Mirón. Levels 130 (Mousterian, >45 uncal kya), 129 (Early Upper Paleolithic?) and 128 (Gravettian, *c.* 28 uncal kya), excavated in a 2 m² test pit at the NE rear corner of the vestibule are all extremely poor in artifacts (no or almost no tools) and faunal remains (González Morales & Straus 2012b). Carnivores played a significant role in the accumulation of the ungulate remains, especially in the lowest two of these levels (Marín Arroyo *et al.* 2018). Levels 127-121, dated between 19.2-18.4 uncal kya, contain Solutrean point fragments (in some cases relatively many–up to 9 in Level 126) and perforated shells (and a perforated red deer canine), but few other retouched tools (21-53) and limited amounts of debris (451-3106). The relatively few ungulate remains in the Solutrean levels are dominated by red deer and ibex, with some chamois (Straus *et al.* 2012). A plausible interpretation is that the cave was repeatedly used as a short-term camp by hunters who went up to the edge of the Cantabrian Cordillera in spring and/or summer during the Last Glacial Maximum (a time when the summits were glaciated), presumably from as yet unknown base camps in the lower Asón valley (possibly on the now-inundated continental shelf).

At the upper end of the Paleolithic (Upper Pleistocene) stratigraphic sequence, corresponding to the Upper/Final Magdalenian and Azilian, most of the levels (103 102.2, 102, 306, 305, 11.2 are very poor in artifacts and faunal remains (Marín Arroyo 2010; González Morales & Straus 2012b). Tool counts range from 1-6 and debris from 103-358; NISP counts (dominated by red deer and ibex, followed by chamois and the woodland species roe deer and boar) for the same levels range from only 2 to 195. The other levels in this time range (e.g. 12 – with a unilaterally barbed Magdalenian harpoon fragment, but only 37 stone tools and a date of *c.* 13 uncal kya –, 11.1, 11, 105, 104-104.3), while sometimes slightly richer, are far less so than the Initial and Lower Magdalenian ones.

C14-dated to 12 970 ± 70 uncal BP (15 280-15 940 cal BP), the 37 Level 12 retouched tools are as follow: 1 atypical endscraper, 1 fan-shaped endscraper, 1 endscraper on flake, 2 thick-nosed endscrapers, 2 atypical perforators (one on a possibly scavenged willow leaf point), 2 multiple perforators, 1 dihedral burin, 1 burin-on-break combined with a denticulate on one edge and continuous retouch on the other edge, 2 other burins on break, 1 burin on oblique truncation, 1 multiple burin on truncation, 2 completely backed blades, 1 convex truncation, 3 pieces continuously retouched on one edge, 1 piece continuously retouched on two edges, 4 notches one of which is continuously retouched on one edge, 2 denticulates, 1 sidescraper, 7 backed bladelets, and 1 notched and continuously retouched bladelet. All are made on flints, including many likely from the Barrika flysch outcrops. The 638 Level 12 knapping debris include: 311 trimming flakes + shatter (<1 cm long)(49% of the total), 91 flakes and 35 blades/blade fragments (most non-cortical), 122 bladelets (<2 cm long), 4 burin spalls, l prismatic bladelet core, 1 mixed (flake + bladelet) core, 16 chunks (core remnants) and 2 platform renewal flakes. All but 8 of these knapping products are flint, mostly high-quality and non-local (5 are quartz and 3 are limestone, presumably local). Short human visits to the cave from the coastal zone are implied. The only osseous artifact is a weathered mesial fragment of a round-section harpoon with two broken, unilateral barbs: 47.0 mm long with shaft width of 6.5-7.0 mm (9.0 mm across the width including barbs) (Fig. 8). No fire-cracked rocks were recovered f rom this 10-30 cm-thick, orangish-light brown layer of gravelly clay, which was excavated in the full 9.25 m² of the Cabin (Vestibule Front) area. According to Marín Arroyo (2010: 77, 79), Level 12 yielded the following numbers of identifiable mammal remains and minimum numbers of individuals (MNI): horse: 3 (1); red deer: 24 (2), roe deer: 5 (2), ibex: 33 (3), *Canis* sp.: 1 (1), common fox: 2 (1), rabbit:

Fig. 8. — Mesial fragment of unilateral harpoon from Level 12, I2, no. 77. Scale bar: 3 cm (photo: M. R. Gonzalez Morales).

1 (1). According to the micro-mammalian record, Level 12 was deposited under Tardiglacial environmental conditions that included both dry grassland and humid meadows along streams below the cave, with still limited, but expanding woods (Cuenca-Bescós *et al.* 2009).

Overall, it is clear that there were major shifts in the human use of El Mirón Cave between the Solutrean and Initial Magdalenian and between the Lower and Middle Magdalenian – from minor, short-term, limited-function occupations to repeated, large-scale, long-term, multi-functional ones and then back again – despite the cave's favorable physical characteristics and location. In the Middle Magdalenian time range (late Greenland Stadial 2), the cave was occasionally visited, but not intensively lived in for significant periods of time, so that the compounded residues of occupations could not result in the kinds of massive, artifactually and faunistically dense palimpsests that were formed in the Initial and Lower Magdalenian. Given the rather insignificant nature of the occupations in this period, it is not surprising that no characteristic Middle Magdalenian works of portable art or proto-harpoons were found in the admittedly relatively small areas excavated. The fact that characteristic Cantabrian Lower Magdalenian engraved scapulae and other special artifacts (antler atl-atl hook, reindeer incisor bead, engraved cobbles, etc.) were found in some of the same excavation areas is additional testimony (along with the massive, artifact-, faunal-, manuport- and feature-dense palimpsest deposit, the human burial, and rupestral art of the Lower Magdalenian) to the more complex, longer-term nature of those earlier occupations.

Finally, it is worth observing that, while El Mirón was occasionally visited in the Upper/Final Magdalenian and Azilian, the main site in the area at those Terminal Pleistocene-Initial Holocene times was El Valle on the floor of a tributary valley of the Asón and that the small cave of El Horno on the valley floor of the Calera below El Mirón was also used and has yielded more characteristic artifacts of these periods than the far larger

and more topographically prominent El Mirón (Fano *et al.* 2020). This shift in cave usage is difficult to understand from our modern- day perspective, but may have been related to changes in temperature and vegetation, as well as in land-use patterns in the Asón valley by Upper and Epi-Magdalenian people in the period of Allerød, Younger Dryas and Preboreal. Mesolithic-age visits to El Mirón, when human population definitely seems to have been concentrated about the new early Holocene estuary of the Asón (Straus *et al.* 2002), were even more ephemeral and insignificant (attested by only C14 dates on charcoal and small numbers of flakes, but no retouched pieces). However, once again the cave became the setting of major, long-term, multi-purpose residential occupations in the Neolithic, Chalcolithic and early Bronze Age, reverting to abandonment and then a place of only fleeting visits in Medieval and early Modern times (Straus & González Morales 2012b). As an important fixed feature or "place" in the landscape of eastern Cantabria, El Mirón Cave clearly witnessed a cyclical waxing and waning of human use from Neanderthal times until the present. The Middle and early Upper Magdalenian levels discussed here are good examples of the latter and they should not be ignored despite their seeming insignificance compared with the extraordinary archeological wealth of the Initial and Lower Magdalenian levels below them. While the rich cultural traditions and intensive trans-Pyrenean social contacts of the Middle Magdalenian are manifested in the Cantabrian region, this is especially the case among major residential sites along the coastal strip, only short-term, perhaps functionally specialized ("logistical") forays were made into the interior montane zone of the Asón drainage. The role of El Mirón continued to be important, though no longer as a residential base or hub site as it had been during the climatically more rigorous Older Dryas, when its significance mirrored that of major sites such as El Castillo, El Juyo or Altamira on or on the edge of the coastal plain. *Sic transit gloria mundi.*

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