Spatiotemporal patterns on the appearance of the first trapezes industries in the Late Mesolithic of the Iberian Peninsula

Graphic information of archaeological assemblages

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The following catalogue serves as supporting graphic material for the original paper titled:

“Spatiotemporal patterns on the appearance of the first trapezes industries in the Late Mesolithic of the Iberian Peninsula”

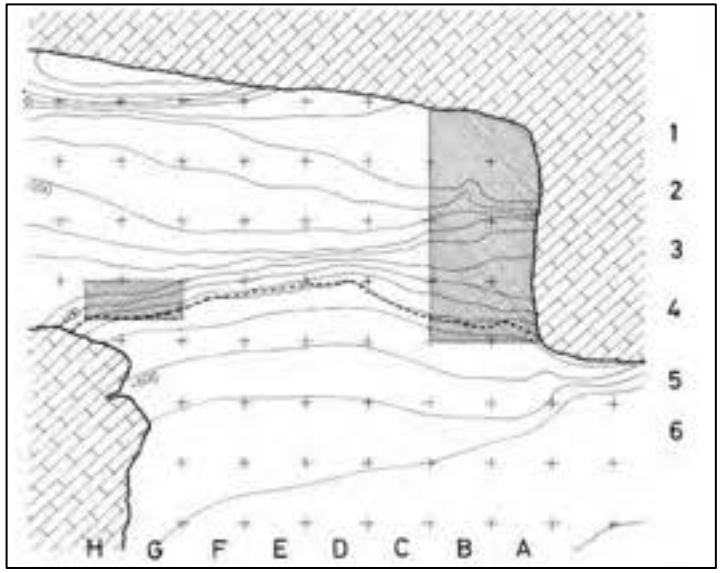
All the visual resources employed have been extracted from the cited references and modified according to the issues mentioned and discussed in the manuscript.

Archaeological sites are grouped by regional units in the Iberian Peninsula (i.e. Upper/Central/Lower Ebro Valley, Central pre-Pyrenean area, Cantabrian façade, Central Mediterranean area, Southern Iberian, and south-central coast of Portugal. They appear approximately in the order they are discussed in the main manuscript. Not all the archaeological sites cited in the main manuscript are presented.

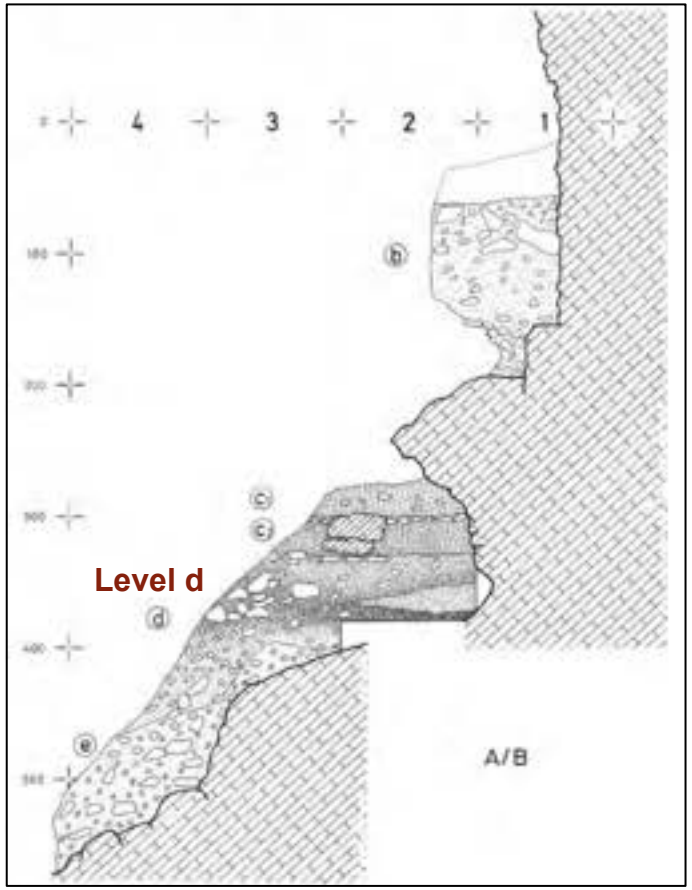
The aim reproducing this images is to illustrate some of our arguments and explanations respecting the intellectual property of the cited authors.

- Time slice 1 (8800-8600 cal BP). Ebro Valley

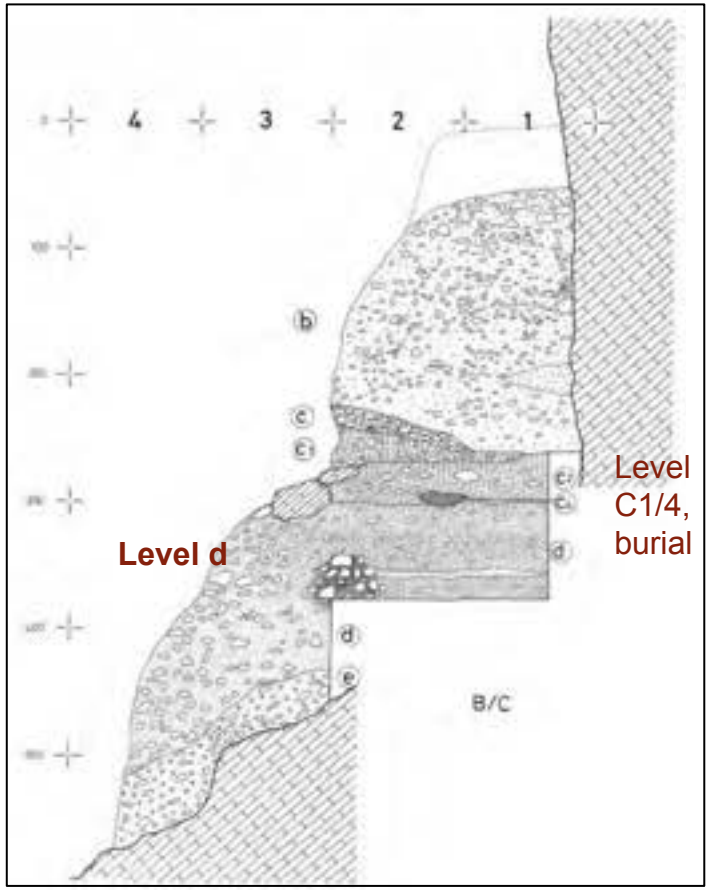
❑ La Peña (de Marañón) (Navarra, Spain) (ID175)



Plan of La Peña rockshelter, signaling the excavated area.
Cava and Beguiristain, 1991: Fig. 4, p. 75

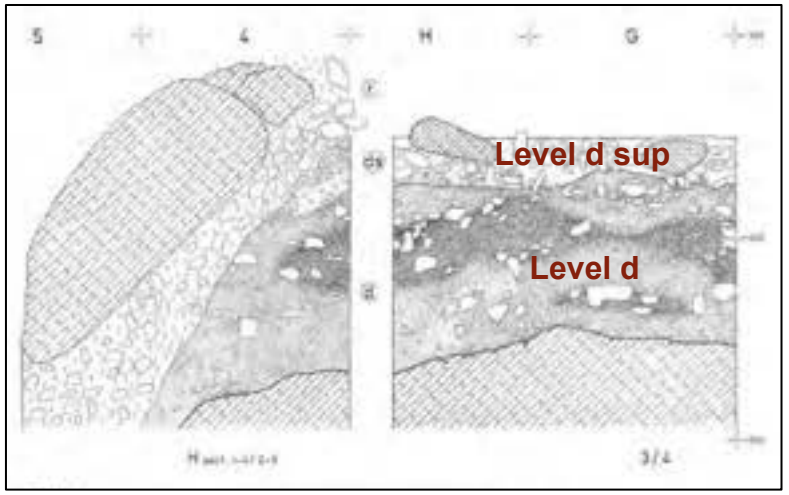


Stratigraphic section of La Peña rockshelter, across A and B bands. Cava and Beguiristain, 1991: Fig. 6, p. 78. Modified.



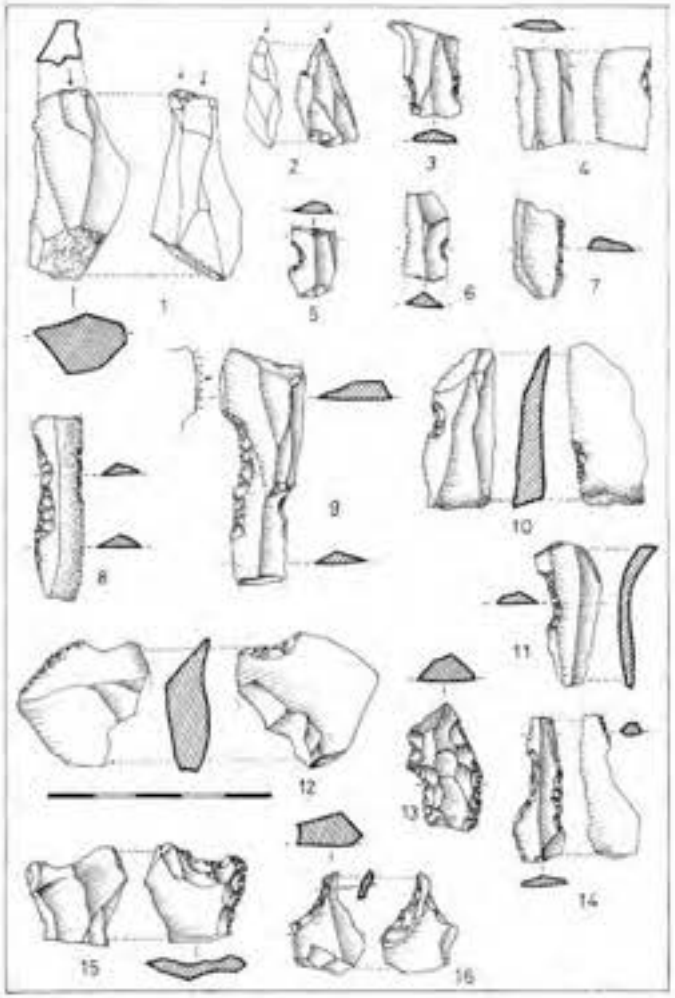
Stratigraphic section of La Peña rockshelter, across B and C bands. Cava and Beguiristain, 1991: Fig. 7, p. 79. Modified.

❑ La Peña (de Marañón) (Navarra, Spain) (ID175)

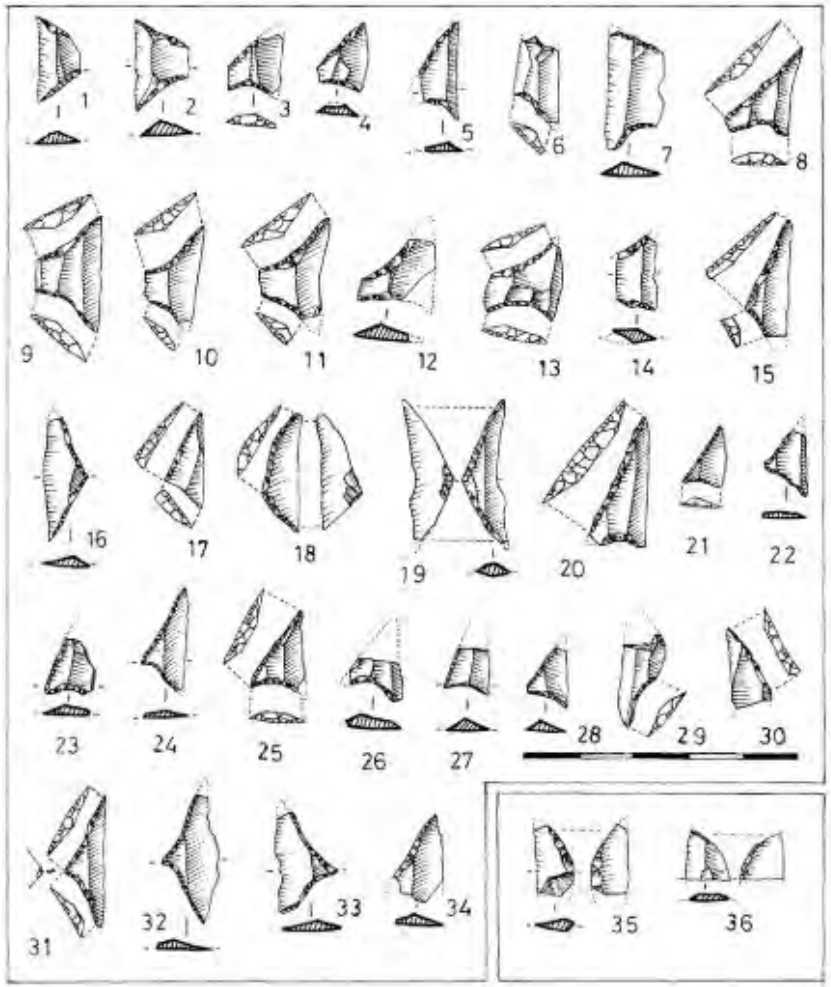


Stratigraphic section representing levels *d* and *d sup* in squares 4G/4H. Cava and Beguiristain, 1991: Fig. 8, p. 80. Modified.

Level *d* has 95 cm depth (Cava y Beguiristain, 1991: 76), and level *dsup*, between 30-35 cm depth, has only been identified in the western part of the archaeological deposit.
There is just one radiocarbon date from level d, square 2A, over a herbivorous bone sample, BM-2363= 7890±120BP (Cava and Beguiristain, 1991: 113). This level also has pottery in its uppermost section (before level d sup).

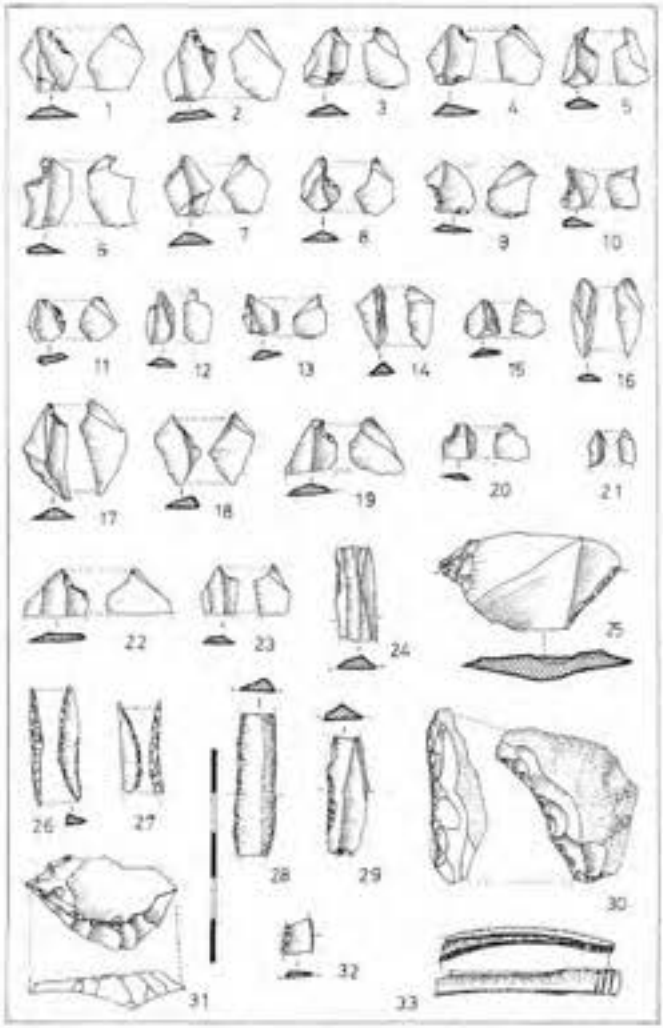


Lithic industry from *level d.* Cava and Beguiristain, 1991: Fig. 13, p. 86

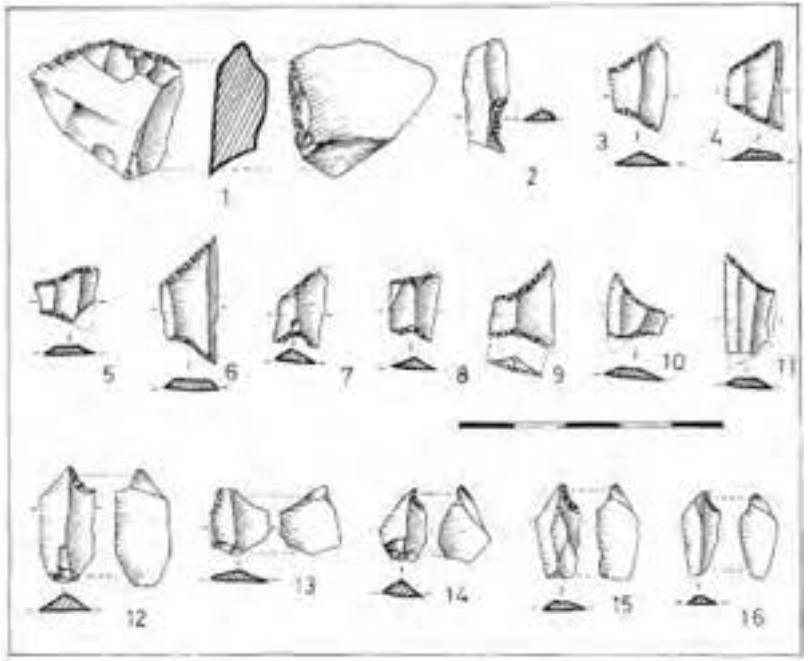


Lithic industry from *level d* (nos. 1-34), and *level d sup* (nos. 35-36).Cava and Beguiristain, 1991: Fig. 14, p. 87

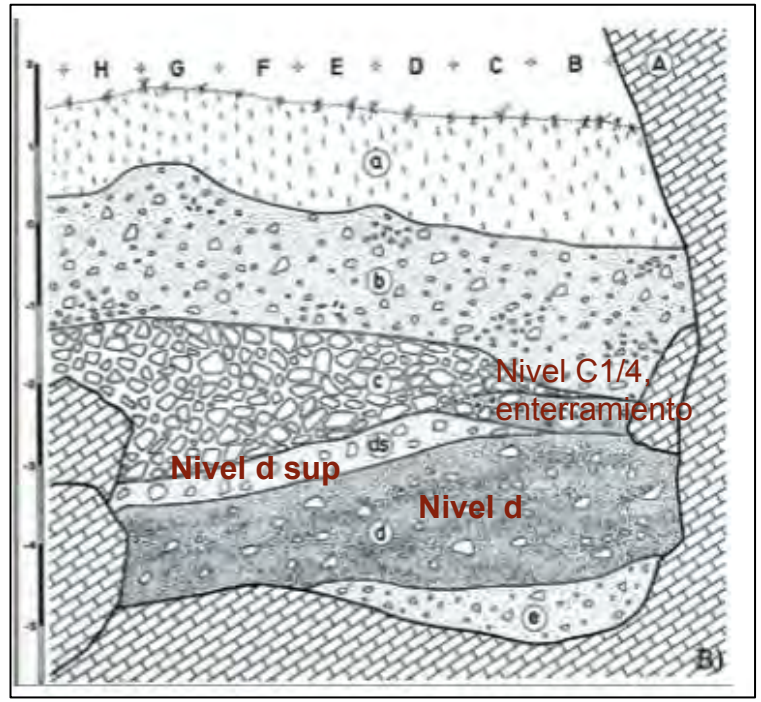
❑ La Peña (de Marañón) (Navarra, Spain) (ID175)



Lithic industry from *level d.* Cava and Beguiristain, 1991: Fig. 15, p. 88

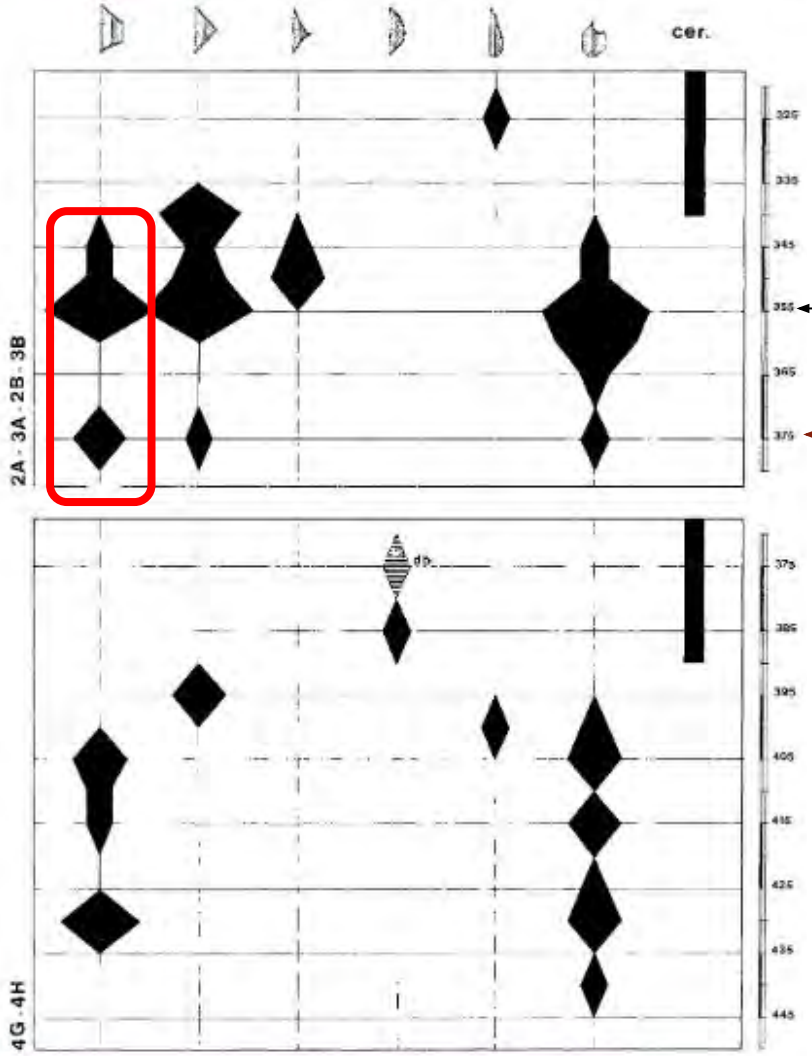


Lithic industry from *level d.* Cava and Beguiristain, 1991: Fig. 16, p. 89



La Peña de Marañón. A) Current view of the rockshelter from the south. B) Stratigraphic section indicating the burial location at the bottom of the rockshelter. Fernández-Crespo, 2016: Fig. 10, p. 140

❑ La Peña (de Marañón) (Navarra, Spain) (ID175)



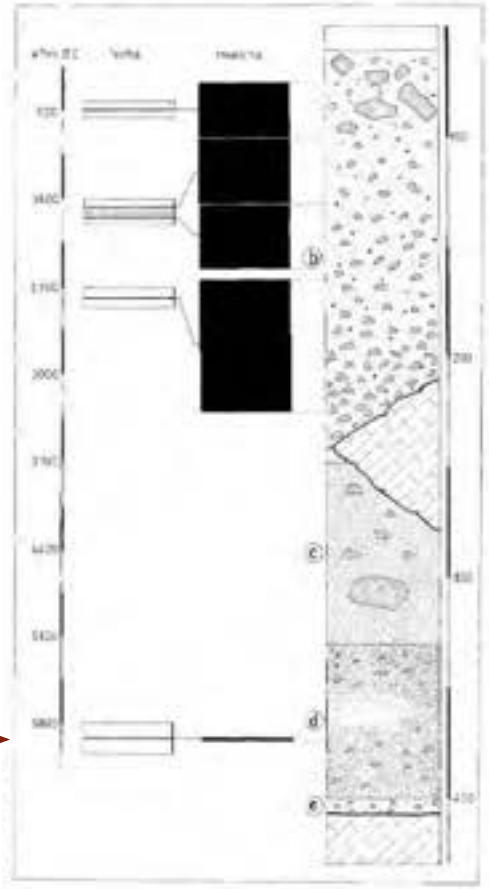
Vertical distribution of the geometric types in the sedimentological fills of levels *d* and *dsup* in bands A and B (top) and 4G/4H (bottom) with indication of absolute depths. Cava and Beguiristain, 1991: Fig. 26, p. 103. Modified.

The vertical distribution of trapezes shows that the highest representation comes from the spits at depths -350-360 cm
(Cava and Beguiristain, 1991: 103, fig. 26), 25-15 cm above the depth of the dated sample.

Depth of maximum trapeze density

The radiocarbon dated sample was found at approximately depth -375 cm (Cava and Beguiristain, 1991: 114, fig. 28)

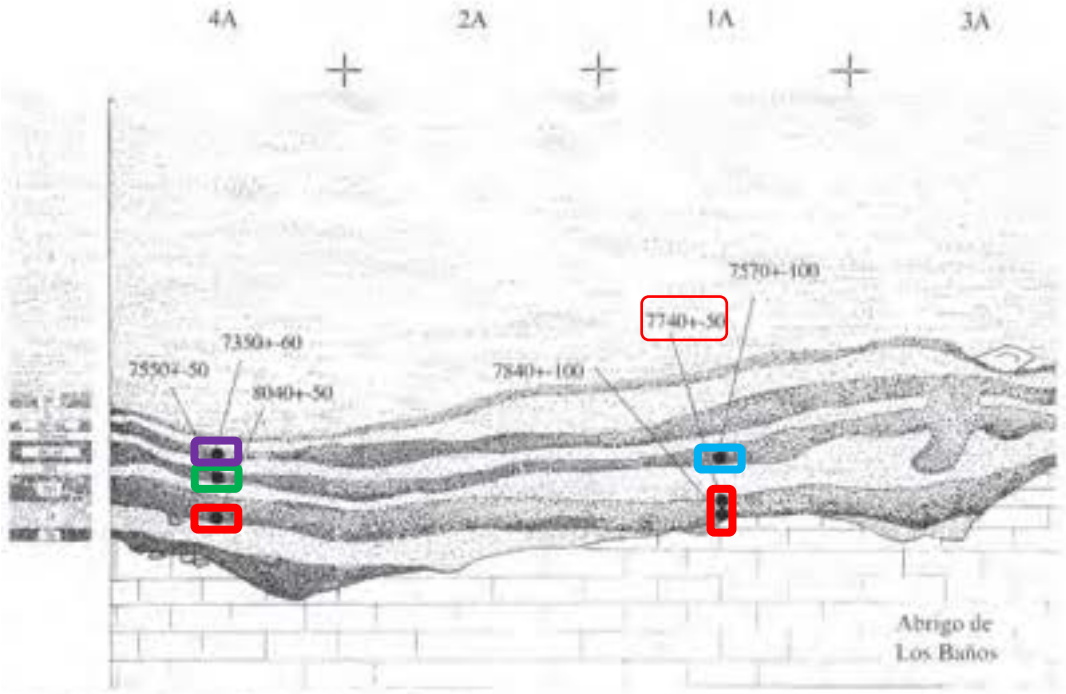
La Peña de Marañón stratigraphy, indicating the provenance of dated samples related to archaeological levels. Cava and Beguiristain, 1991: Fig. 28, p.114



Level *d* has 95 cm depth (Cava y Beguiristain, 1991: 76), and level *dsup*, between 30-35 cm depth, has only been identified in the western part of the archaeological deposit.
There is just one radiocarbon date from level d, square 2A, over a herbivorous bone sample, BM-2363= 7890±120BP (Cava and Beguiristain, 1991: 113). This level also has pottery in its uppermost section (before level d sup).

According to this, the relationship between the dated sample and the trapezes found at the same depth, which follows a clear decreasing pattern, opens the possibility that the second ones were associated by percolation.

❑ Los Baños (Teruel, Spain)(ID217)

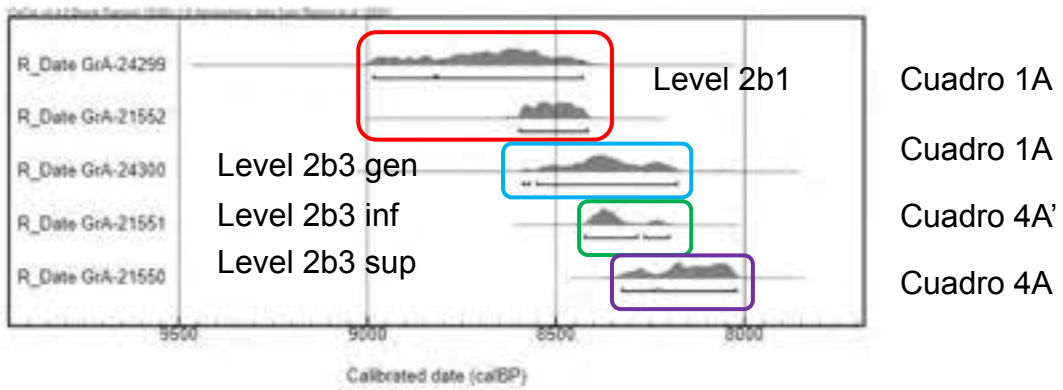


Los Baños stratigraphy (according to Utrilla and Rodanés 2004) Utrilla et al., 2009: Fig. 7, p. 141. Modified. Colors correspond to radiocarbon dates from different levels.

One of the most interesting aspects of this site is that provides a possible internal evolution of the Geometric Mesolithic Phase A. There are no Neolithic levels here (Utrilla et al., 2009: 136). From the typological point of view, 30 geometrics have been quantified (28 trapezes). To analyze diachronic trends, geometrics from levels have been quantified together (level 2a+2b1 (n=10); level 2b2+2b3 inferior (6); 2b3 medium + level 2b3 upper (7); level 2b3 generic (5)

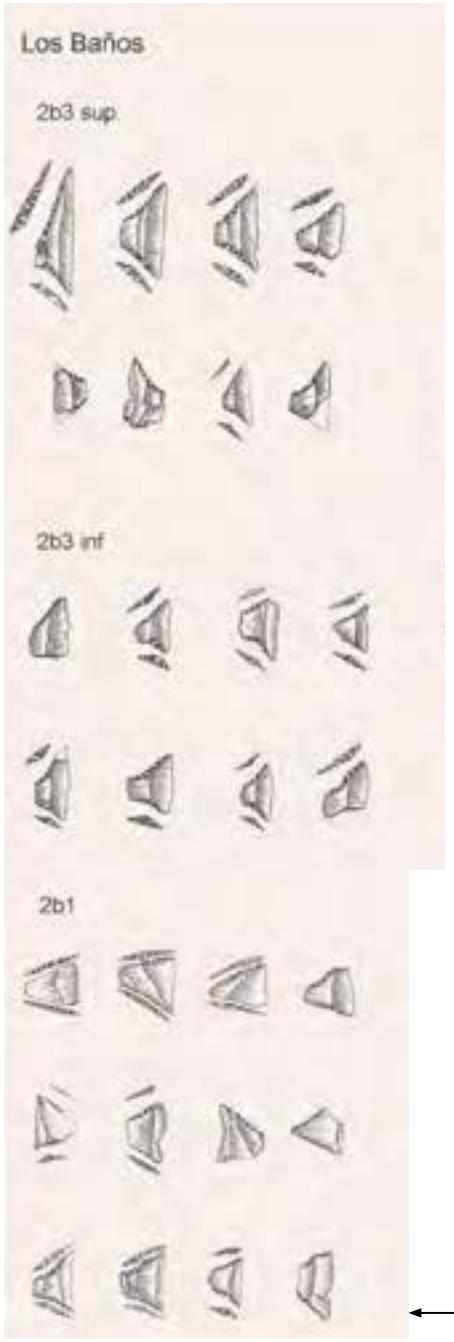
Nivel	C-14 y Laboratorio	Cultura	Restos significativos
2d	–	Pocos restos	–
2c	–	Estéril	–
2b3sup	7350± 50 GrA-21550	Mesolítico Geométrico	Trapecios abruptos alargados de e gran tamaño Sólo ocres rojos
2b3 medio	–	Casi Estéril	–
2b3inf	7550± 50 GrA-21551	Mesolítico Geométrico	Trapecios abruptos pequeños Ocres rojos (+) y amarillos
2b3 genérico	7570±100 Grn-24300	Mesolítico Geométrico	Columbellae
2b2	–	Estéril	–
2b1	7740±50 GrA-21552 7840±100 Grn-24299 8040±50 GrA-21556	Transición Mesolítico Geométrico / Epipal. Macrolítico	Ocres amarillos (+) y rojos Trapecios ab. achaparrados MD toscos / Columbellae
2a	–	Estéril	–
1b	–	Epipaleolítico Macrolítico	Escallés / MD Hogar con cantos

Radiocarbon dates available for Los Baños rockshelter. Utrilla et al., 2009: Tabla 4, p. 141. Modified.



Mutiplot of the five radiocarbon dates available for the Late Mesolithic period at Los Baños. In red: level 2b1; in blue: level 2b3 general; in green: level 2b3 inf; in purple: level 2b3 sup.

❑ Los Baños (Teruel,Spain)(ID217)



Lithic industry from levels 2b3sup, 2b3inf and 2b1. Utrilla et al., 2009: Fig. 23, p. 171

Level 2b3 sup (cuadro 4A)
GrA-21550: 7350±50BP (Ch -AMS)

Level 2b3 inf (cuadro 4A')
GrA-21551: 7550±50BP (Ch -AMS)

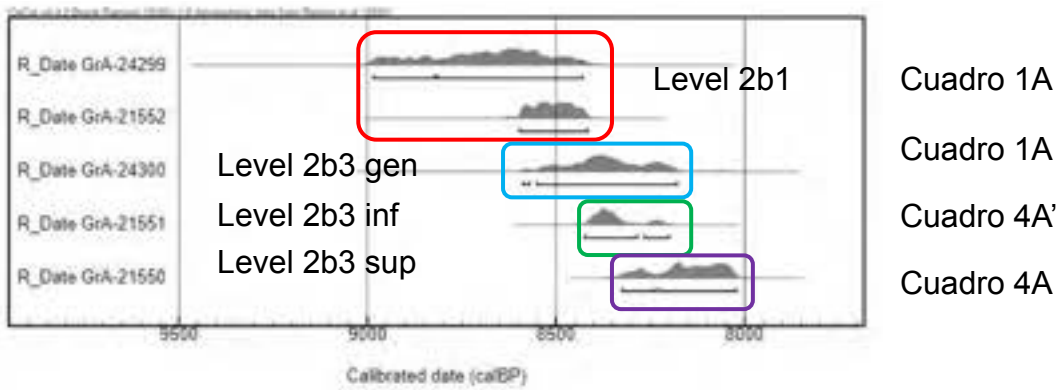
GrN-24300: 7570±100BP (Ch -C14)

** This radiocarbon date corresponds to level 2b3 generic (square 1A), equivalent to old level 2 in 1998 test pit. According to Utrilla and Rodanés, 2004: 93, this date allows equating level 2b3 generic with level 2b3 inferior (square 4A) from 2001 fieldwork. In fact, radiocarbon dates from both levels partially overlap.

Level 2b1 (cuadro 1A)
GrA-21552: 7740±50BP (Ch -AMS)
GrN-24299: 7840±100BP (Ch -C14)
GrA-21556: 8040±50BP (Ch -AMS)

Nivel	C-14 y Laboratorio	Cultura	Restos significativos
2d	–	Pocos restos	–
2c	–	Estéril	–
2b3sup	7350± 50 GrA-21550	Mesolítico Geométrico	Trapecios abruptos alargados de e gran tamaño Sólo ocres rojos
2b3 medio	–	Casi Estéril	–
2b3inf	7550± 50 GrA-21551	Mesolítico Geométrico	Trapecios abruptos pequeños Ocres rojos (+) y amarillos
2b3 genérico	7570±100 GrN-24300	Mesolítico Geométrico	Trapecios abruptos Columbellae
2b2	–	Estéril	–
2b1	7740±50 GrA-21552 7840±100 GrN-24299 8040±50 GrA-21556	Transición Mesolítico Geométrico / Epipal. Macrolítico	Ocres amarillos (+) y rojos Trapecios ab. achaparrados MD toscos / Columbellae
2a	–	Estéril	–
1b	–	Epipaleolítico Macrolítico	Escallés / MD Hogar con cantos

Radiocarbon dates available for Los Baños rockshelter. Utrilla et al., 2009: Tabla 4, p. 141. Modified.



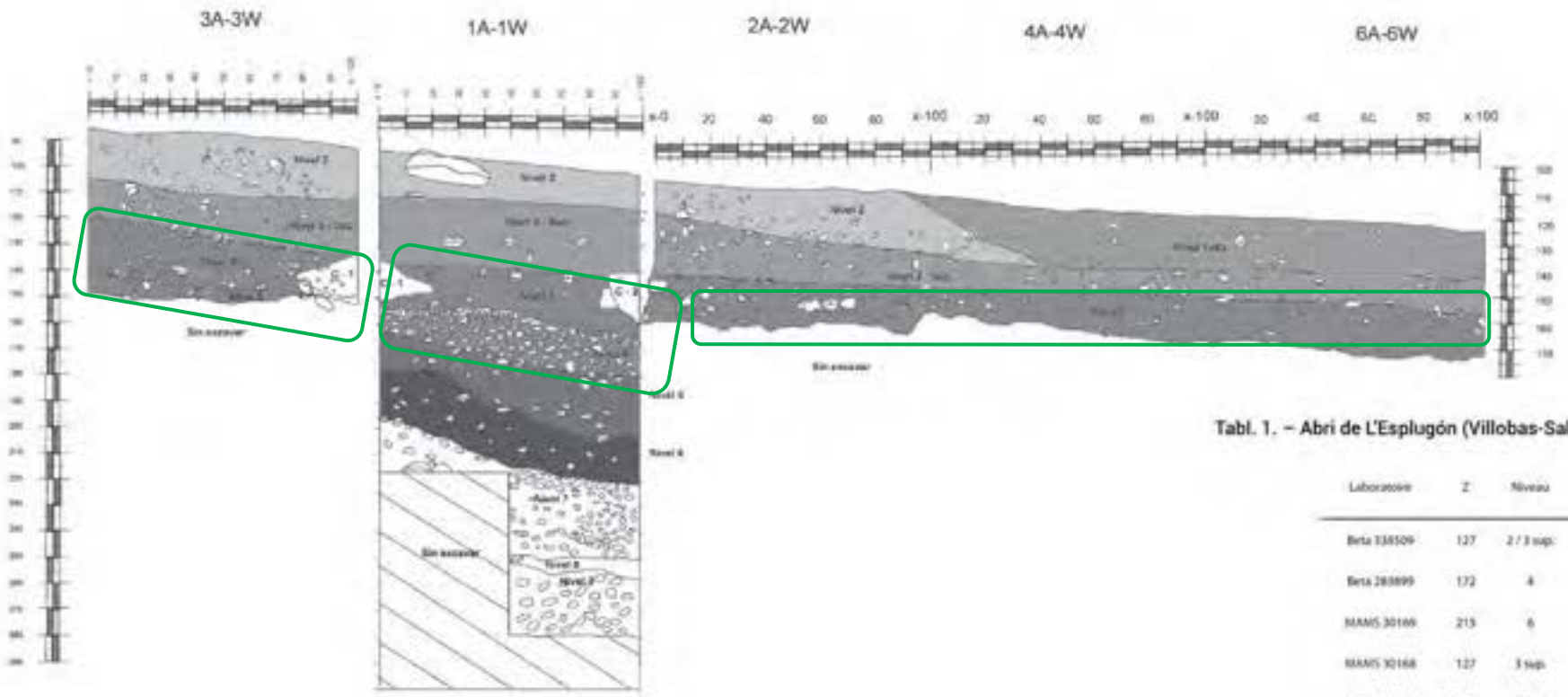
Mutiplot of the five radiocarbon dates available for the Late Mesolithic period at Los Baños. In red: level 2b1; in blue: level 2b3 general; in green: level 2b3 inf; in purple: level 2b3 sup.

- Time slice 2 (8600-8400 cal BP). Central pre-Pyrenean area

❑ 173. El Esplugón (Huesca, Spain) (ID173)

Cultural attribution:
Level 3inf - - Geometric Mesolithic of triangles
Level 4 - - Geometric mesolithic of trapezes Level 5 - - Mesolithic of Notches and denticulates

El Esplugón III. This unit encompasses levels 3 inferior and 4.



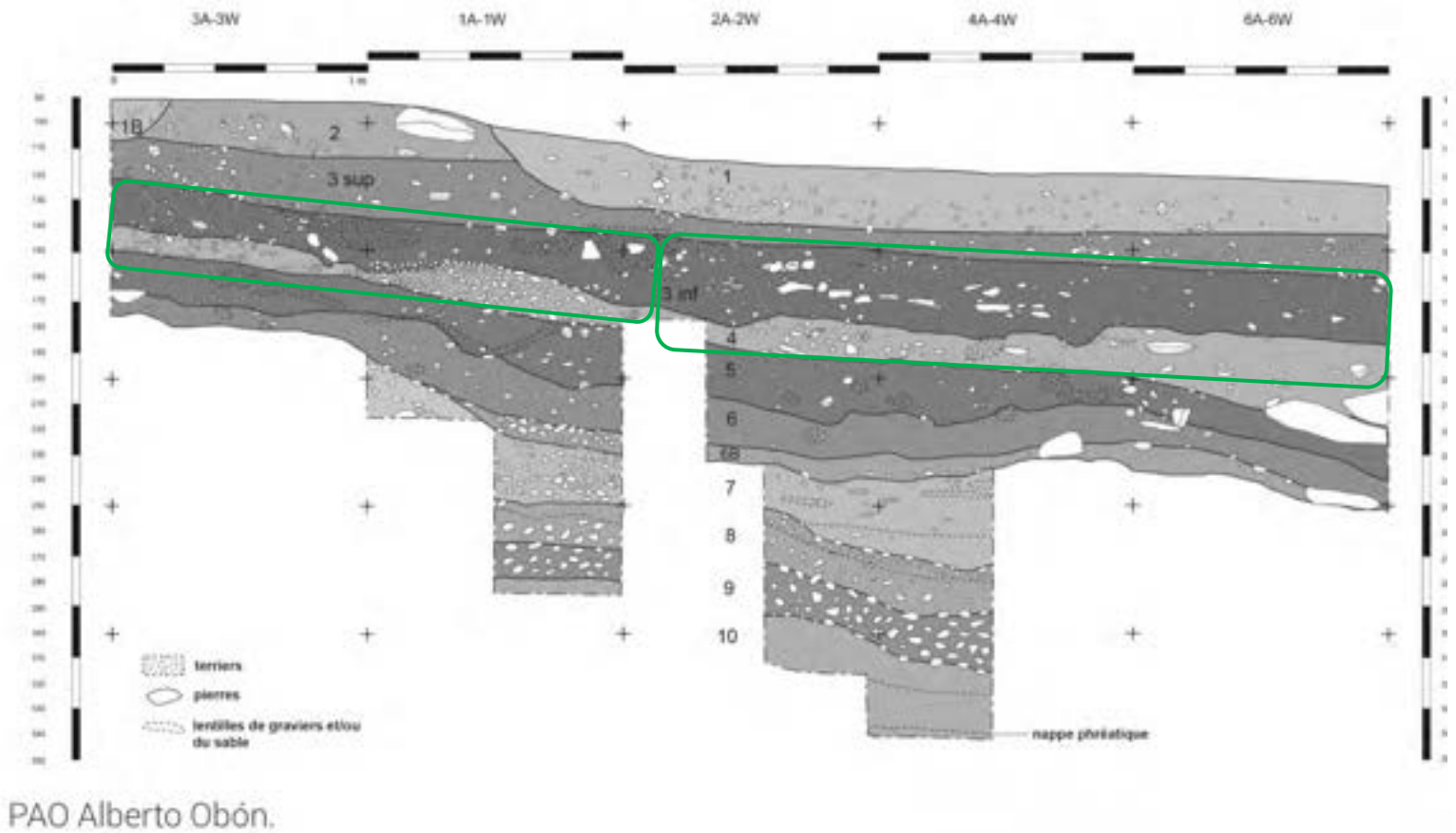
El Esplugón rockshelter stratigraphy. Utrilla et al., 2012 Fig. 3, p. 239. Modified. Green squares designate Unit III.

Tabl. 1. – Abri de L'Esplugón (Villobas-Sabiñánigo, Huesca, Espagne) : datations radiocarbone.

Laboratoire	Z	Niveau	Dates BP	Cal. BC 2σ	Matériau	Phase (d'après la mesure)
Beta 338509	127	2 / 3 sup.	5 970 ± 30	4 943-4 781	Os	Néolithique ancien
Beta 283899	172	4	6 120 ± 40	5 209-4 953	Os	Intrusion
MAMS 30169	215	6	6 166 ± 23	5 213-5 047	Os	Intrusion
MAMS 30168	127	3 sup.	6 282 ± 22	5 309-5 220	Os	Néolithique ancien
Beta 313517	128	3 inf.	6 730 ± 40	5 718-5 564	Os	Mésolithique à triangles
MAMS 30166	117	2	6 781 ± 23	5 720-5 638	Os	Intrusion ?
Beta 306723	165	3 inf.	6 950 ± 50	5 976-5 731	Os	Mésolithique à triangles
MAMS 30167	175	4	7 355 ± 23	6 341-6 094	Os	Mésolithique à trapèzes
GrA-59632	182	4	7 620 ± 40	6 569-6 416	C	Mésolithique à trapèzes
GrA-59634	229	6	7 715 ± 45	6 635-6 469	C	Intrusion
Beta 306725	189	5	7 860 ± 40	6 984-6 597	Os	Mésolithique à denticulés ?
GrA-59633	199	5	8 015 ± 45	7 071-6 767	C	Mésolithique à denticulés ?
Beta 306722	218	6	8 380 ± 40	7 536-7 350	Os	Mésolithique microlaminaire ?

Radiocarbon dates from El Esplugón rockshelter. Obón et al., 2019 Fig. 3, p.6

❑ 173. El Esplugón (Huesca, Spain) (ID173)



PAO Alberto Obón.

El Esplugón rockshelter west-east stratigraphic section. Obón et al., 2019 Fig. 1, p.4. Modified. Green squares designate Unit III.

Tabl. 1. – Abri de L'Esplugón (Villobas-Sabiñánigo, Huesca, Espagne) : datations radiocarbone.

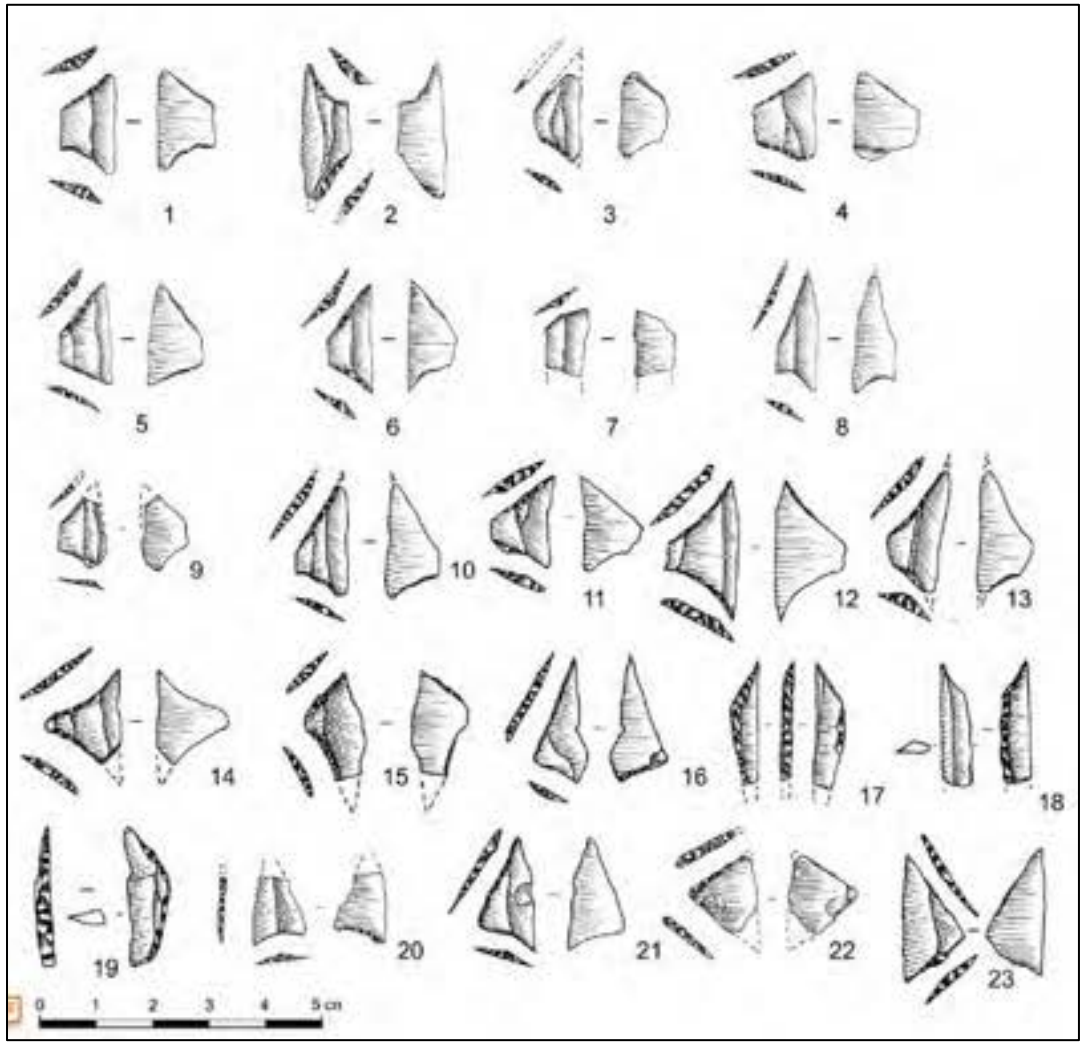
Laboratoire	Z	Niveau	Dates BP	Cal. BC 2σ	Matériau	Phase (d'après la mesure)
Beta 338306	127	2 / 3 sup.	5 970 ± 30	4 943-4 781	Os	Néolithique ancien
Beta 283899	172	4	6 120 ± 40	5 209-4 953	Os	Intrusion
MAMS 30169	215	6	6 166 ± 23	5 213-5 047	Os	Intrusion
MAMS 30168	127	3 sup.	6 282 ± 22	5 309-5 220	Os	Néolithique ancien
Beta 313517	128	3 inf.	6 730 ± 40	5 716-5 564	Os	Mésolithique à triangles
MAMS 30166	117	2	6 781 ± 23	5 720-5 638	Os	Intrusion ?
Beta 306723	165	3 inf.	6 950 ± 30	5 970-5 731	Os	Mésolithique à triangles
MAMS 30167	175	4	7 355 ± 23	8 341-8 094	Os	Mésolithique à trapèzes
GrA-59632	182	4	7 620 ± 40	8 509-8 416	C	Mésolithique à trapèzes
GrA-59634	229	6	7 715 ± 45	8 635-8 469	C	Intrusion
Beta 306725	189	5	7 890 ± 40	8 984-8 597	Os	Mésolithique à denticulés ?
GrA-59633	199	5	8 015 ± 45	7 071-6 767	C	Mésolithique à denticulés ?
Beta 306722	218	6	8 380 ± 40	7 536-7 359	Os	Mésolithique microlaminaire ?

Radiocarbon dates from El Esplugón rockshelter. Obón et al., 2019. Table1, p.6

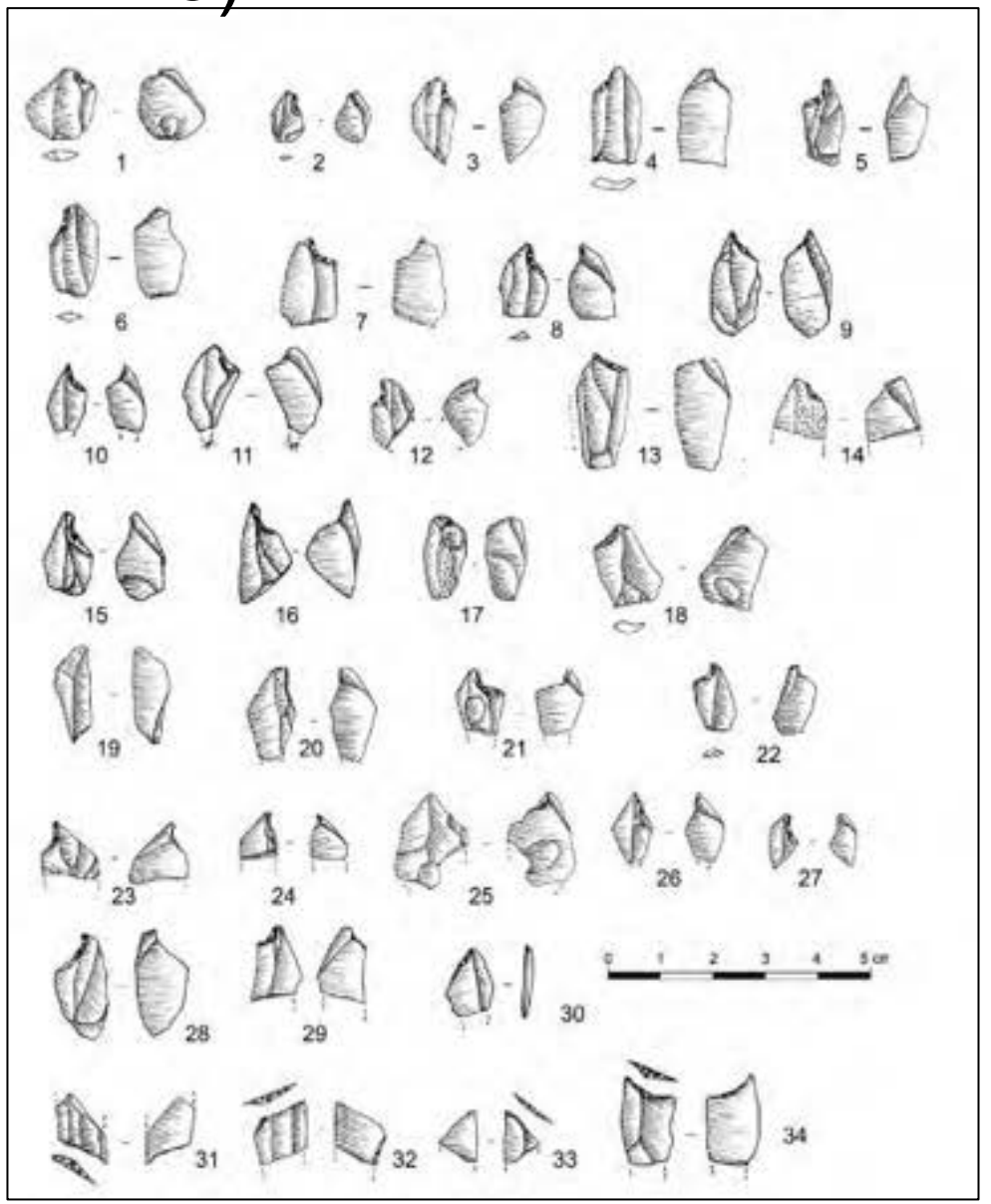
<u>Radiocarbon dates from level 4</u>:
1 bone sample (Sus scrofa) MAMS30167: 7355±23BP;
1 charcoal sample (Pinus nigra) GrA-59632: 7620±40BP.

❑ 173. El Esplugón (Huesca, Spain) (ID173)

Geometric microliths from level 4: 17 trapezes, 6 triangles, 30 microburins.



Geometric microliths from level 4. Utrilla et al., 2016, fig. 9, p.84



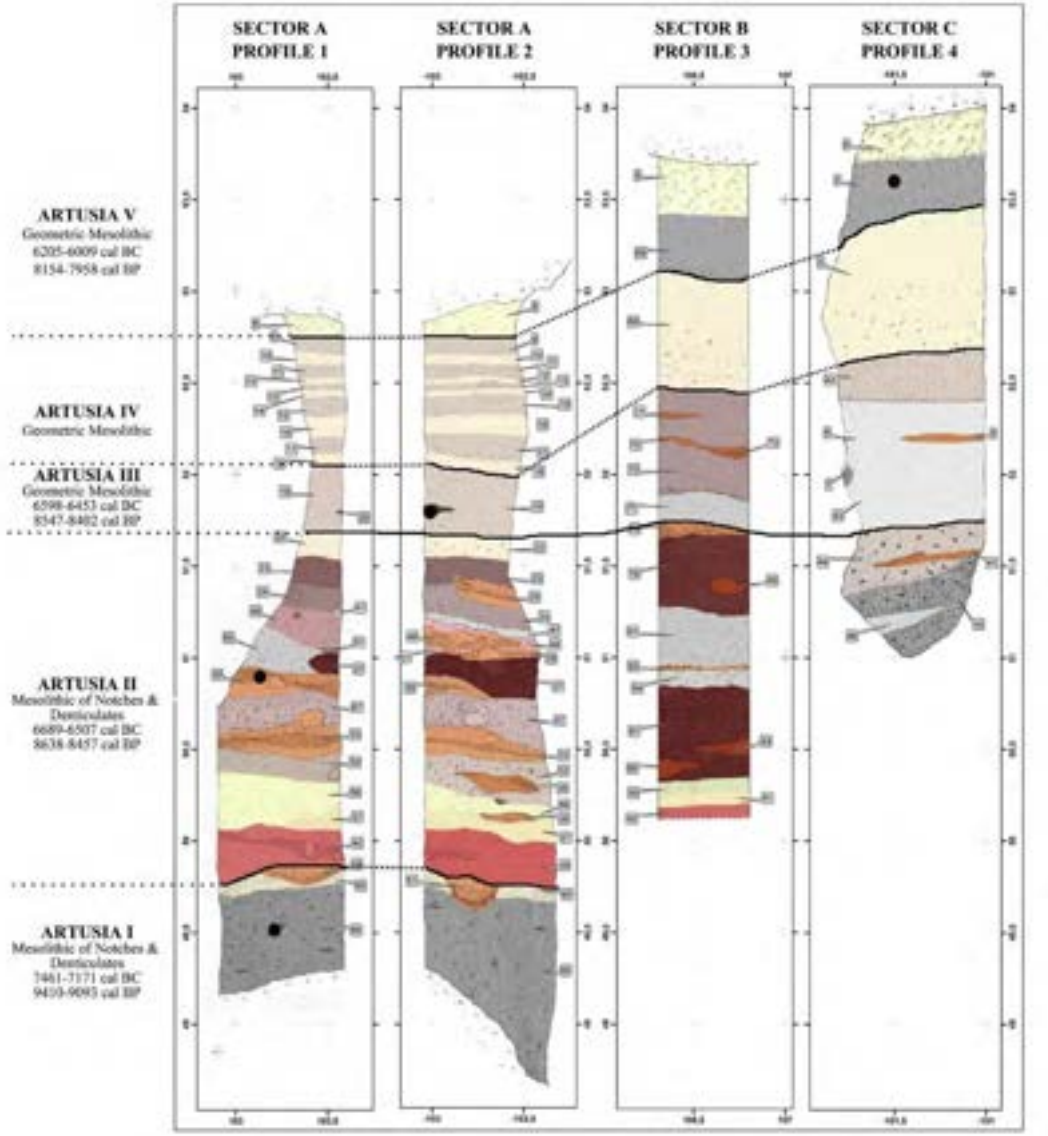
Microburins and truncations from level 4. Utrilla et al., 2016, fig. 10, p.85

- Time slice 2 (8600-8400 cal BP). Ebro Valley

❑ Artusia (Navarra, Spain) (ID222)

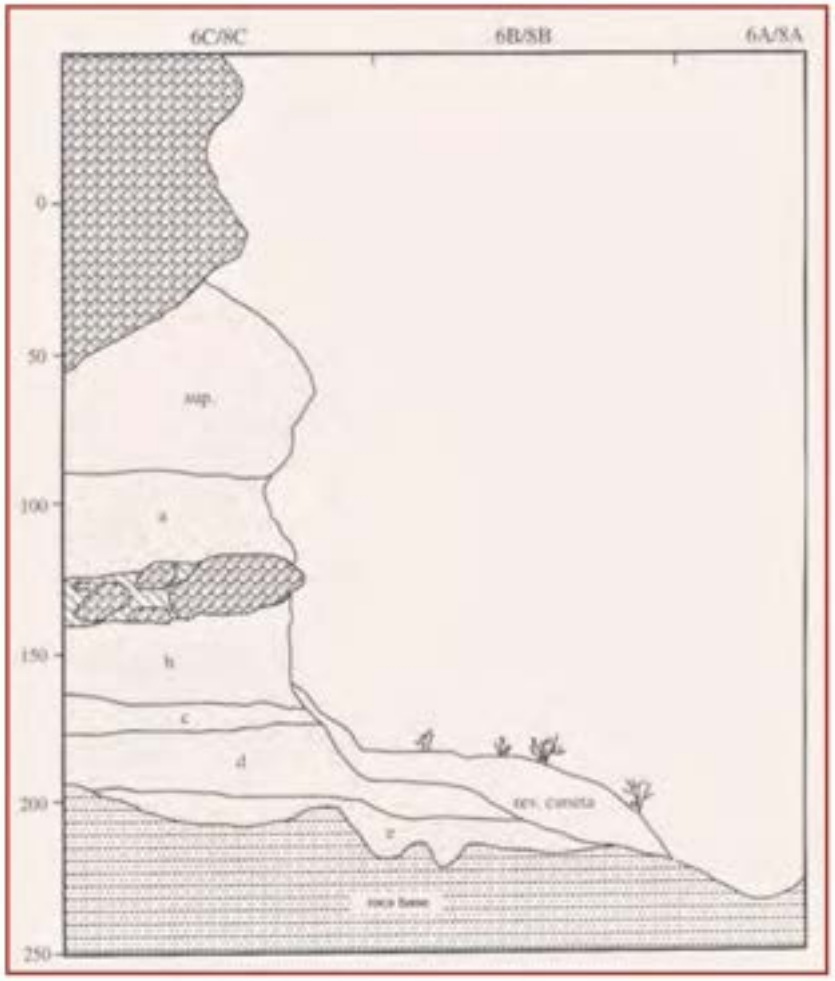
ARTUSIA III

Artusia rockshelter lithic industries: A) Artusia I - 1st phase of Mesolithic of Notches and Denticulates: 1 and 4 denticulates, 2 and 3 notches, 5 scraper. B) Artusia II - 2nd phase of Mesolithic of Notches and Denticulates: 6, 8 and 9 denticulates, 7 notches, 10 scraper and 11 chipped piece. C) Artusia III - 1st phase of Geometric Mesolithic: 12 and 13 bladelets with notch Montbani type, 14-17 concave-based trapezes, 18 circular endscraper. D) Artusia V - 2nd phase of Geometric Mesolithic: 19-21 triangles (21 Tardenois type), 22 and 23 microburins. García Martínez de Lagrán et al., 2016, Fig. 6, p.160.

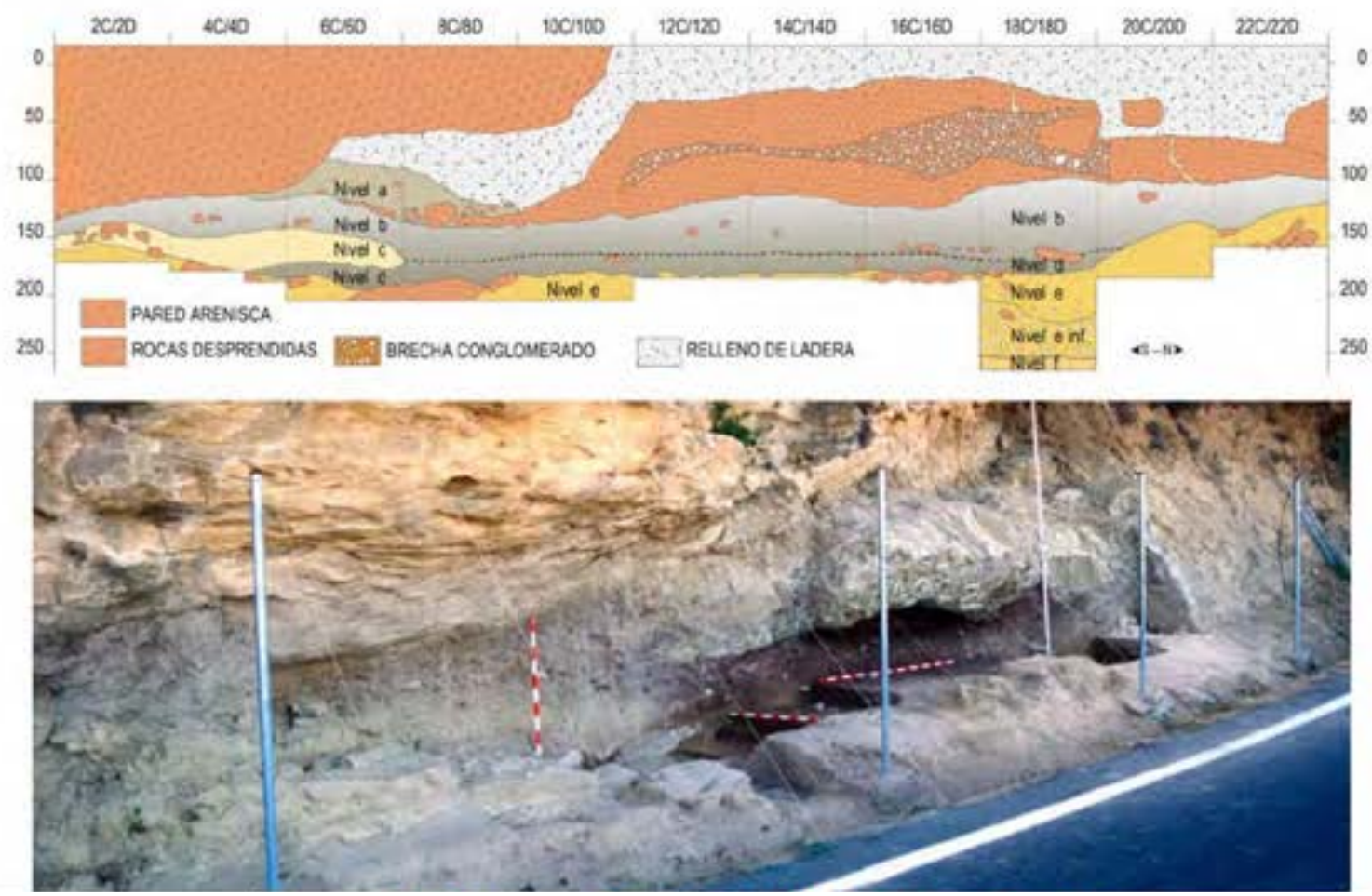


Artusia rockshelter profiles with the different phases and the location of the dated samples (black points). García Martínez de Lagrán et al., 2016, Fig. 3, p.156.

❑ Peña 14 (Zaragoza, Spain) (ID42).

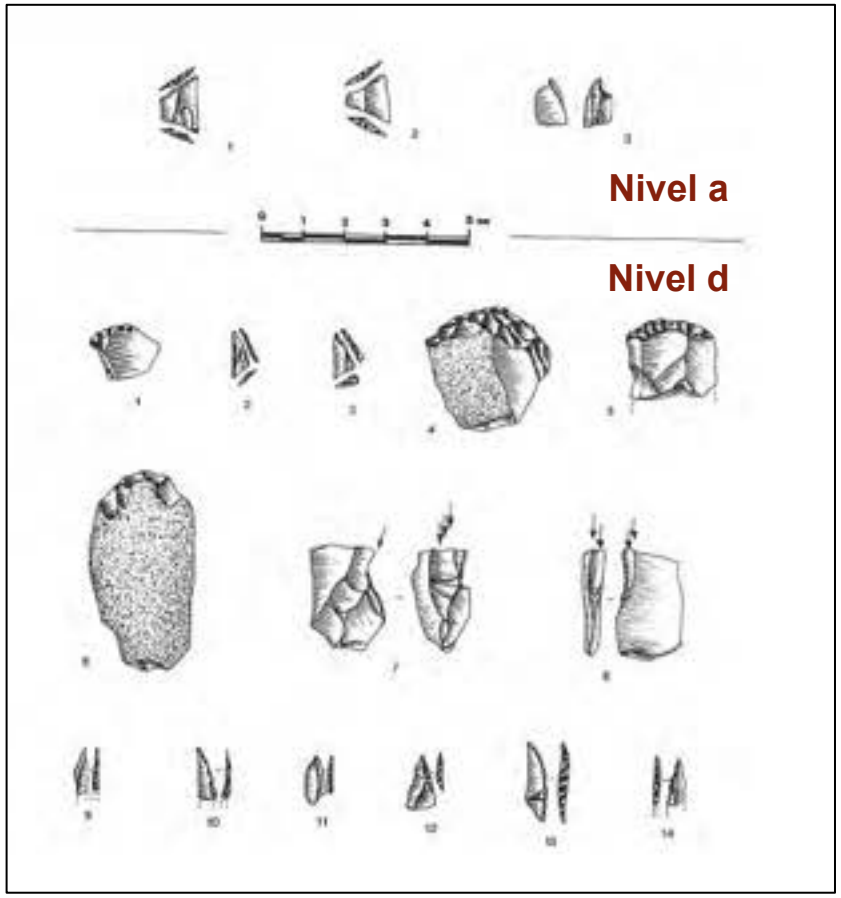


Peña 14, stratigraphic sequence (according Montes). Utrilla et al., 2009: Fig.5, pág.138.



Peña 14, stratigraphic sequence and picture of the excavated area in 2000. Soto et al., 2019: Fig.2, pág.32

❑ Peña 14 (Zaragoza, Spain) (ID42).



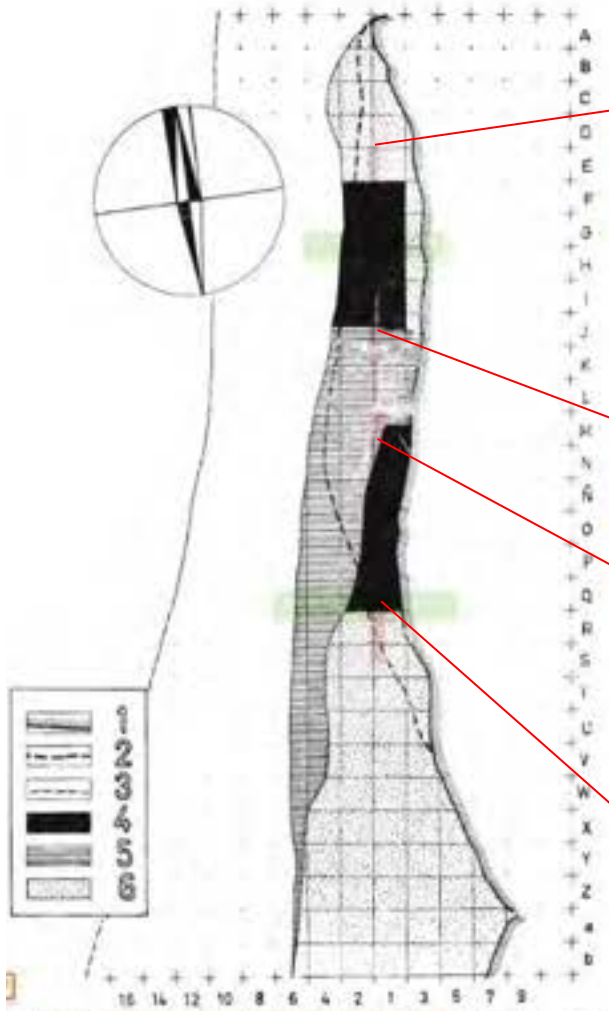
Lithic materials from Peña 14 occupation levels. Montes, 2001-2002, fig.3, p.302. Modified.

Peña 14							
a	Grn-25094	7660	90	8470	80	MG	C
b	Grn-25999	8000	60	8860	130	MD	C
b	Grn-25998	8000	90	8850	140	MD	C
b	Grn-25097	8340	130	9300	150	MD	C
b	Grn-25098	8780	110	9860	200	MD	C

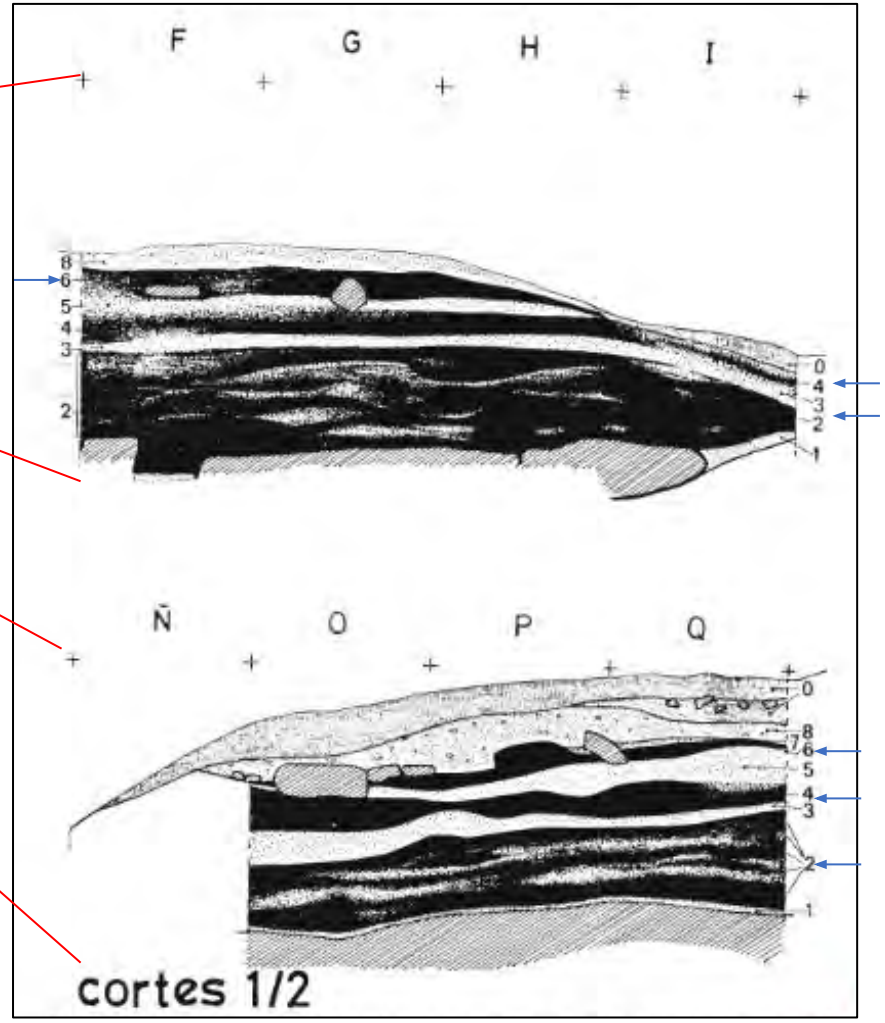
Available radiocarbon dates from La Peña 14 rockshelter. Utrilla et al., 2009: pág.186

The only radiocarbon date available for the Geometric Mesolithic is on one, single charcoal sample, but retrieved from scattered charcoals in level a, and obtained by conventional C^{14} method, which could have get older the radiocarbon measure (old wood effect) (According to Montes et al, 2016: 60)

❑ Botiquería dels Moros (Teruel, Spain) (ID215)



Botiquería dels Moros. Plan of the site indicating the excavated areas in 1974 (in black). Barandiarán 1978: 55. Fig. 3. Modified. Light pink shadowed areas correspond to longitudinal sections.



Longitudinal sections between 1 and 2 bands. Top: Southern area. Bottom: Northern area. Barandiarán 1978: 59. Fig. 4. Modified. Arrows indicate occupation levels.

3 occupation levels have been identified (levels 2, 4 and 6), with high density of archaeological materials. They are interspersed with very thin horizon almost sterile (levels 3 and 5) (Barandiarán 1978: 62.

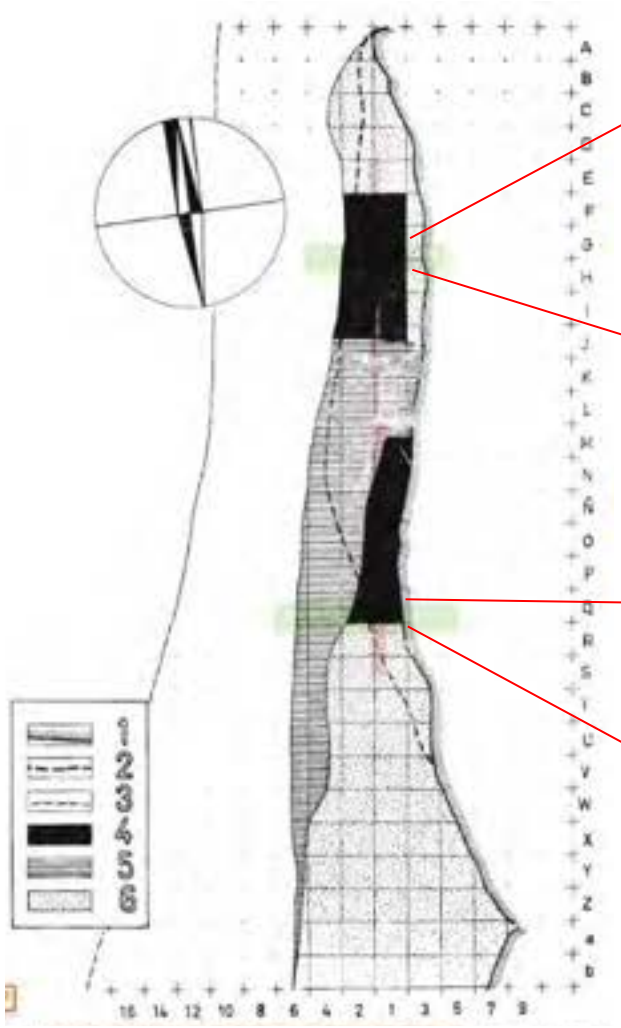
Level 2, between 40-50 cm depth, was subdivided in 5 sublevels. It contains most of the lithic industry recovered from the site: 82 notches and denticulates, 74 geometric microliths.

Group of geometrics (n=74). Trapezes predominate (n=57), over triangles (n=10) (more abundant in level 4)

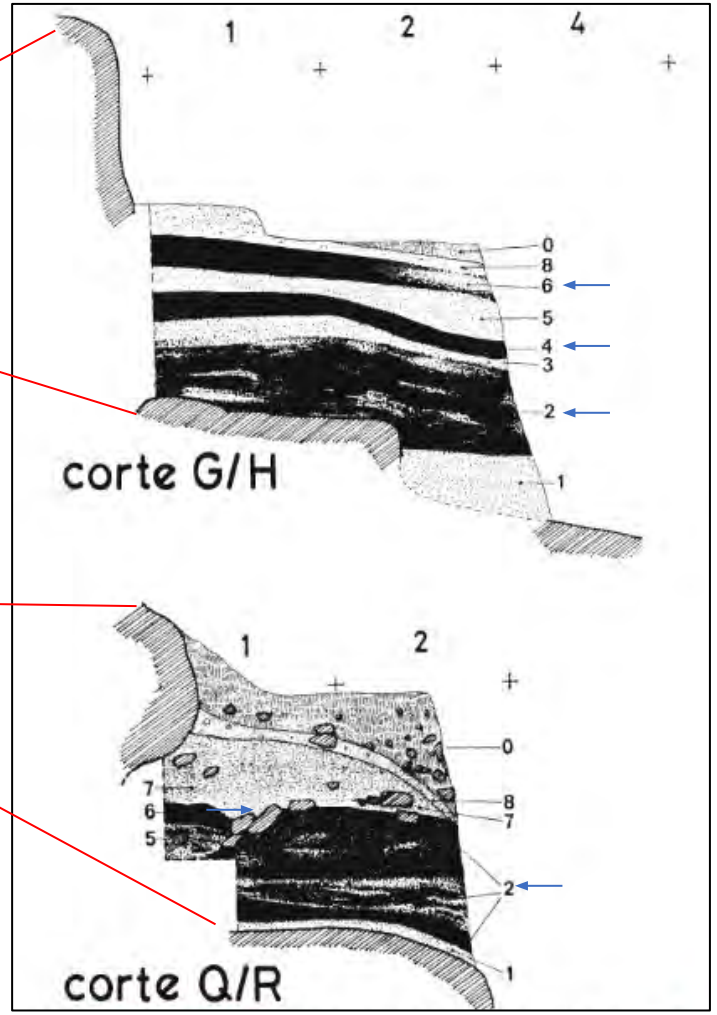
Symmetric trapezes =15
Asymmetric trapezes =9
Trapezes of two concave sides =9
Rectangular trapeze of bifacial retouch in the lower truncation =2
Trapezes of one concave sides =2

❑ Botiquería dels Moros (Teruel, Spain) (ID215)

3 occupation levels have been identified (levels 2, 4 and 6), with high density of archaeological materials. They are interspersed with very thin horizon almost sterile (levels 3 and 5) (Barandiarán 1978: 62).



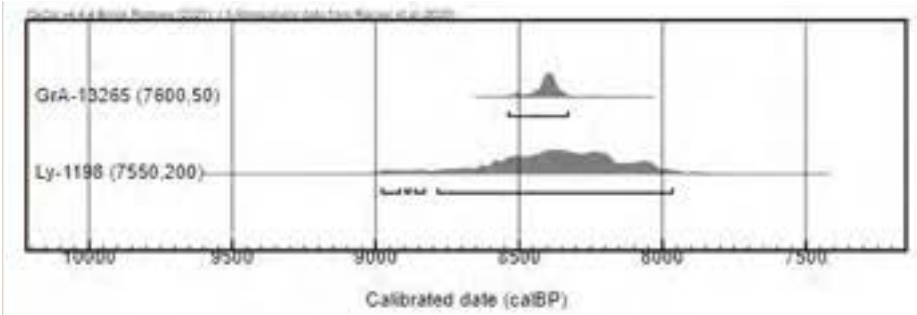
Botiquería dels Moros. Plan of the site indicating the excavated areas in 1974 (in black). Barandiarán 1978: 55. Fig. 3. Modified. Light green shadowed areas correspond to cross sections.



Cross sections. Top: between G and H bands, Southern area. Bottom: between Q and R bands, Northern area.Barandiarán 1978: 61. Fig. 5. Modified. Arrows indicate occupation levels.

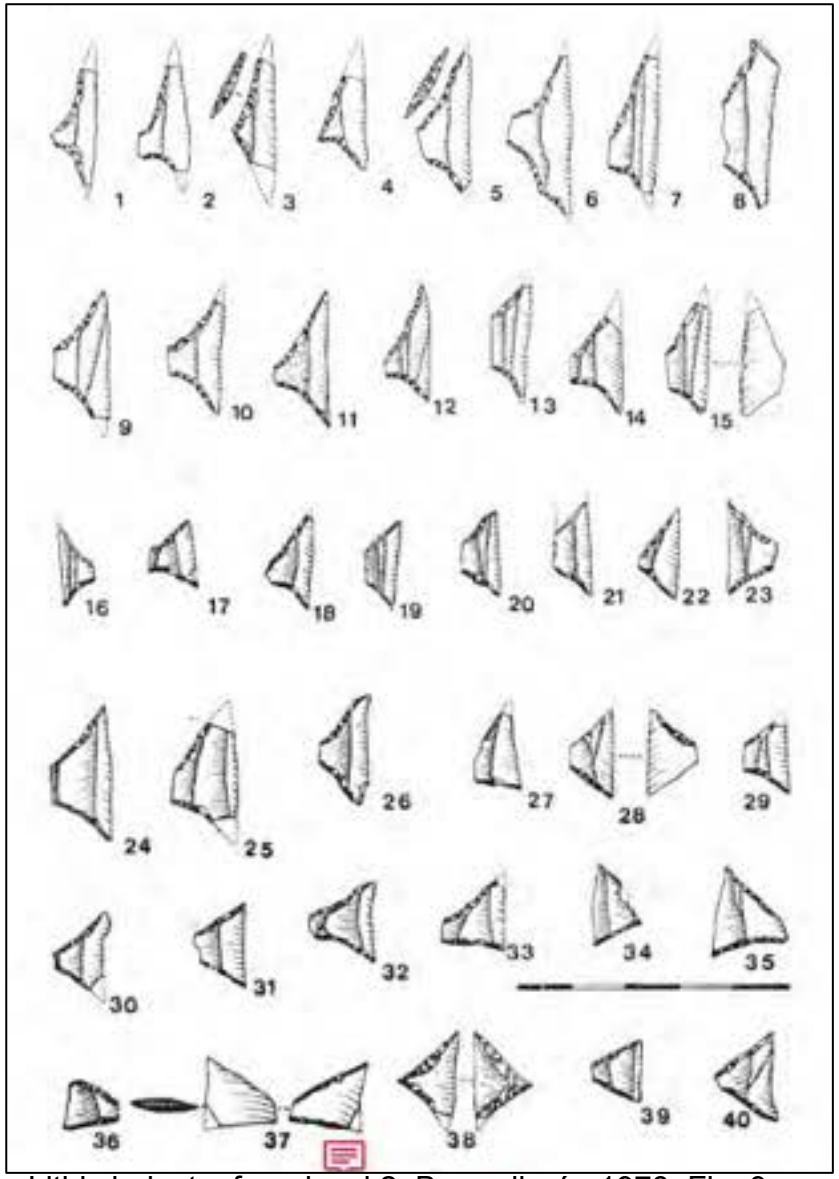
Unit	Lab.code	Sample	Age BP	Std	Cal BP 2σ	Median cal BP
2	GrA-13265	Bone collagen	7600	50	8537-8330	8399
2	Ly-1198	Charcoal (aggreg)	7550	200	8978-7966	8359
4	GrA-13267	Bone collagen	6830	50	7779-7578	7660

Radiocarbon dates from Botiquería del Moros (Barandiarán and cava, 2000)

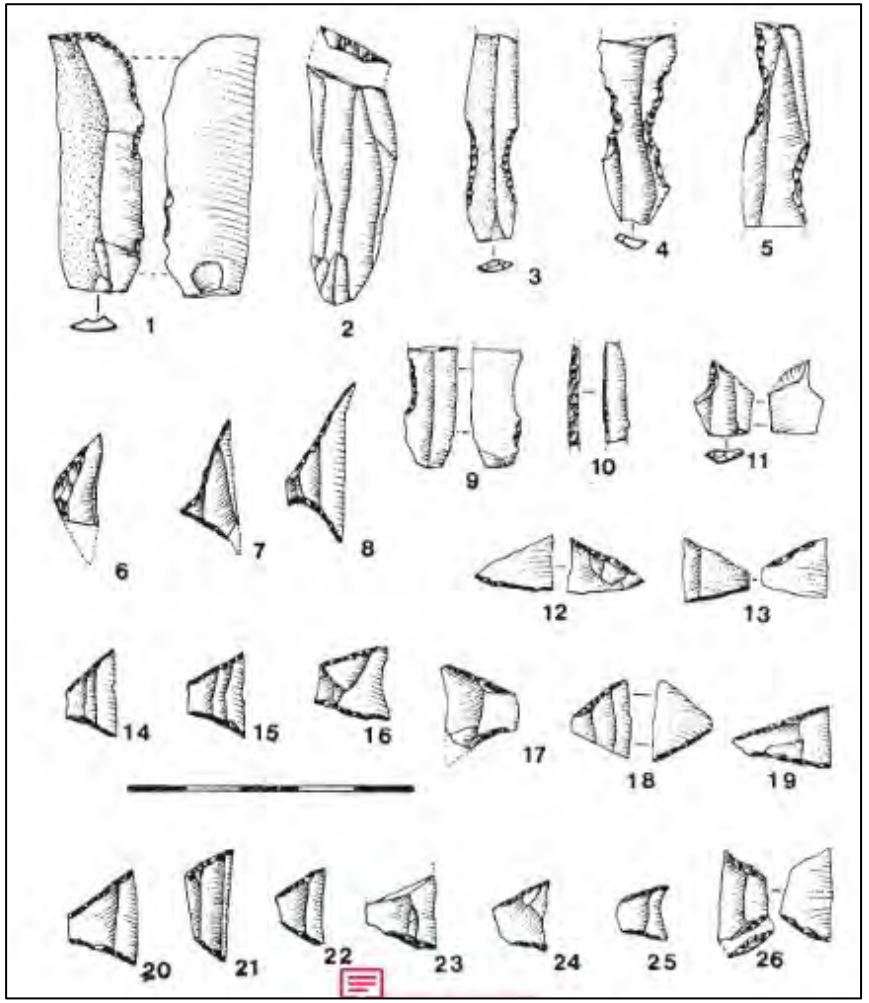


Mutiplot of the two radiocarbon dates available for Level 2 at Botiquería

❑ Botiquería dels Moros (Teruel, Spain) (ID215)

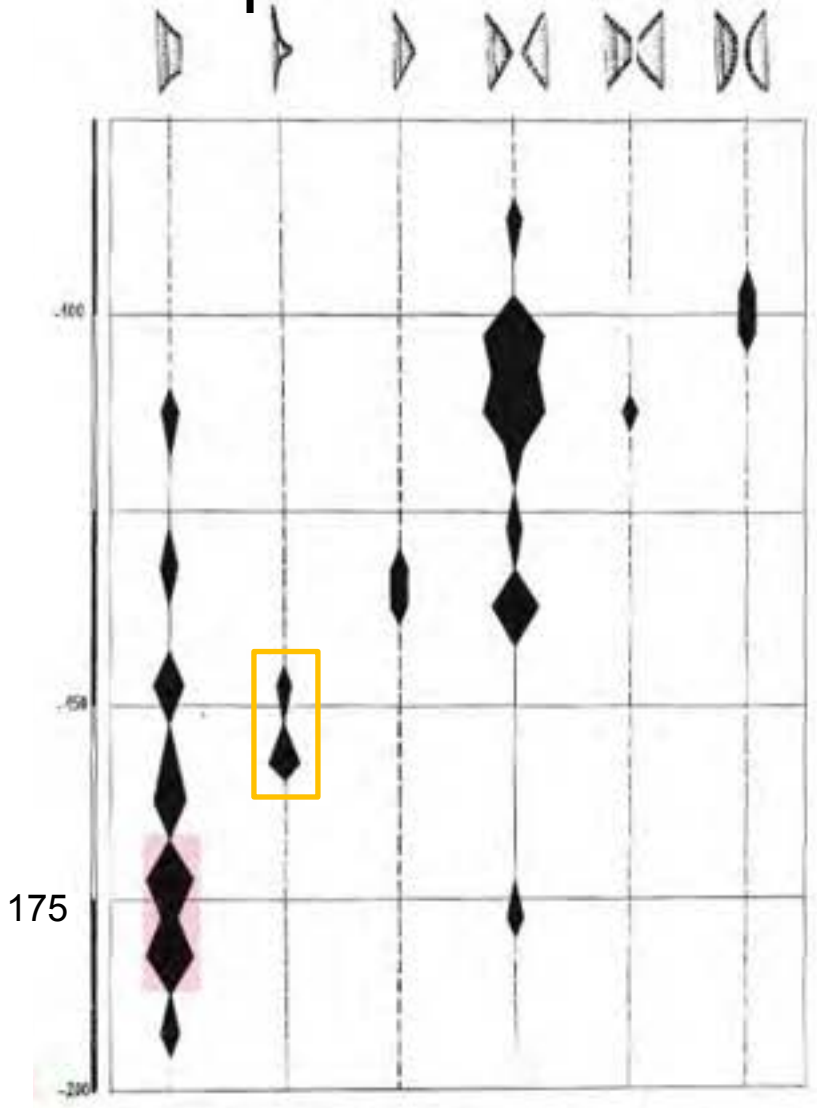


Lithic industry from level 2. Barandiarán 1978: Fig. 9, p. 68

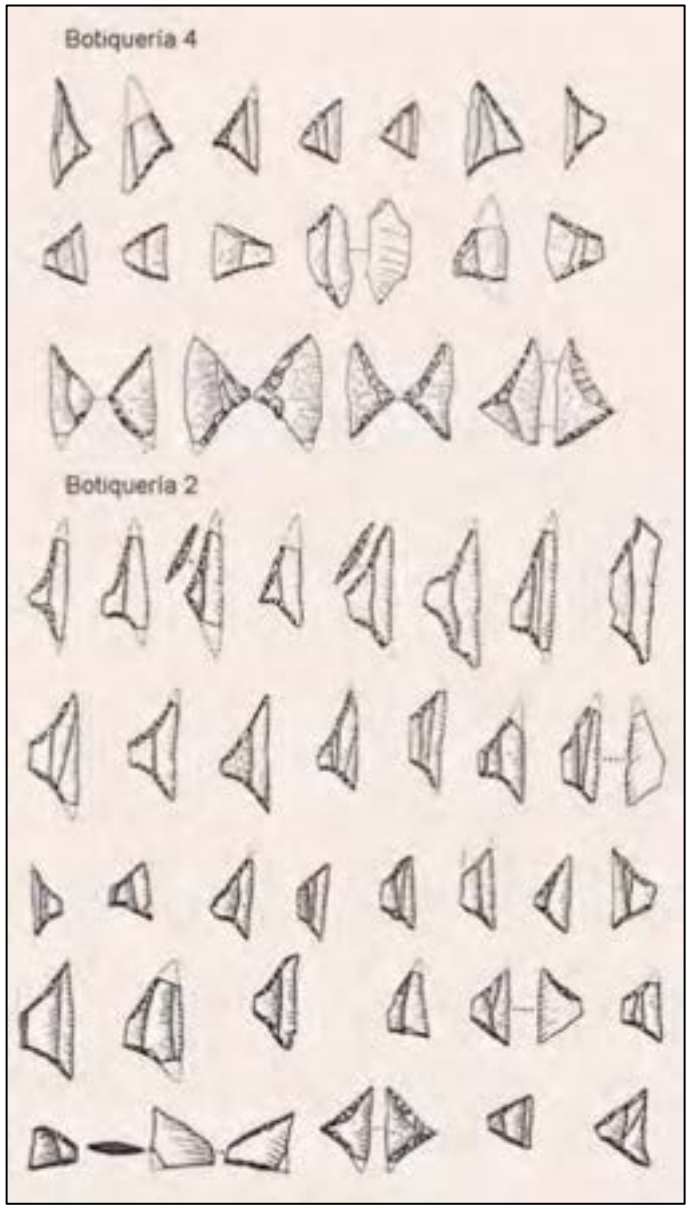


Lithic industry from level 2. Barandiarán 1978: Fig. 10, p. 69

❑ Botiquería dels Moros (Teruel, Spain) (ID215)



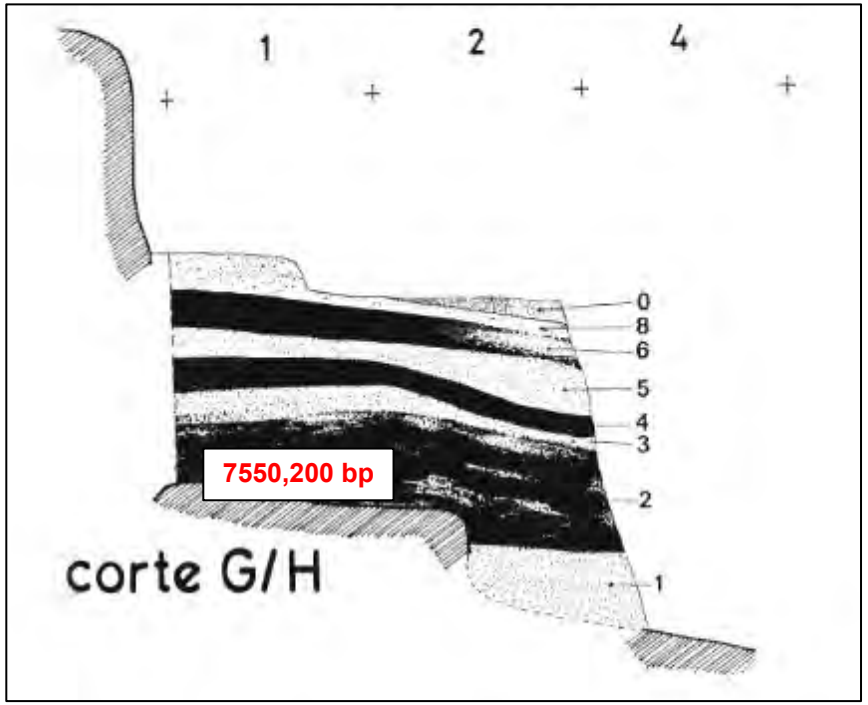
Vertical distribution of the geometric types in squares 1F and 1G. Barandiarán, 1978: 122; fig. 42. Modified



Geometrics from Botiquería level 2 and 4. Utrilla et al. 2009: Fig. 24, p. 172

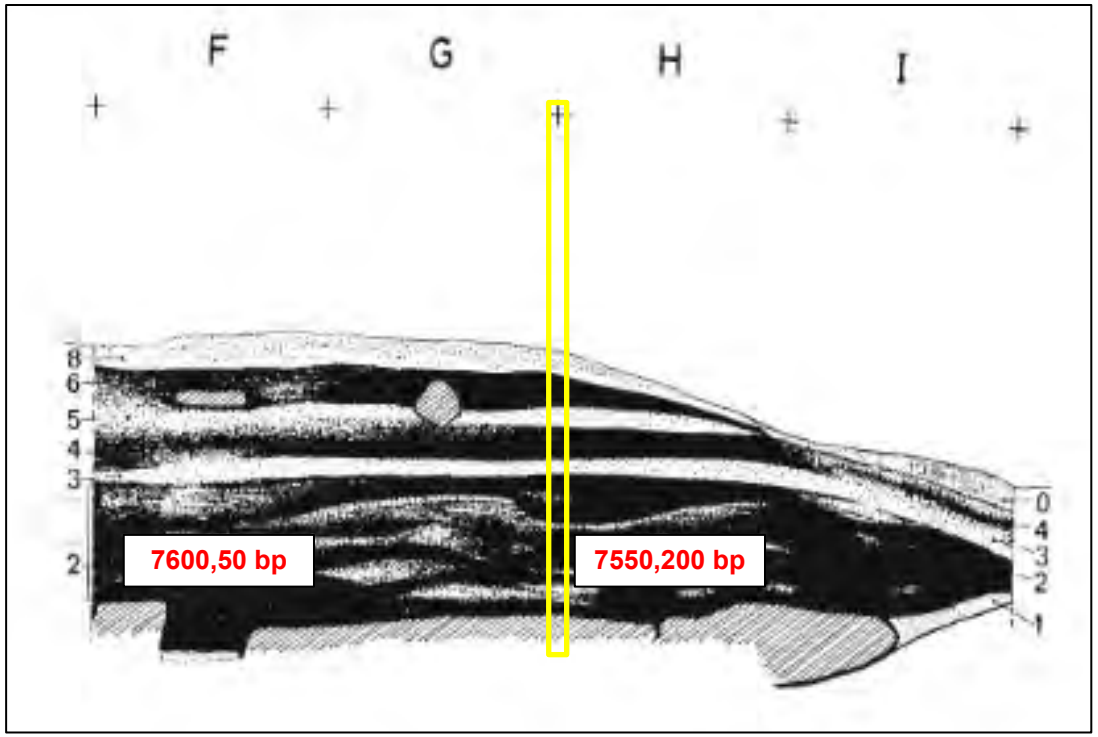
Regarding the evolution of lithic industries in Botiquería, only lithic assemblages from squares 1F and 1G have been analyzed. Trapezes with abrupt retouch are almost exclusively ascribed to the lower half of the stratigraphic deposit. Its maximum density is concentrated between -190/-185 y -160/-155

❑ Botiquería dels Moros (Teruel, Spain) (ID215)

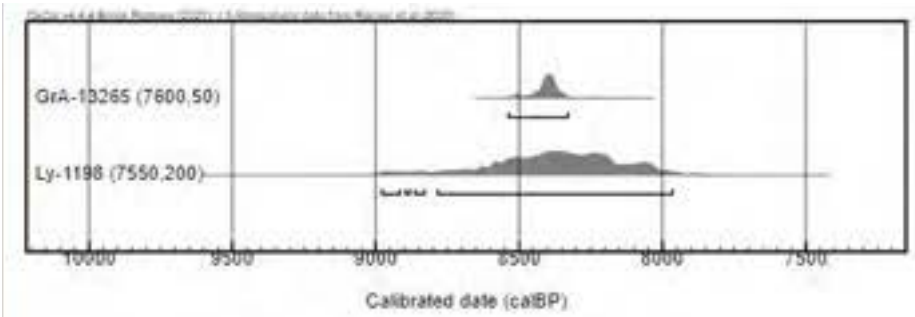


Cross sections between G and H bands, Southern area. Barandiarán 1978: 61. Fig. 5. Modified. Location of charcoal sample

Longitudinal sections between 1 and 2 bands. Southern area. Barandiarán 1978: 59. Fig. 4. Modified. Location of samples radiocarbon dated. →



Corte G/H

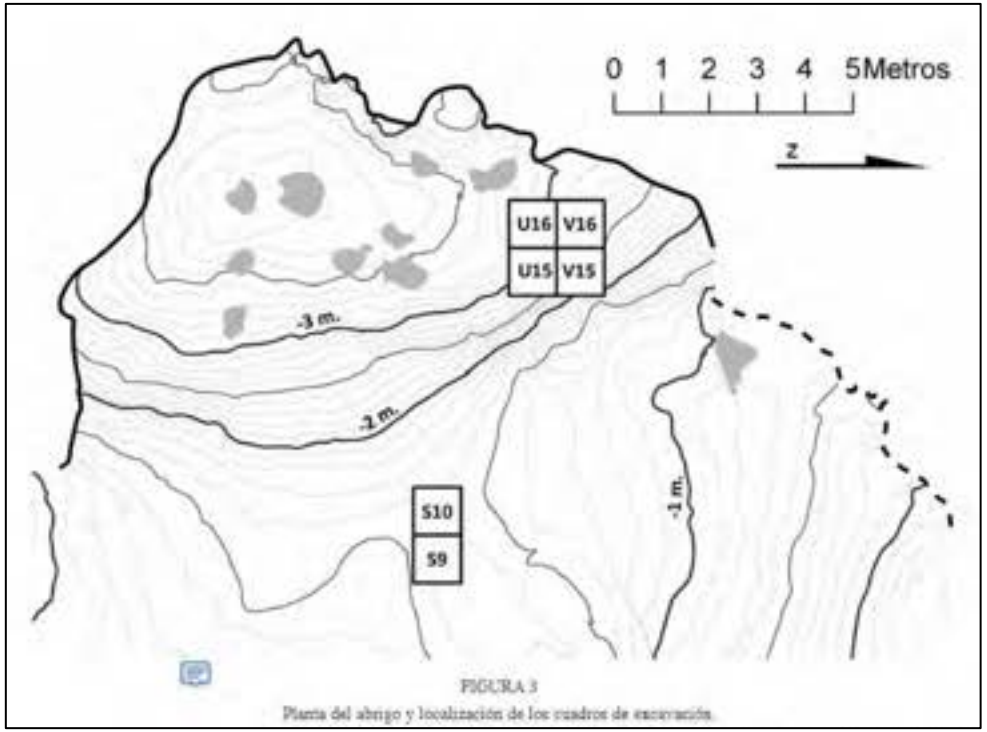


Mutiplot of the two radiocarbon dates available for Level 2 at Botiquería

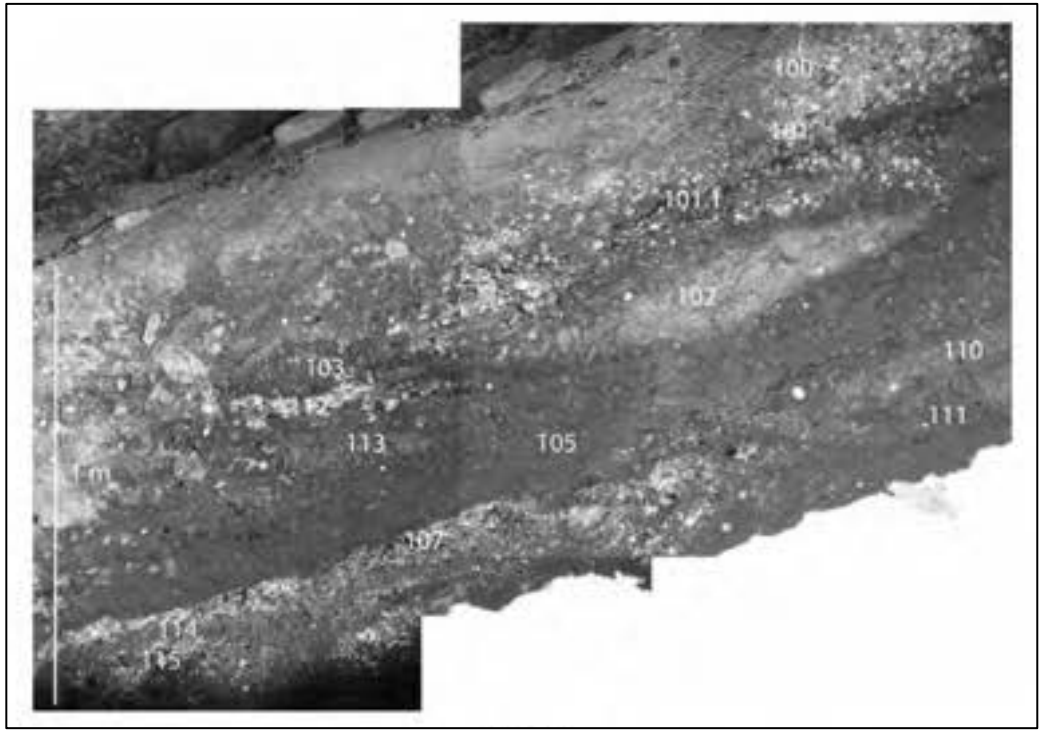
There are two radiocarbon dates available for level 2 of Botiquería.
The oldest one, published in 1976, was the first absolute radiocarbon date for the Iberian Geometric Epipaleolithic. It is an aggregate charcoal sample retrieved from a hearth located in square 1H. It was obtained by the conventional method. Ly-1198:7550±200.
The second one, GrA-13265:7600±50, obtained by AMS, corresponds to an individual bone sample, deer metapod fragment founded at -178/173 cm depth in square 1F.
It is possible to establish a precise correspondence between the major concentration of trapezes with abrupt retouch, almost exclusively ascribed to the lower half of the stratigraphic deposit, between -190/-185 and -160/-155 cm depth, and the sample dated.

- Time slice 2 (8600-8400 cal BP). Cantabrian façade

❑ El Mazo (Asturias, Spain) (ID89)



El Mazo rockshelter. Plan and excavated area. Gutiérrez et al. 2014, fig.3, p.28

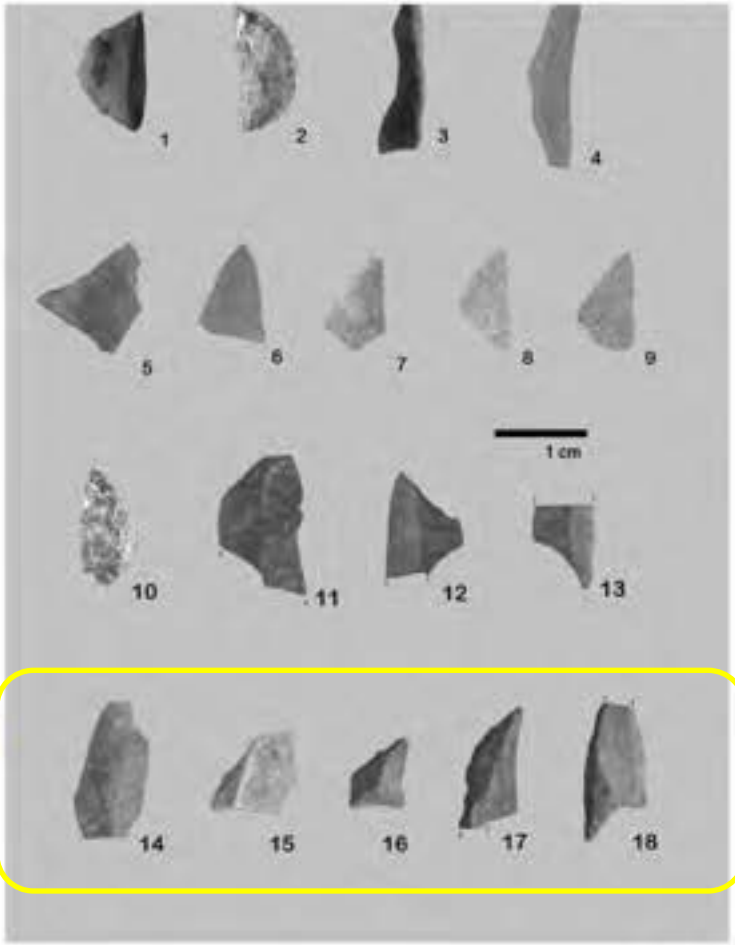


El Mazo rockshelter, stratigraphic units identified in Test Pit A, squares V15 and V16. Gutiérrez et al. 2014, fig.5, p.31

Sector	U.E.	Cuadro	Tramo	Material	Lab Ref	Fecha BP	SD	$\delta^{13}C$, ‰	Método
Sondeo Exterior	2	S9	1	Hueso	UGAMS-5406	260	20	-20.5	C14 AMS
Sondeo Exterior	3	S10		Hueso	UGAMS-5407	6790	30	-21.1	C14 AMS
Sondeo Exterior	3	S10		Patella	LEB-8790 a 8798	6467	778		AAR
Sondeo Abrigo	105	V15		Carbón	UGAMS-5408	7640	30	-25.6	C14 AMS
Sondeo Abrigo	100/101	V15		Patella	LEB-8905 a 8914	6373	1008		AAR
Sondeo Abrigo	103	V16		Patella	LEB-8765 a 8773	7152	599		AAR
Sondeo Abrigo	103.1	V15		Patella	LEB-8774 a 8779	6070	582		AAR
Sondeo Abrigo	105	V15		Patella	LEB-8915 a 8924	6495	582		AAR
Sondeo Abrigo	107	V15		Patella	LEB-8770 a 8789	6280	517		AAR
Sondeo Abrigo	107	V16		Patella	LEB-9445 a 9454	9067	1415		AAR

Radiocarbon dates obtained by radiocarbon method and aminoacid racemization (AAR). Gutiérrez et al. 2014, tabla 2, p.32

❑ El Mazo (Asturias, Spain) (ID89)



Exterior
Test pit

Rockshelter
Test pit

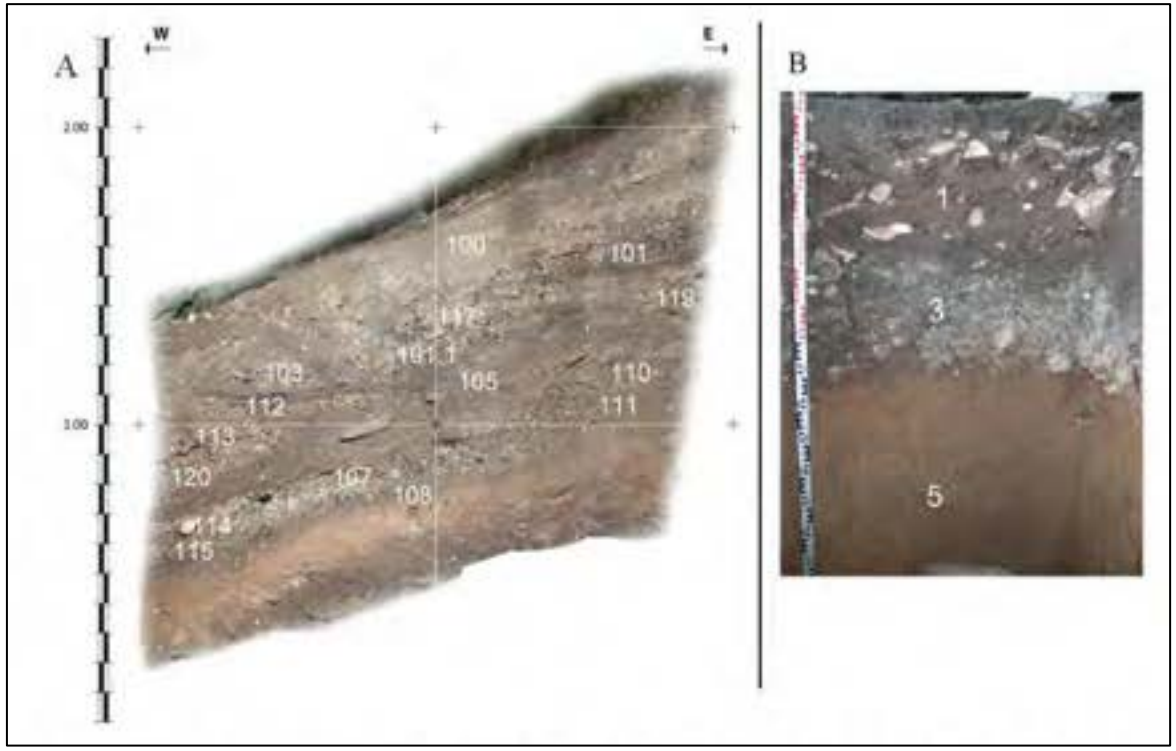
Lithic armatures from El Mazo rockshelter. SU 105 (nos. 14 to 18). Gutiérrez et al. 2014, fig.6, p.35. Modified.

Sector	U.E.	Cuadro	Tramo	Material	Lab Ref	Fecha BP	SD	$\delta^{13}C$, ‰	Método
Sondeo Exterior	2	S9	1	Hueso	UGAMS-5406	260	20	-20.5	C14 AMS
Sondeo Exterior	3	S10		Hueso	UGAMS-5407	6790	30	-21.1	C14 AMS
Sondeo Exterior	3	S10		Patella	LEB-8790 a 8798	6467	778		AAR
Sondeo Abrigo	105	V15		Carbón	UGAMS-5408	7640	30	-25.6	C14 AMS
Sondeo Abrigo	100/101	V15		Patella	LEB-8905 a 8914	6373	1008		AAR
Sondeo Abrigo	103	V16		Patella	LEB-8765 a 8773	7152	599		AAR
Sondeo Abrigo	103.1	V15		Patella	LEB-8774 a 8779	6070	582		AAR
Sondeo Abrigo	105	V15		Patella	LEB-8915 a 8924	6495	582		AAR
Sondeo Abrigo	107	V15		Patella	LEB-8770 a 8789	6280	517		AAR
Sondeo Abrigo	107	V16		Patella	LEB-9445 a 9454	9067	1415		AAR

Radiocarbon dates obtained by radiocarbon method and aminoacid racemization (AAR). Gutiérrez et al. 2014, tabla 2, p.32

The oldest appearance of trapezes is documented at SU 105, associated to a radiocarbon date on individual charcoal sample.

❑ El Mazo (Asturias, Spain) (ID89)



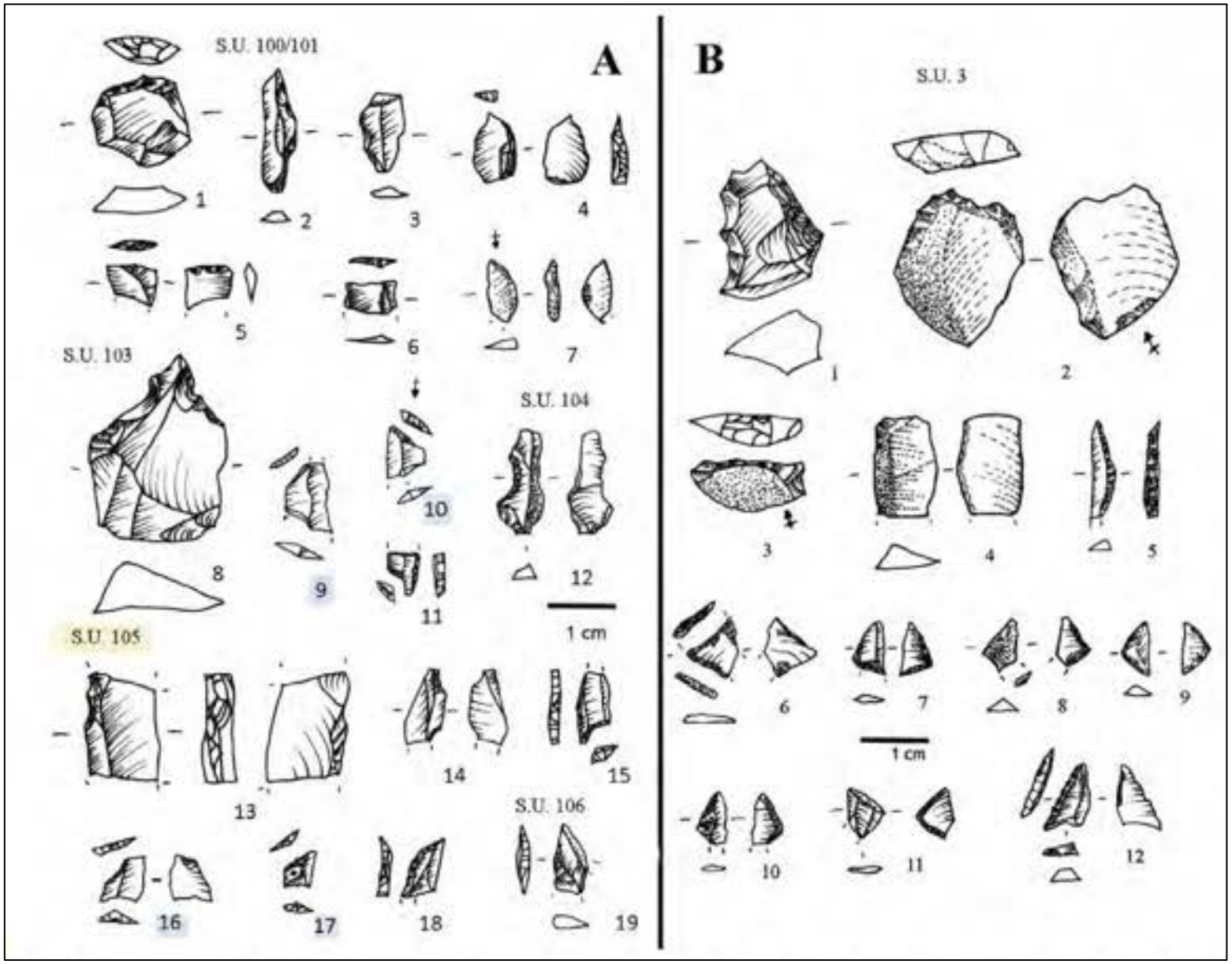
El Mazo rockshelter. A) North stratigraphic profile in squares V15 and V16 of the Inner Test Pit. B) West stratigraphic profile in square S10 of the Outer Test Pit. Numbers indicate the location of stratigraphic units (SU) Fuertes-Prieto et al. 2021, fig.71.2, p.471.

SU	Lab ID	Date BP	$\delta^{13}C$ ‰	95% confidence cal BC	Material
3	UGAMS-5407	6790±30	−21.1	5727–5638	Bone
100	OxA-28397	6772±37	−20.5	5725–5627	Bone
101	OxA-28389	7230±36	−23.0	6211–6022	Bone
112	OxA-28401	7294±37	−21.6	6227–6072	Bone
105	UGAMS-5408	7640±30	−25.6	6568–6435	Charcoal
114	OxA-27969	7990±38	−21.3	7057–6713	Bone

AMS radiocarbon dates from Mesolithic units at El Mazo. Fuertes-Prieto et al. 2021, table.71.1, p.472

❑ El Mazo (Asturias, Spain) (ID89)

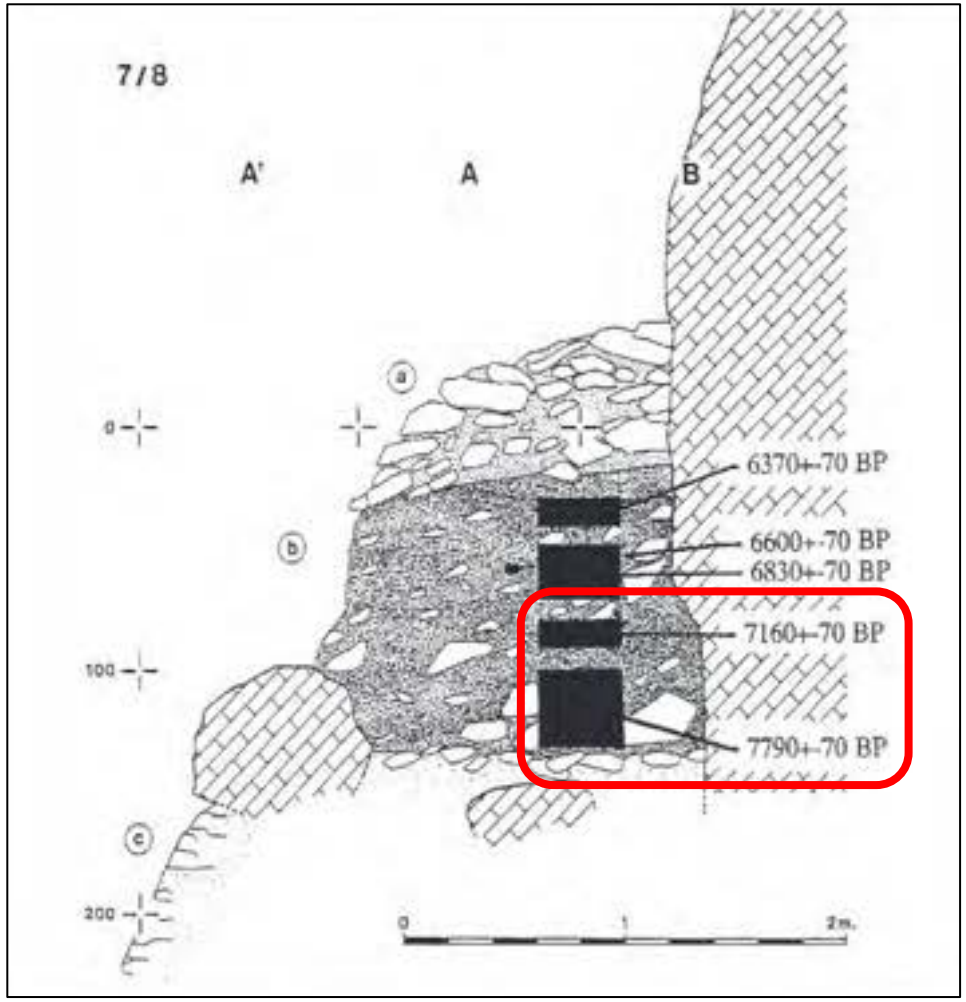
The oldest appearance of trapezes is documented at SU 105, associated to a radiocarbon date on individual charcoal sample.



Lithic industry from El Mazo rockshelter. Retouched pieces from the Inner Test Pit (A) and the Outer Test Pit (B). Fuertes-Prieto et al. 2021, fig.71.4, p.474. Modified.

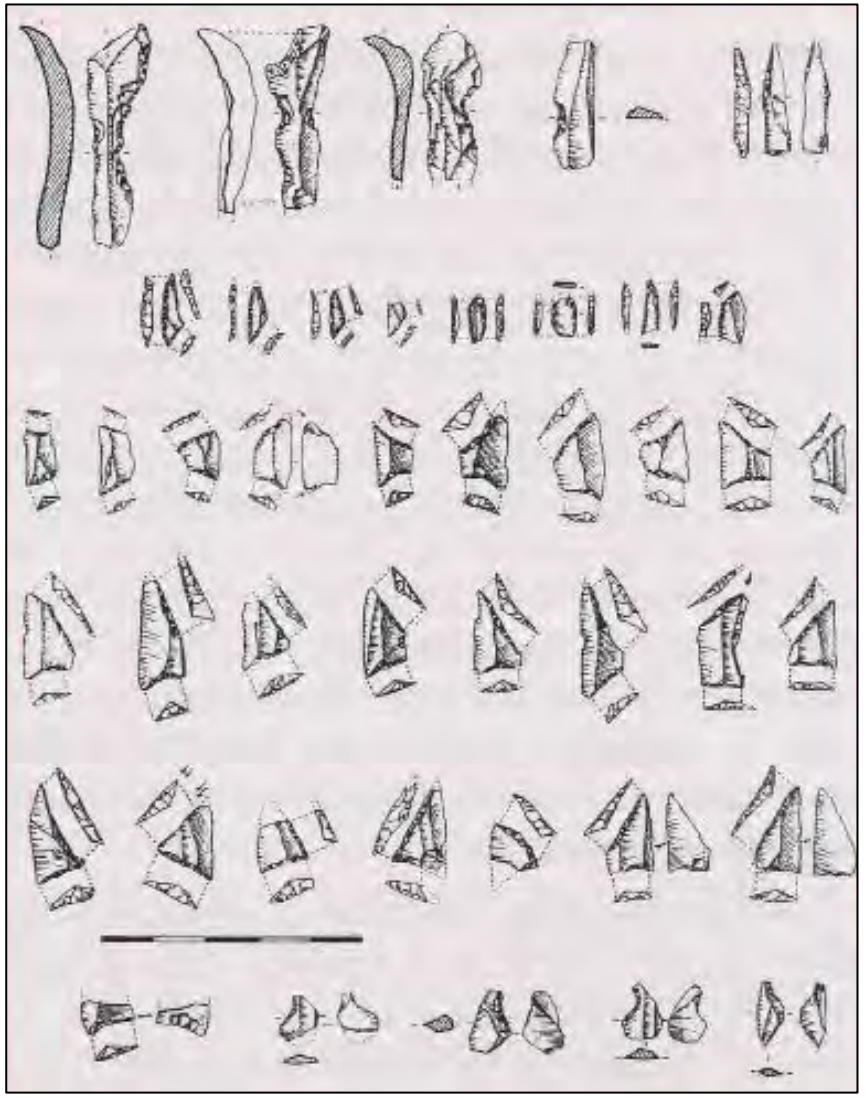
- Time slice 2 (8600-8400 cal BP). Upper Ebro Valley.

❑ Aizpea (Navarra, Spain) (ID177)



Aizpea. Stratigraphic sequence from the archaeological deposit, indicating the provenance of the dated sample. Alday and Cava, 2006: 248. Fig. 23. Modified. Red rectangle marks the Geometric Mesolithic.

Lithic industry from Aizpea I. Alday and Cava, 2009: 96. Fig. 4

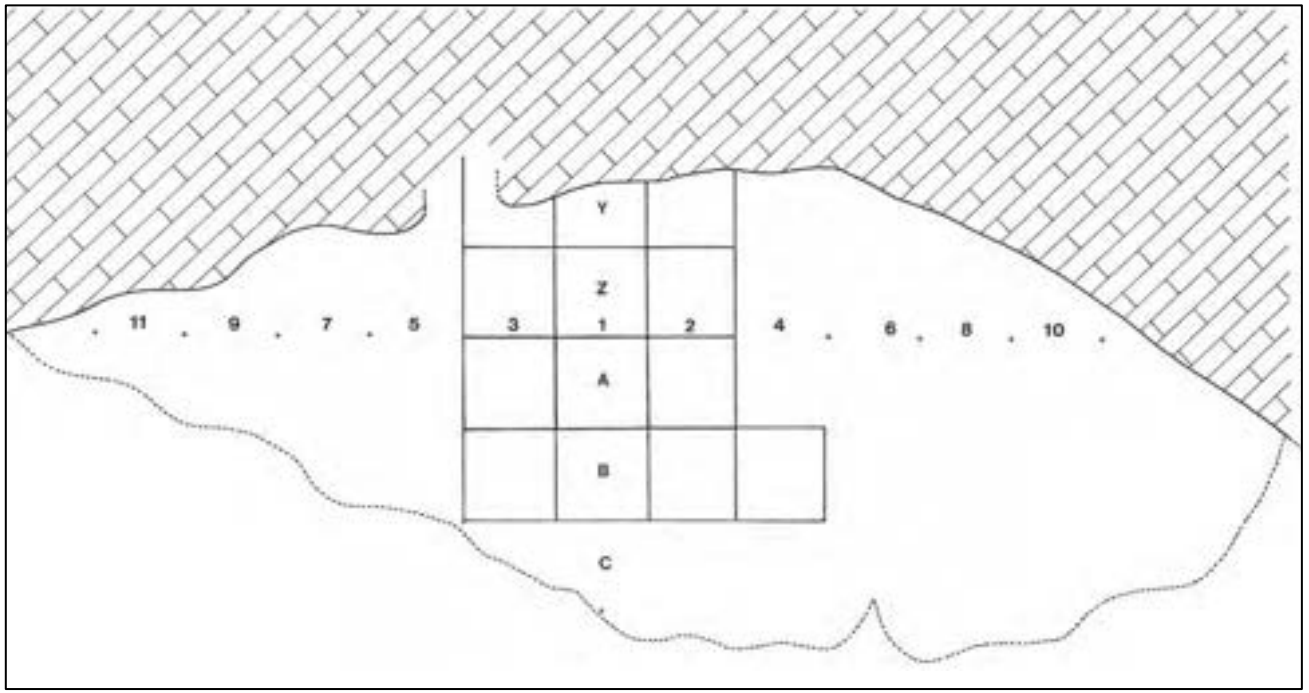


Aizpea I – corresponds to old level b, in its middle and base section. It has 80 cm deep.

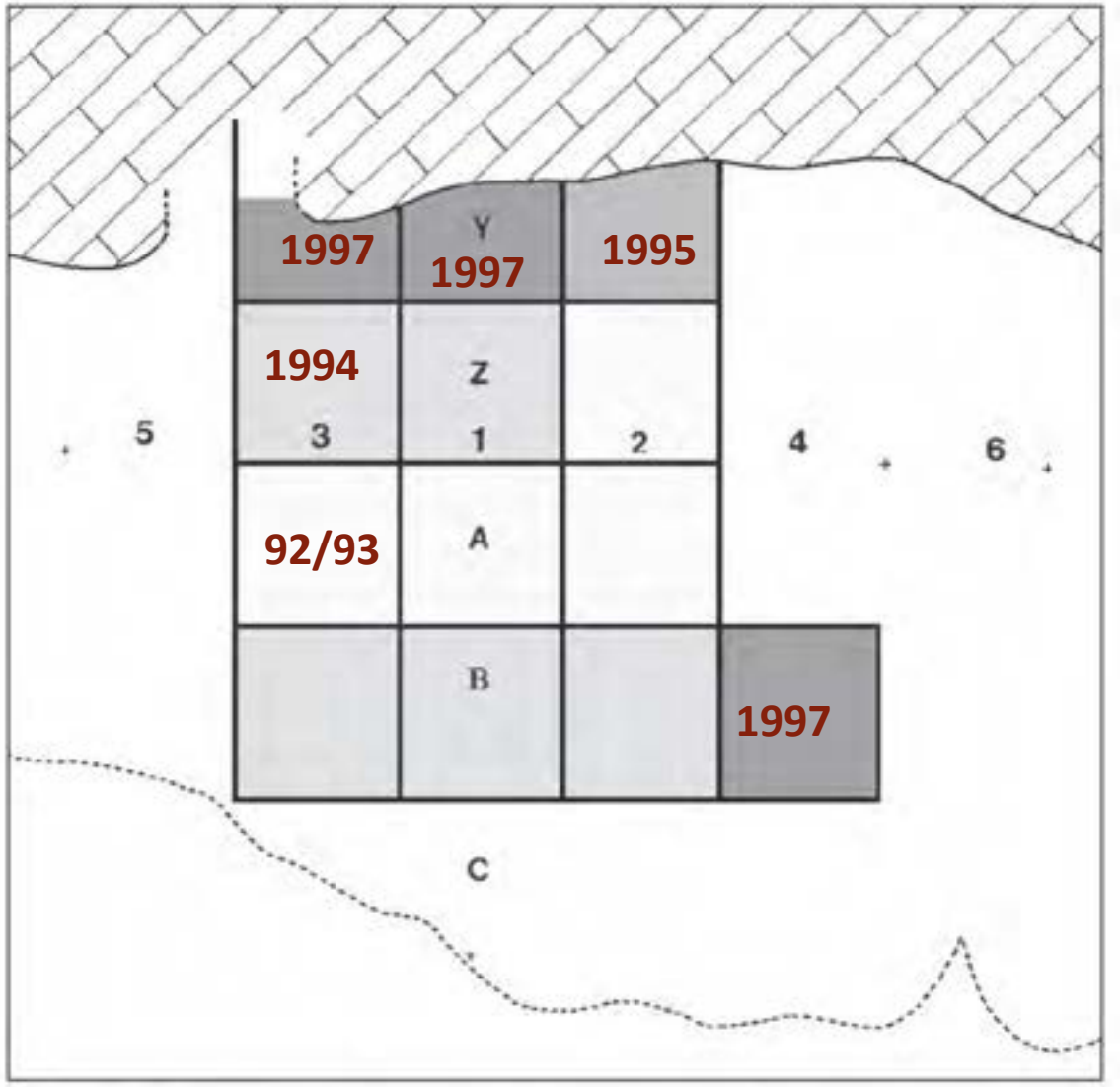
Level I has two radiocarbon dates available, both on aggregate bone samples:

- GrN-16620: 7790±70BP (old level b in its base section. Cava, 1994: 73)(135-100 cm depth, Alday and Cava, 2006:250)
- GrN-16621: 7190±140BP (old level b in its middle section. Cava, 1994: 73)(90-80 cm depth, Alday and Cava, 2006:250)

❑ 39. Mendandia (Burgos, Spain) (ID39)

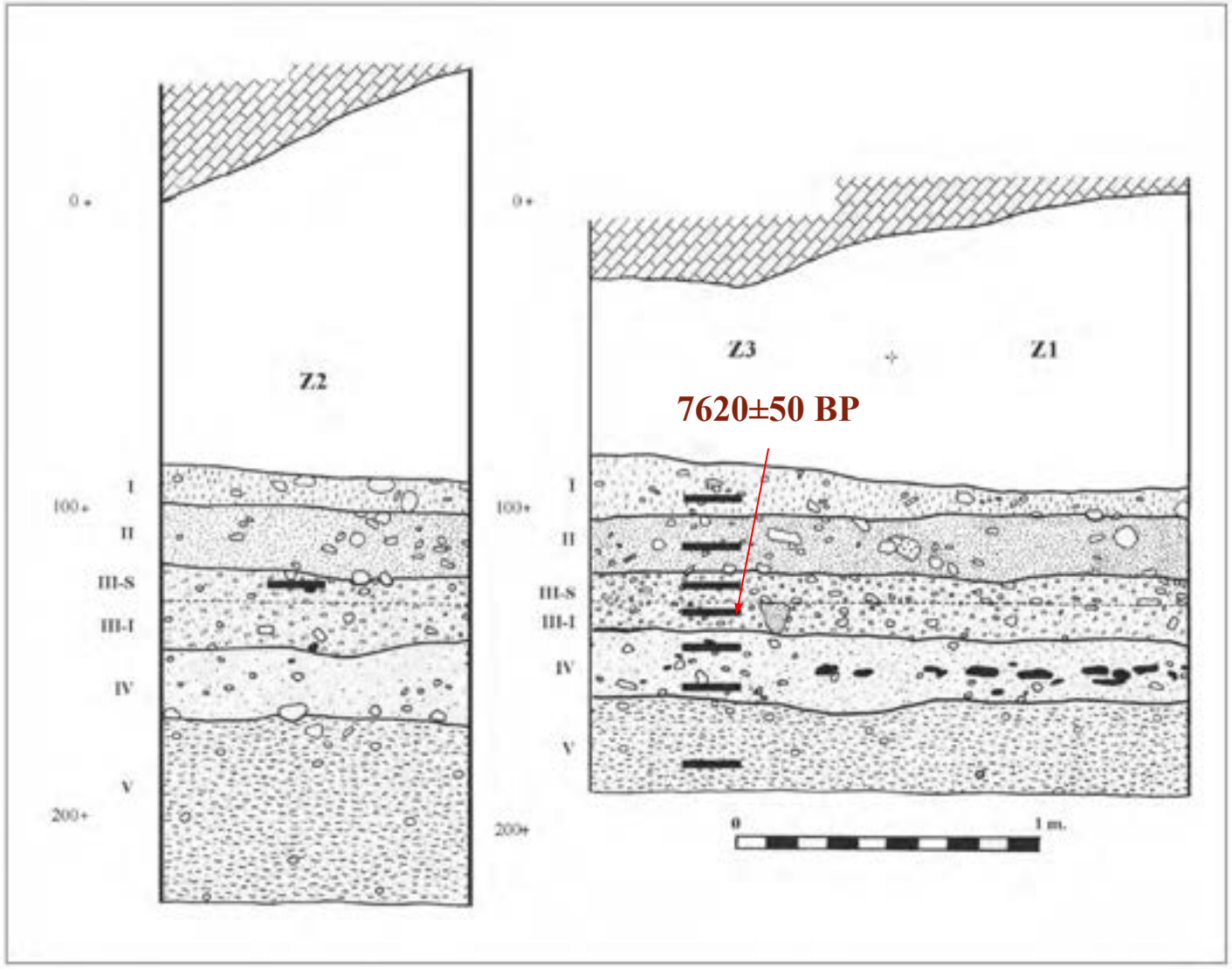


Plan of Mendandia rockshelter. Alday, 2005: 31. Fig. 1.



Fieldwork campaigns in Mendadia. Alday, 2005: 38. Fig. 2. Modified.

❑ 39. Mendandia (Burgos, Spain) (ID39)



Topographic position of the 14C samples. Alday, 2005: 106. Fig. 1. Modified. Sample 5 from level III-inf is marked.

According to Alday, 2005: 161, two radiocarbon dates are available for level III.

Sample 4: 250 gr. of faunal remains from square Z2 at a depth of between –120 to –125 cm. on the reference plane 0. GrN-19658: 7210±80 (Level III-s)

Sample 5: 190 grams of faunal remains from square Z3 at a depth of between –135 to –140 cm. on the reference plane 0. GrN-22743: 7620±50 (Level III-i)

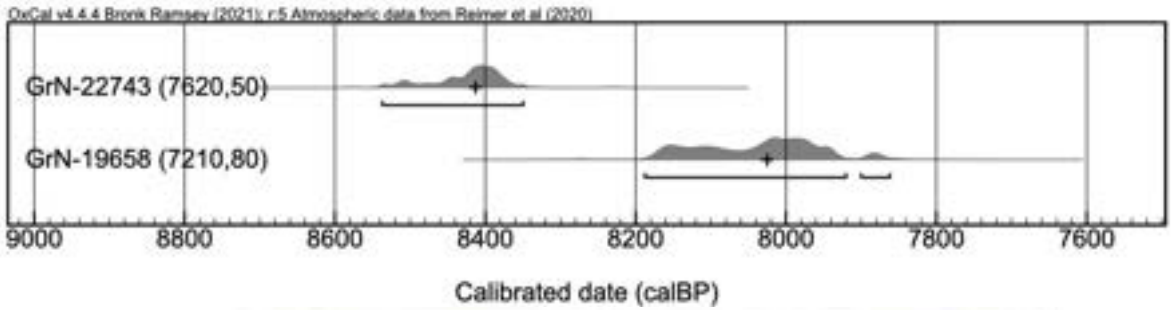
❑ 39. Mendandia (Burgos, Spain) (ID39)

Nivel	Referencia	Estimación BC sin calibrar	Rango años BC sin calibrar	Rango años BC calibrada
I	GrN-22740	4490	4450 - 4530	5283 - 5437
II	GrN-22741	4590	4520 - 4660	5386 - 5560
III-sup	GrN-22742	5230	5185 - 5275	5968 - 6040
III-sup	GrN-19658	5260	5180 - 5340	5967 - 6119
III-inf	GrN-22743	5670	5620 - 5720	6397 - 6461
IV	**GrN-22745**	5830	5770 - 5890	6474 - 6610
IV	GrN-22744	5860	5810 - 5910	6541 - 6623
V	GrA-6874	6550	6490 - 6610	7488 - 7546

Radiocarbon results from Mendandia rockshelter. Alday, 2005: 107. Table 1.

Level III-inf

Level III-sup



Name		Unmodelled (BP)				Select	
Show all Show structure		from	to	%	m	All Visible	Page break
GrN-22743 (7620,50)		8537	8350	95.4	8413	☑ 2	☐
GrN-19658 (7210,80)		8188	7862	95.4	8025	☑ 3	☐

Multiplot and table with radiocarbon dates from Mendandia, level III.

❑ 39. Mendandia (Burgos, Spain) (ID39)

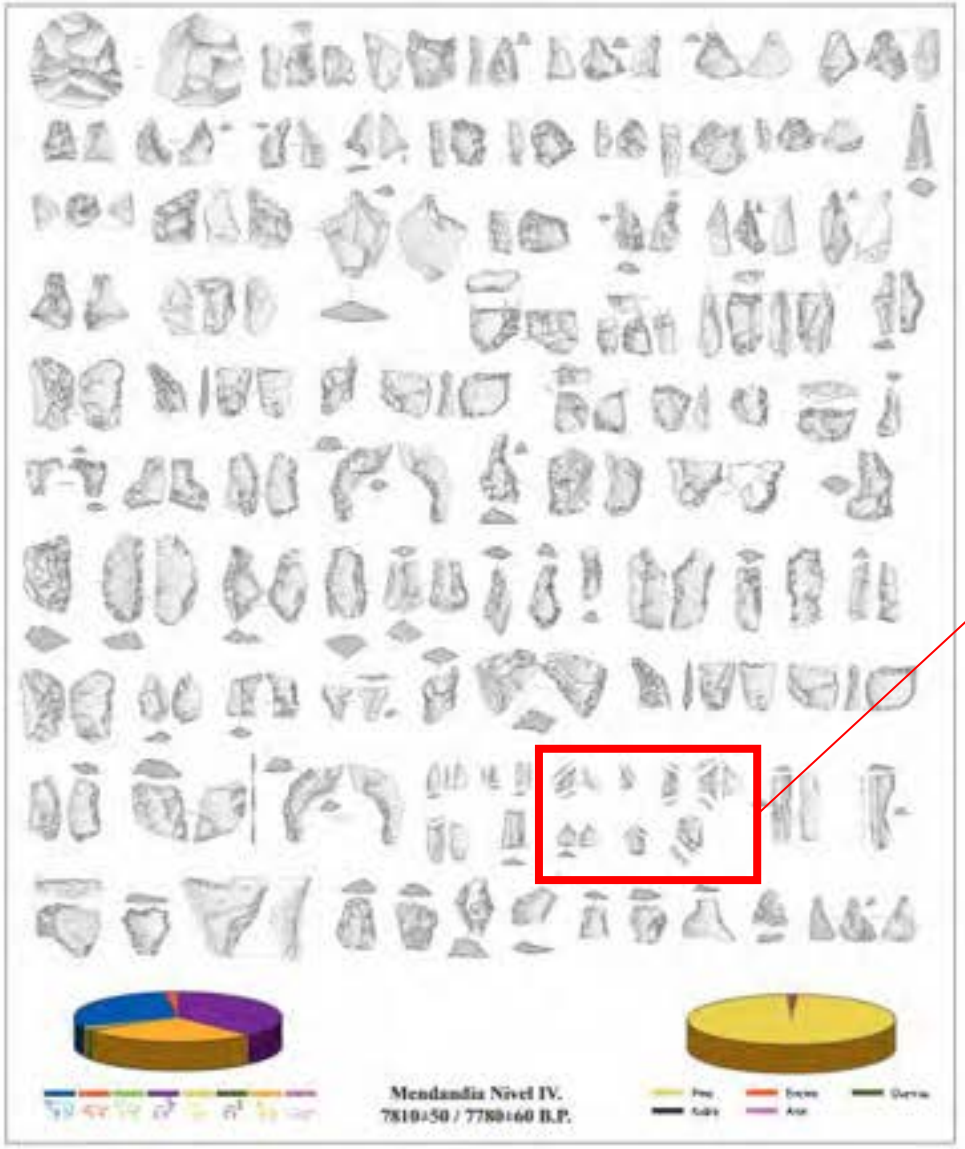
Fauna 15.562			Industria lítica 3.869														I. ósea	Adorno		
Identí.	No ident.	Nº tafón	Objetos retocados 237										Objetos no retocados 3.632				Apun	Nassa	Natica	Cypraea
580	14.892	13	R	P	B	LBA	C	lba	M/D	Tr	G	Mb	D	N	A	Gb	Pb	2	2	1	1
			20	15	0	3	0	11	79	2	33	20	54	50	38	0	3.544				

Mendandia. Summary of the basic archaeological inventor from Level III-inf. Alday, 2005: 72. Table 4.

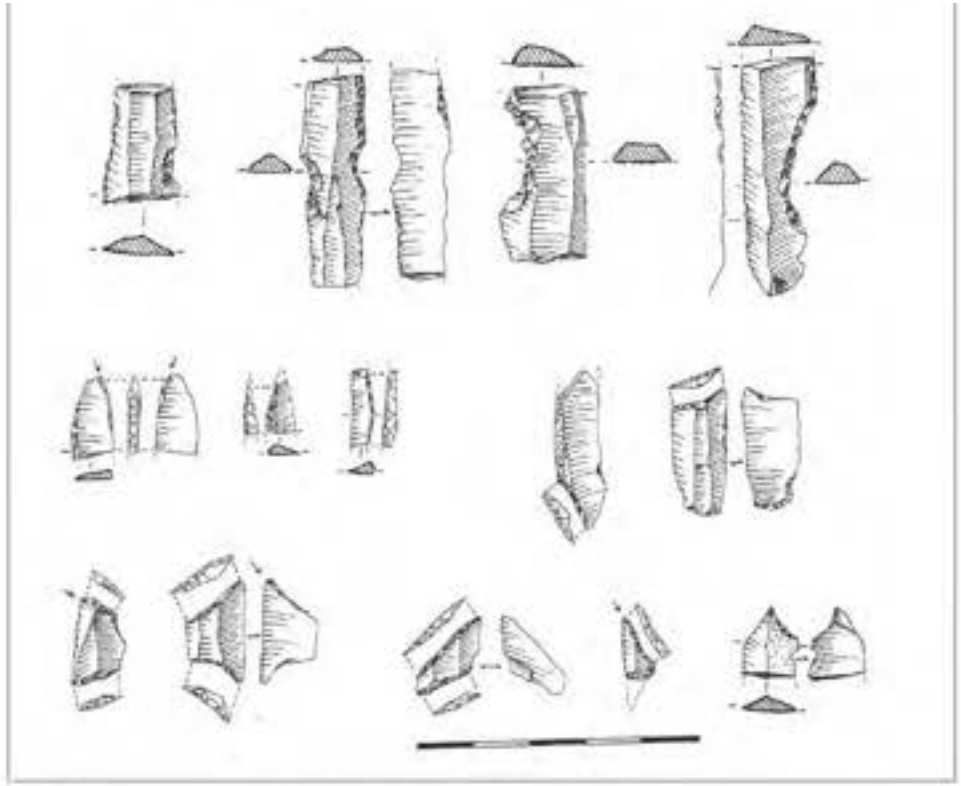
Fauna 12.518			Industria lítica 1.282														I. ósea		Cerámica 343	
Identi.	No ident.	Nº tafón	Objetos retocados 106										Objetos no retocados 1.176				Apun	Retoc.	Bordes	Panza
986	11.532	16	R	P	B	LBA	C	lba	M/D	Tr	G	Mb	D	N	A	Gb	Pb	4	1	18	325
			13	6	0	1	0	22	20	4	18	6	16	7	10	0	1.749				

Mendandia. Summary of the basic archaeological inventor from Level III-sup. Alday, 2005: 76. Table 5.

❑ 39. Mendandia (Burgos, Spain) (ID39)



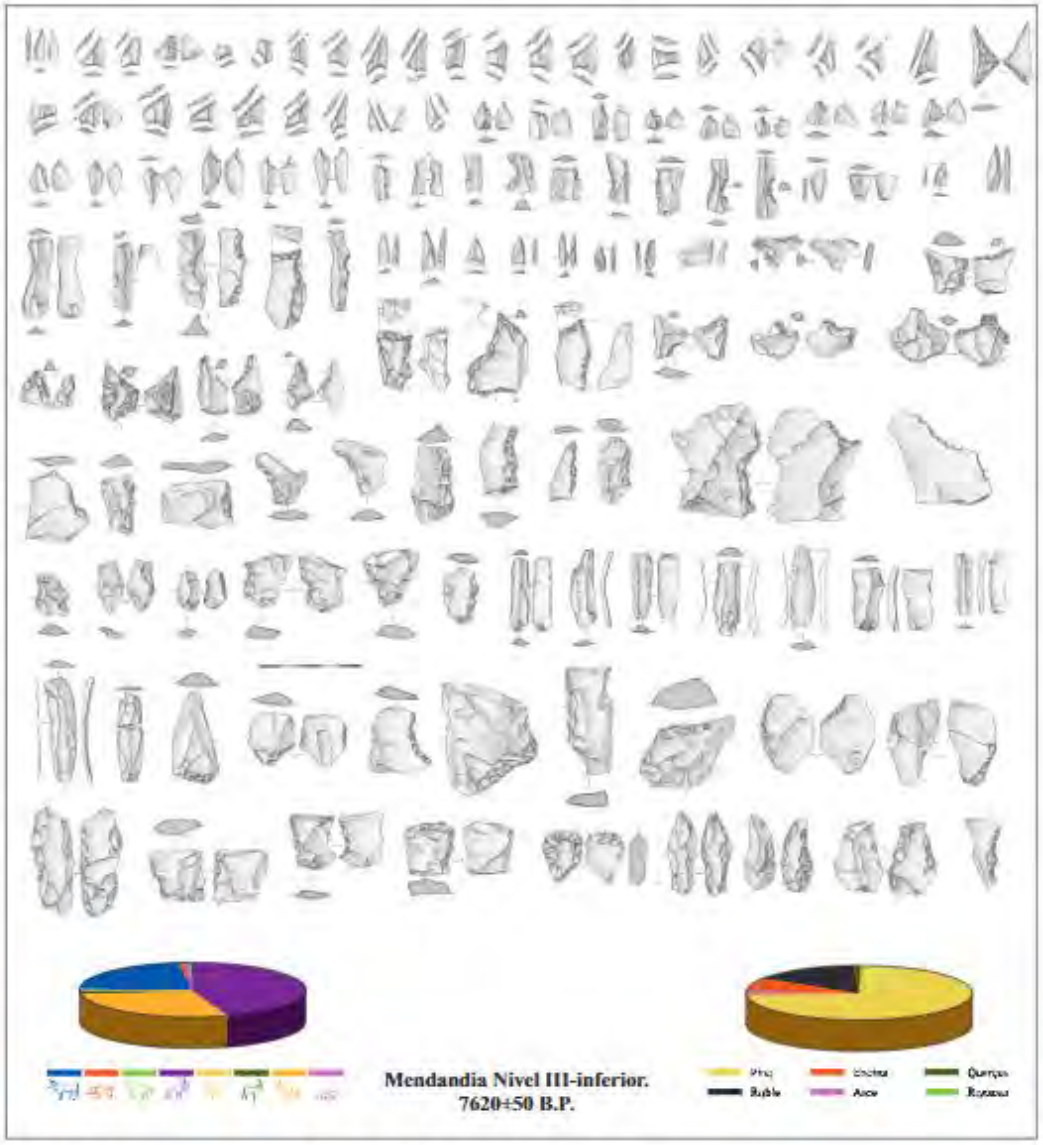
Mendandia. Lithic industry from Level IV. Alday, 2005: 607. Fig. 3.



Mendandia, blades and geometrics from Level IV. Alday and Cava, 2006: 243. Fig. 19.

Level IV: GrA-22745: 7780±40 BP, the youngest radiocarbon date of this level is over an aggregate bone sample.

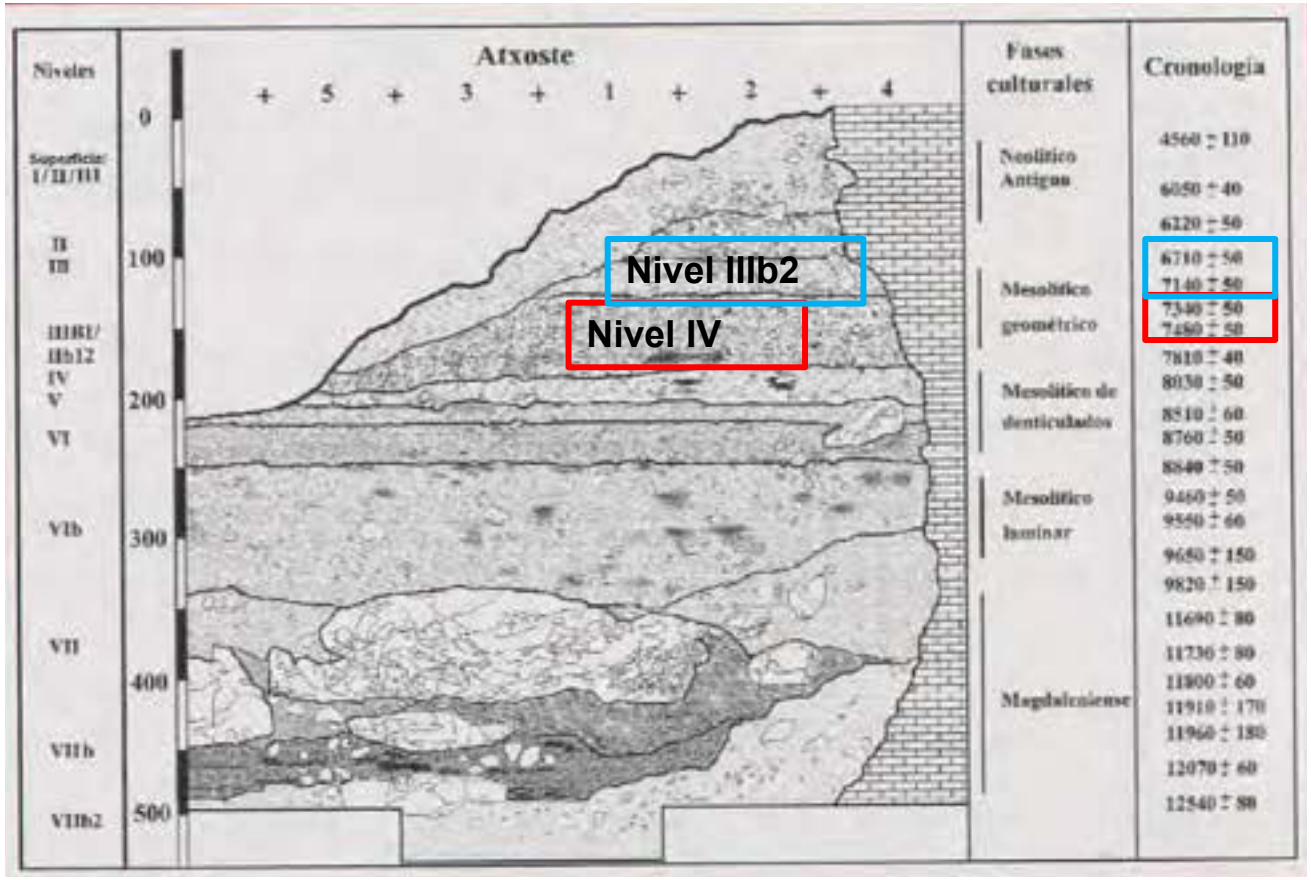
❑ 39. Mendandia (Burgos, Spain) (ID39)



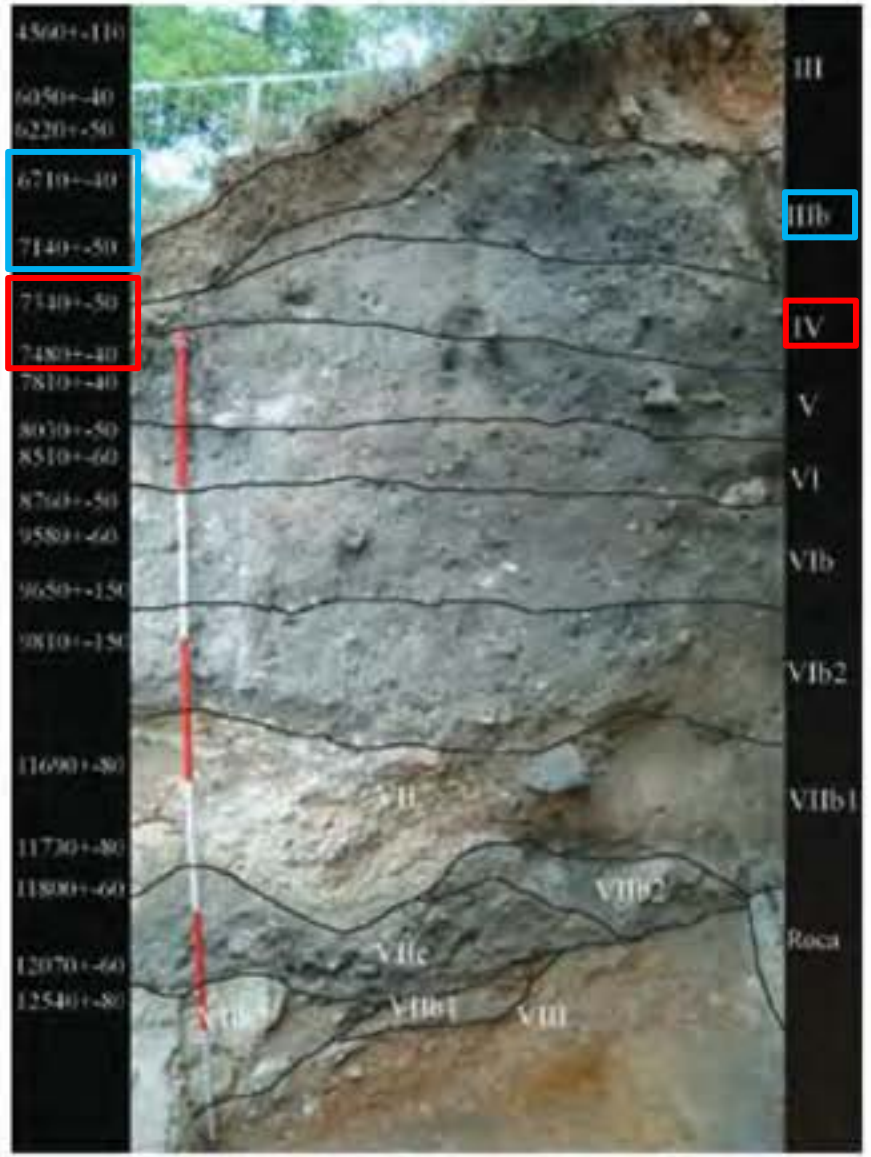
Mendandia. Lithic industry from Level III-inferior. Alday, 2005: 621. Fig. 2.

Level III-inferior: GrA-22743: 7620±50 BP, 8413 calibrated median. Radiocarbon date for this level is over an aggregate bone sample.

❑ 26. Atxoste (Álava, Spain) (ID26)



Atxoste, stratigraphy of the archaeological deposit. Alday and Cava, 2009: 97, fig. 7. Modified. Levels IV and IIIb are attributed to the Geometric Mesolithic.



Atxoste, stratigraphy of the archaeological deposit. Alday and Cava, 2006: 232, fig. 9. Modified. Levels IV and IIIb are attributed to the Geometric Mesolithic.

❑ 26. Atxoste (Álava, Spain) (ID26)

Yacimiento	Nivel	Datación BP	Ref. cultural	Tipo de muestra
Atxoste	VII	9550±60	sauveterroide	Hueso
	VI	876050, 8510±80	de denticulados	Hueso
	V	8030±50, 7830±50, 7810±40	de denticulados	Hueso
	IV	7480±50, 7340±50 6970±40 8080±50	geométrico	Hueso
	IIIb2	6940±40, 6710±50, 7140±50	geométrico	Hueso
	E	9650±150	sauveterroide	Hueso
	E2	9510±150 9820±150	sauveterroide	Hueso
	Hogar	8840±50	de denticulados	Hueso

Radiocarbon dates from Atxoste rockshelter. Alday and Cava, 2006: 291, table 37. Modified. Red rectangle indicates the Geometric Mesolithic levels.

It should be mentioned that some of the radiocarbon results for the beginnings of geometrism were accepted with caution by researchers, since one of the samples from level IV of Atxoste was evaluated by the laboratory according to two procedures, offering balances that are separated by a millennium. They opted for eliminating both dates (Alday and Cava, 2006: 293). Bearing that in mind, we understand that:
GrA-13470: 8080, 50 bp and GrA-13419: 6970, 40 bp. were discarded (same labs. codes in Alday, 2003: 221; in Pérez et al. 2020: 4)
And 7480, 50 bp and 7340, 50 bp admitted. The former date has a different lab code depending on the publication: GrA-13469: in Alday, 2003: 221, and lab. code GrA-13468 in Pérez et al. 2020: 4). The latter date has the same lab. code GrA-13418 in Alday, 2003: 221, and in Pérez et al. 2020: 4.
On the other hand, in Alday 2009 (p. 161), the date GrA-13469: 7480, 50 bp is given as representative of level IV. Whereas in Alday and Cava 2009 (p. 97), the same date GrA-13469: 7480, 50 bp, in addition to 7340, 50 bp, are also given as representative of level IV.
But in Alday 2014 (p. 150), only the most recent date GrA-13419: 7340, 50 bp is given as representative of level IV. In addition to the GrA date -14419: 6970, 40 bp, which seemed to be discarded. Likewise the lab. code is wrong, being GrA -13419 the correct code as published in Soto, 2014: 181

❑ 26. Atxoste (Álava, Spain) (ID26)

There is a discrepancy regarding the accepted radiocarbon dates.
In Soto, 2014: 181, the only accepted ^{14}C dates for level IV, are:
GrA-13418: 7340, 70bp / GrA-13419: 6970, 40bp
However, in Pérez-Fernández et al., 2020: 4, all the dates of level IV are published, although the date GrA-13468: 7480, 50 bp has a different lab code, from the one GrA-13469, published in Alday, 2003 : 221; and Utrilla et al., 2009.

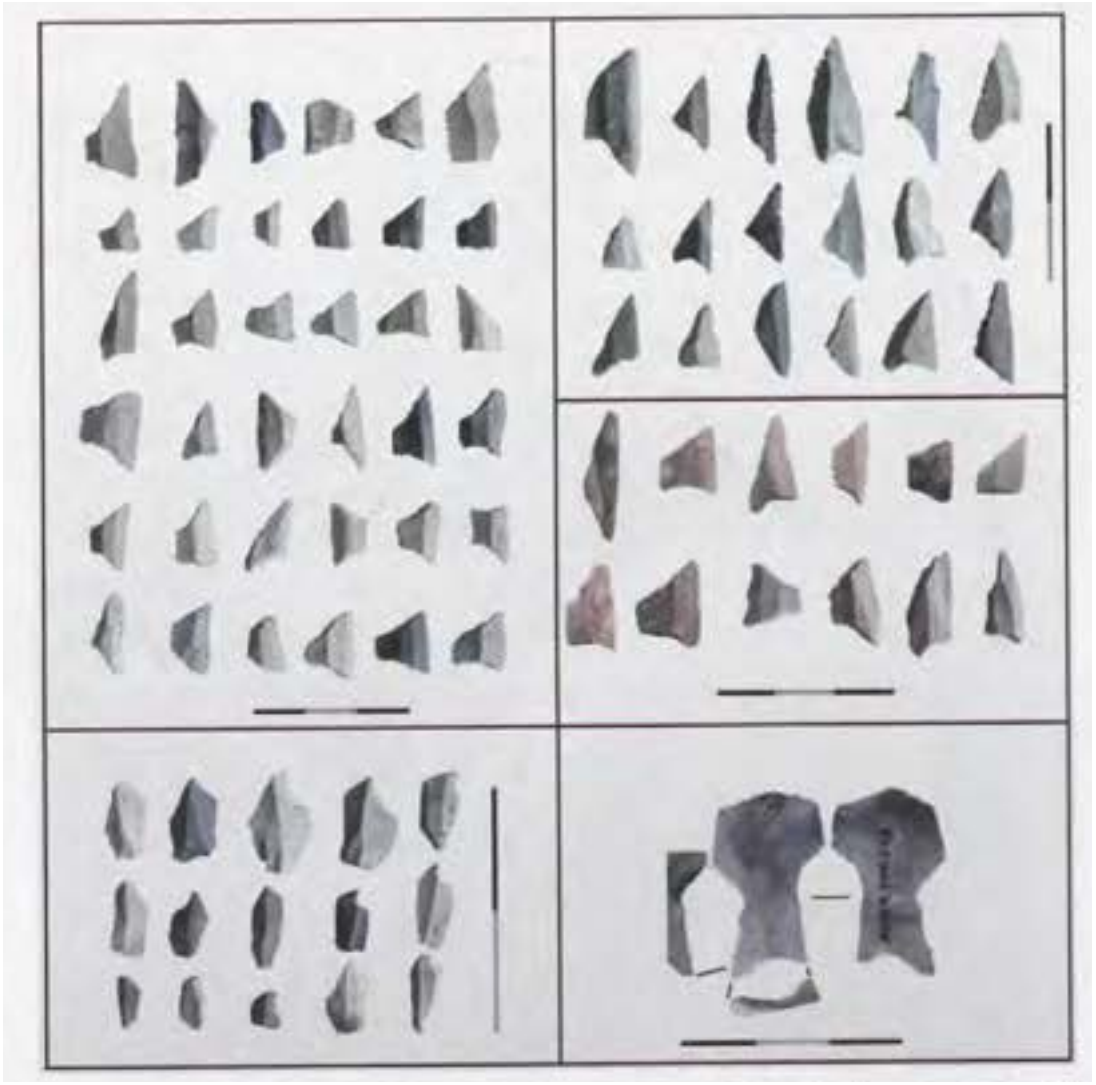
VI	8760±50	Mmd	GrA-15699	9990-9550	H	AMS
	8510±80		GrA-15700	9600 - 9400	H	AMS
V	8030±50		GrA-13448	9100 - 8700	H	AMS
	7810±40		GrA-13447	8670 - 8510	H	AMS
D	8840±50		GrA-13473	10250 - 9650	H	AMS
IV	7340±70	Mgm	GrA-13418	8370 - 7970	H	AMS
	6970±40		GrA-13419	7930 - 7690	H	AMS
IIIb2	6940±40		GrA-13415	7870 - 7670	H	AMS
	7140±50		GrA-13468	8040 - 7880	H	AMS

Atxoste. Radiocarbon dates from the Mesolithic levels. Soto, 2014: 181. table 1. Modified. Red shading point t^{14}C dates from level IV

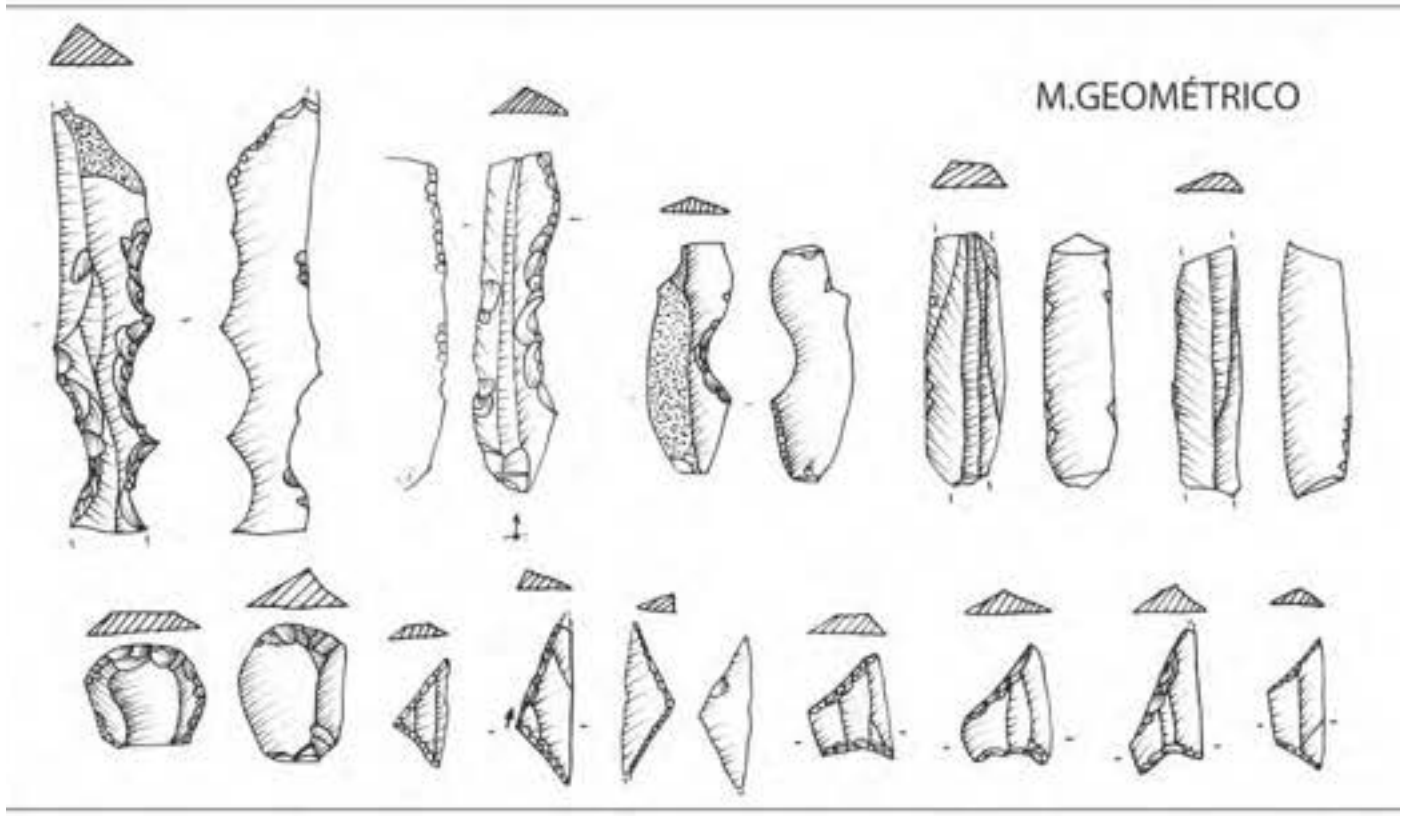
Data taken from the Atxoste field. Pérez et al. 2020: 4. Modified. Orange and gray shading point the depth of the dated samples. →

Unit	Depth	Reference	Material Pretreatment	Radiometric value	Calibration CalPal 2 Sigma
I	45	GrA-9786	Bone collagen	3360 ± 40	3,695–3,480 calBP
I	60	GrA-9787	Bone collagen	3470 ± 40	3,843–3,636 calBP
I	70	GrA-24684	Bone collagen	3680 ± 50	4,151–3,880 calBP
I	70	GrA-6846	Bone collagen	4730 ± 50	5,585–5,324 calBP
I	70	GrN-22739	Bone collagen	4560 ± 110	5,577–4,878 calBP
I	70	GrA-24683	Bone collagen	4980 ± 50	5,891–5,602 calBP
III	155	GrA-13414	Bone collagen	6050 ± 40	7,005–6,785 calBP
III	160	GrA-9789	Bone collagen	6220 ± 50	7,257–6,997 calBP
IIIb2	170	GrA-13415	Bone collagen	6940 ± 40	7,915–7,679 calBP
IIIb2	180	GrA-13417	Bone collagen	6710 ± 50	7,665–7,490 calBP
IIIb2	180	GrA-13468	Bone collagen	7140 ± 50	8,041–7,850 calBP
IV	190	GrA-13418	Bone collagen	7340 ± 70	8,326–8,012 calBP
IV	190	GrA-13468	Bone collagen	7480 ± 50	8,383–8,129 calBP
IV	200	GrA-13419	Bone collagen	6970 ± 40	7,927–7,696 calBP
IV	200	GrA-13470	Bone collagen	8080 ± 50	9,232–8,771 calBP
V	210	GrA-13447	Bone collagen	7810 ± 40	8,699–8,459 calBP
V	225	GrA-13448	Bone collagen	8030 ± 50	8,855–8,455 cal BP
V	225	GrA-13472	Bone collagen	7830 ± 50	9,031–8,658 calBP
VI	240	GrA-15700	Bone collagen	8510 ± 80	9,670–9,310 calBP
VI	265	GrA-15699	Bone collagen	8760 ± 80	10,148–9,548 calBP
VIb	294	GrA-15858	Bone collagen	9550 ± 60	11,133–10,691 calBP
VIb	310	GrA-35142	Bone collagen	9510 ± 50	11,086–10,601 calBP
VII	405	GrA-22865	Bone collagen	11,720 ± 70	13,730–13,429 calBP
VII	415	GrA-22866	Bone collagen	11,760 ± 70	13,741–13,457 cal BP
VII	425	GrA-23107	Bone collagen	11,690 ± 80	13,730–13,366 calBP
VII	435	GrA-22900	Bone collagen	11,800 ± 60	13,750–13,481 calBP
F2	457	GrA-19554	Bone collagen	12,070 ± 60	14,088–13,762 calBP
H2	500	GrA-19503	Bone collagen	12,540 ± 80	15,140–14,315 calBP

❑ 26. Atxoste (Álava, Spain) (ID26)



Atxoste. Selection of lithic materials from the Geometric Mesolithic.
Alday and Cava, 2009: 97, fig. 8



Mesolithic retouched industry scheme. Soto et al., 2016: 304, fig. 3

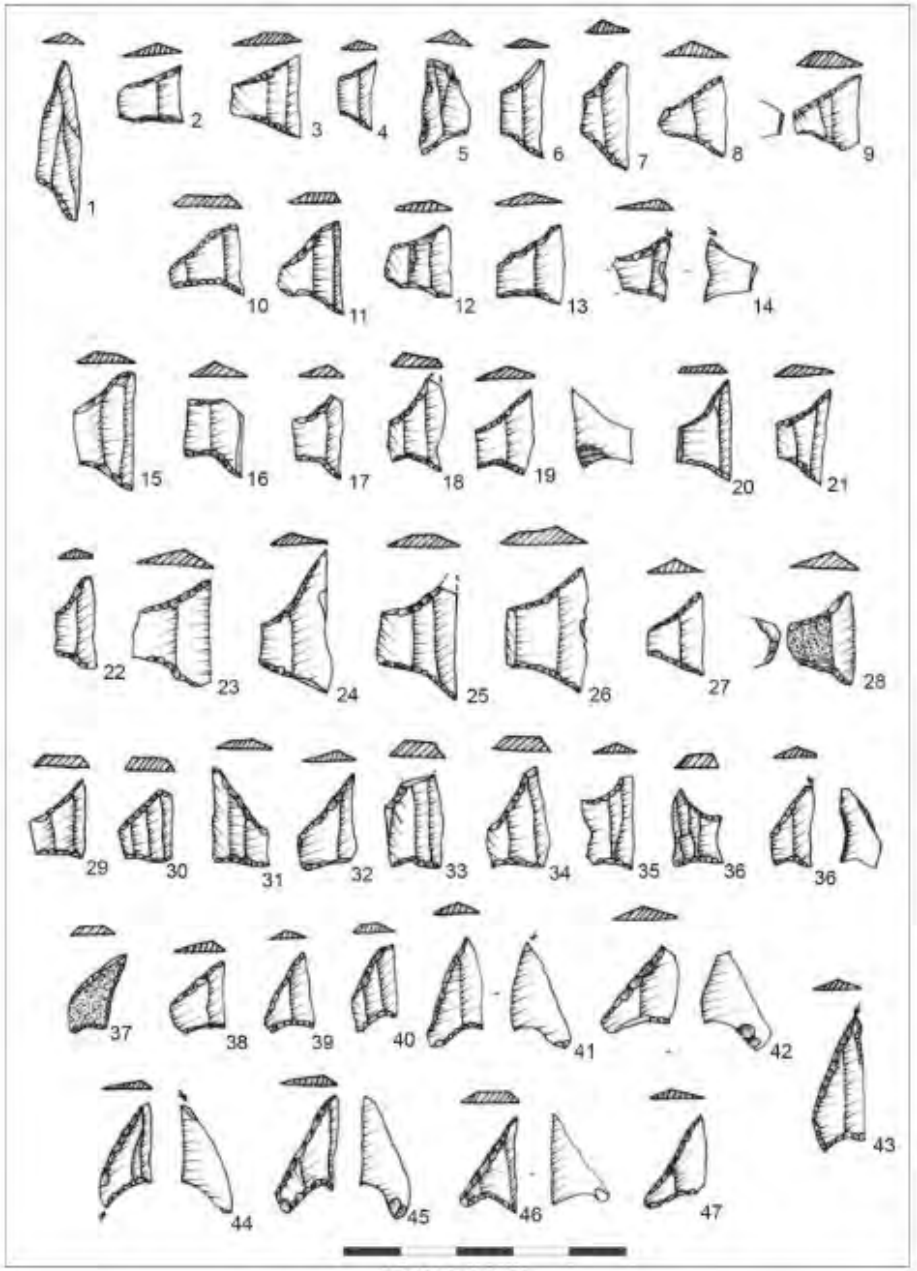
❑ 26. Atxoste (Álava, Spain) (ID26)

	Atxoste IV (Y1-Y2)		Atxoste IIIb2 (Y1-Y2)	
R1	4	4,12	3	3,66
R2	4	4,12	5	6,10
R3	0	0	2	2,44
R4	3	3,09	1	1,22
R5	0	0	0	0
R6	2	2,06	0	0
R7	2	2,06	0	0
R8	2	2,06	0	0
R9	0	0	0	0
R10	0	0	0	0
Total 10	**17**	**17,53**	**11**	**13,41**
P1	**0**	**0**	**0**	**0**
B	**0**	**0**	**0**	**0**
C	**0**	**0**	**0**	**0**
LBA	**2**	**2,06**	**1**	**1,22**
lba1	1	1,03	0	0
lba2	1	1,03	2	2,44
lba3	0	0	0	0
lba4	0	0	2	2,44
lba6	0	0	2	2,44
lba7	0	0	5	6,10
lba9	0	0	1	1,22
lba10	0	0	1	1,22
lba11	0	0	11	13,41
lbaind	1	1,03	3	3,66
Total lba	**3**	**3,09**	**30**	**36,59**
MD1	5	5,15	2	2,44
MD2	5	5,15	1	1,22
MD3	16	16,49	3	3,66
MD4	2	2,06	5	6,10
MD5	0	0	1	1,22
Total MD	**28**	**28,87**	**12**	**14,63**

	Atxoste IV (Y1-Y2)		Atxoste IIIb2 (Y1-Y2)	
FR1	**7**	**7,22**	**1**	**1,22**
G1	0	0	0	0
G2	2	2,06	1	1,22
G3	3	3,09	0	0
G4	2	2,06	0	0
G5	10	10,31	2	2,44
G6	2	2,06	0	0
G7	0	0	1	1,22
G8	4	4,12	0	0
G9	0	0	0	0
G10	1	1,03	1	1,22
G11	0	0	1	1,22
G12	1	1,03	0	0
G17	3	3,09	2	2,44
G18	0	0	0	0
Gind	0	0	0	0
Total G	**28**	**28,87**	**8**	**9,76**
M	**0**	**0**	**0**	**0**
D1	0	0	0	0
D2	8	8,25	8	9,76
D3	2	2,06	2	2,44
D4	0	0	0	0
D8	1	1,03	1	1,22
D (lru)	0	0	8	9,76
Total D	**12**	**12,37**	**19**	**23,17**
Total	**97**		**82**	

Absolute and relative values, for each type-variant according to the Fortea list. Alday, 2005: 623-624, table 1. Modified. Yellow shading point Notched blades (MD1 - MD5) and trapezes (G1 -G8).

❑ 26. Atxoste (Álava, Spain) (ID26)

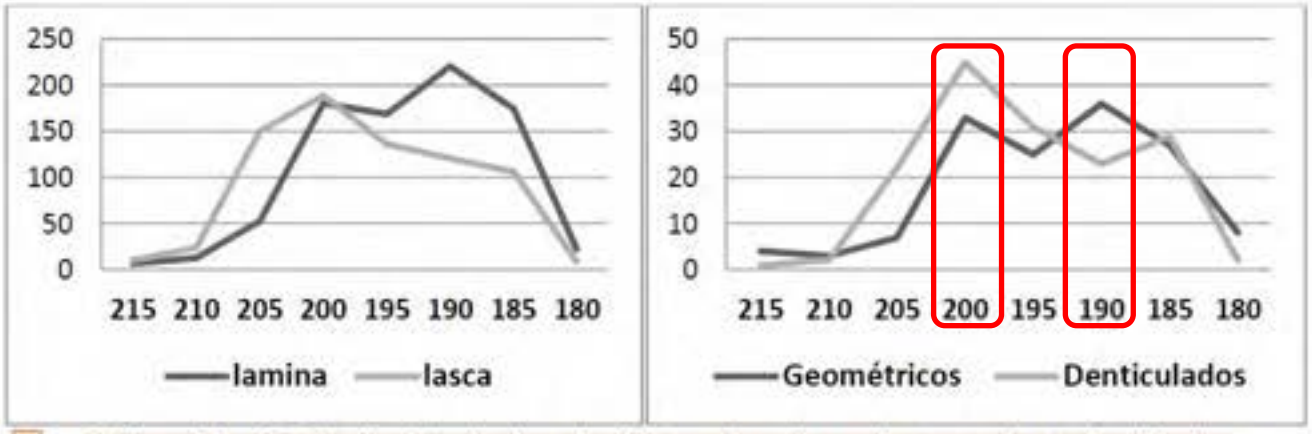


Trapezes from Atxoste, Level IV. Soto, 2014: 708. Fig. 30

According to Soto, 2014: 705-707, geometric industry from level IV is composed by: 66 trapezes, most of them asymmetric, 21 triangles, and 39 microburins.

❑ 26. Atxoste (Álava, Spain) (ID26)

Comparison between the depths of the samples used in the radiocarbon dating program and the depths of the level IV products.
This level has an average thickness of 20-25 cm and was excavated in an area approx. of 11 m2, dividing different sublayers.



Gráficos 44 y 45: Distribución absoluta de distintos tipos de productos según profundidades.

Some observations can be made:

1) Coexistence between Denticulates and Geometrics along all level IV.
2) Geometrism is present from the beginning of the level.
3) A change can be detected around the middle of level IV (195 cm depth), from where blades and geometric microliths predominate.

Absolute distribution of different tecnotypological groups at different depths. Soto, 2014: 730. Graphic 44 and 45.

IIIb2	180	GrA-13417	Bone collagen	6710 ± 50	7,665–7,490 calBP
IIIb2	180	GrA-13468	Bone collagen	7140 ± 50	8,041–7,850 calBP
IV	190	GrA-13418	Bone collagen	7340 ± 70	8,326–8,012 calBP
IV	190	GrA-13468	Bone collagen	7480 ± 50	8,383–8,129 calBP
IV	200	GrA-13419	Bone collagen	6970 ± 40	7,927–7,696 calBP
IV	200	GrA-13470	Bone collagen	8080 ± 50	9,232–8,771 calBP
V	210	GrA-13447	Bone collagen	7810 ± 40	8,699–8,459 calBP
V	225	GrA-13448	Bone collagen	8030 ± 50	8,855–8,455 cal BP

Data taken from the Atxoste field. Pérez et al. 2020: 4. Modified. Red and gray shading point the depth of the dated samples.Pérez et al. 2020: 4. Tabla 1.

- Time slice 2 (8600-8400 cal BP). Central Mediterranean area of the Iberian Peninsula

❑ Cocina Cave (Valencia, Spain)(ID136)

Plan of Cocina cave with indication of Pericot's and Fortea's trenches. García et al., 2018: 261

Trench	DEN-CER	DEN-LIT	DEN_BIF	DEN-TRI-CO	DEN-TRA-A	DEN-SEG-A	DEN-SEG-DB	PHASES
41_4	0.00	573.89	0	8.89	10.56	0.00	0.00	41_B1
41_9	0.00	396.11	0	0.00	14.44	0.00	0.00	41_A1
41_10	0.00	427.78	0	0.00	8.33	0.00	0.00	41_A1
41_11	0.00	442.78	0	0.00	0.56	0.00	0.00	41_A1
45_1	142.86	132.14	1.19	0.00	0.00	0.00	0.00	45-C3
45_5	4.76	204.76	0	2.38	0.00	5.95	0.00	45_C1
45_7	0.00	1021.43	0	10.71	7.14	0.00	0.00	45_B2
45_11	0.00	283.33	0	0.00	1.19	0.00	0.00	45_A2
45_12	0.00	422.62	0	0.00	7.14	0.00	0.00	45_A2

Phases and sub-phases established in 1941 and 1945 trenches from archaeological and stratigraphic characteristics. Columns show distinctive archaeological materials from density by layers. DEN-CER: pottery density, DEN-LIT: lithic density, DEN-BIF: Bifacial points density, DEN-TRI-CO: Triangles Cocina Type density, DEN-TRA-A: trapezes with abrupt retouch density, DEN-SEG-A: Crescents with abrupt retouch density, DEN-SEG-DB: Crescents with bifacial retouch density. García et al., 2018: 262. Table 1. Modified. Red arrows indicate the oldest levels with trapezes and radiocarbon dates.

❑ Cocina Cave (Valencia, Spain)(ID136)

Trench/Layer	Sample	Species	Lab. Ref	age bp	sd	cal BP 1s	cal BP 2s	δ13C	δ15N	C:N
Pericot 1941-3	Animal bone	*Cervus elaphus*	UCIAMS-147346	6970	35	7845–7745	7925–7700	−19.5	4.0	3.25
Pericot 1941-6	Animal bone	*Cervus elaphus*	UCIAMS-145194	7300	30	8166–8054	8175–8028	−20.3	3.9	3.20
Pericot 1941-8	Animal bone	*Capra pyrenaica*	UCIAMS-145195	7475	25	8351–8215	8371–8202	−20.4	4.2	3.18
Pericot 1941-11	Animal bone	*Capra pyrenaica*	UCIAMS-147347	7415	35	8306–8187	8333–8176	−19.5	3.8	3.22
Pericot 1941-13	Animal bone	*Capra pyrenaica*	UCIAMS-147348	7905	40	8847–8609	8977–8597	−19.0	4.5	3.24
Pericot 1945-6	Animal bone	*Capra pyrenaica*	Beta-267435	6840	50	7708–7614	7786–7588	nd	nd	nd
Pericot 1945-8	Animal bone	*Capra pyrenaica*	Beta-267436	7080	50	7961–7855	8001–7796	nd	nd	nd
Pericot 1945-10	Animal bone	*Capra pyrenaica*	Beta-267437	7050	50	7940–7841	7972–7761	nd	nd	nd
Pericot 1945-12	Animal bone	*Capra pyrenaica*	Beta-267438	7350	40	8276–8050	8305–8030	nd	nd	nd
Pericot 1945-13	Animal bone	*Capra pyrenaica*	Beta-267439	6760	40	7655–7584	7675–7570	nd	nd	nd
Pericot 1945-17	Animal bone	*Capra pyrenaica*	Beta-267440	7610	40	8427–8380	8514–8350	nd	nd	nd
2015 UE1030	Charcoal	Branch *pinus sp*	Beta-426849	6350	30	7313–7256	7414–7175			

Radiocarbon dataset obtained in Cocina cave. García et al., 2018: 263. Table 2. Modified. Light red shading the oldest radiocarbon dates associated to phase A1.

Recent Bayesian chronological models have correlated both trenches (1941 and 1945). Two general phase models without considering the internal order of the layers with the dates have been build, model 4 and model 5 (equal to model 4, but without TAQ). The model that shows higher agreement (*model 4*, in García-Puchol et al., 2018: 268) offers the following chronological succession in years cal BP at 2 σ:

•Phase A0 – Start 9236-8593. Corresponds with the first evidence of human occupation in the cavity. The oldest radiocarbon date in Cocina cave was recovered in layer 13, 1941 trench (UCIAMS-147348: 7905, 40).
•Transition A0/A1 – 8736-8366. Trapeze-based industry appears.
•Transition A1/A2 – 8344-8195. A1: Predominance of trapezes. A2: Trapezes and a few Cocina type triangles.
•Transition A2/B1 – 8165-7894. In sub-phase B1, Cocina type triangles have a significant presence.
•Transition B1/B2 – 7960-7796. In sub-phase B2, triangles are predominant.
•Transition B2/B3 – 7878-7639. In sub-phase B3, there is a drastic reduction in lithic density and the first crescents with abrupt retouch appear.
•End B3 – 7769-7355

❑ Cocina Cave (Valencia, Spain)(ID136)

Model	Boundary	1Ç	2Ç
Model 4	start A0	8867–8627	9236–8593
	Transition A0/A1	8611–8399	8736–8366
	Transition A1/A2	8292–8221	8344–8195
	Transition A2/B1	8102–7936	8165–7894
	Transition B1/B2	7928–7845	7960–7796
	Transition B2/B3	7838–7714	7878–7639
	End B3	7705–7503	7769–7355
	Start C	7448–7268	7640–7240
	End C	7313–7134	7413–6818
Model 5	start A0	8846–8623	9195–8591
	Transition A0/A1	8614–8400	8730–8370
	Transition A1/A2	8292–8221	8342–8196
	Transtion A2/B1	8102–7936	8165–7893
	Transition B1/B2	7928–7845	7960–7797
	Transition B2/B3	7838–7714	7896–7640
	End B3	7705–7502	7768–7359
	Start C	7446–7268	7629–7245
	End C	7315–7140	7412–6900

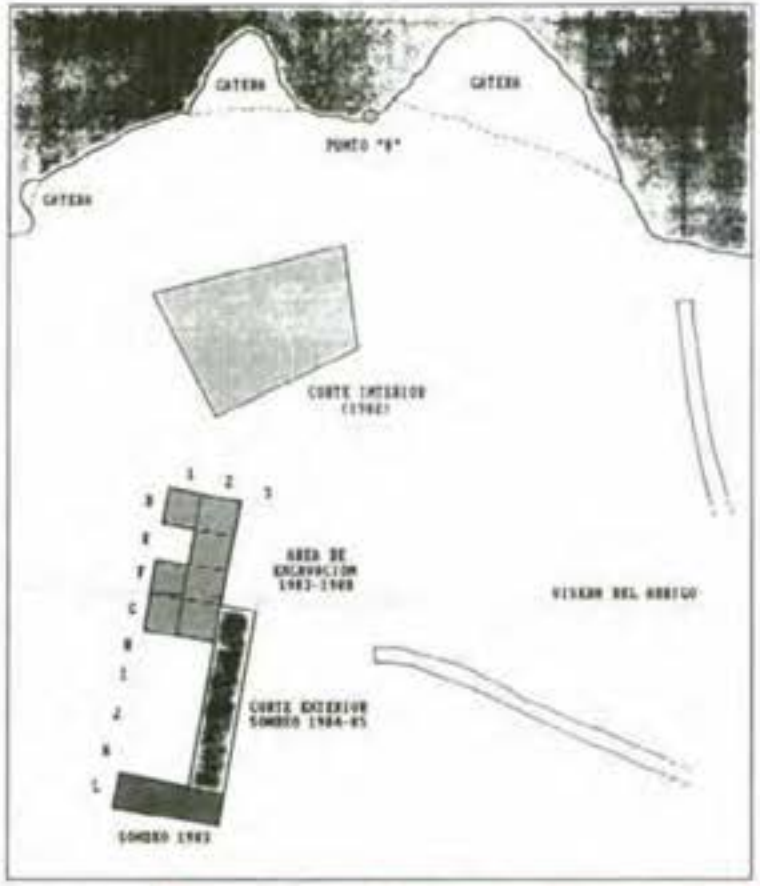
Results of Cocina cave phase models (models 4 and 5) showing the radiocarbon distributions. García et al., 2018: 268. Table 5.

Techno-typological phases according to current knowledge in Cocina cave (García-Puchol et al., 2018: 268):

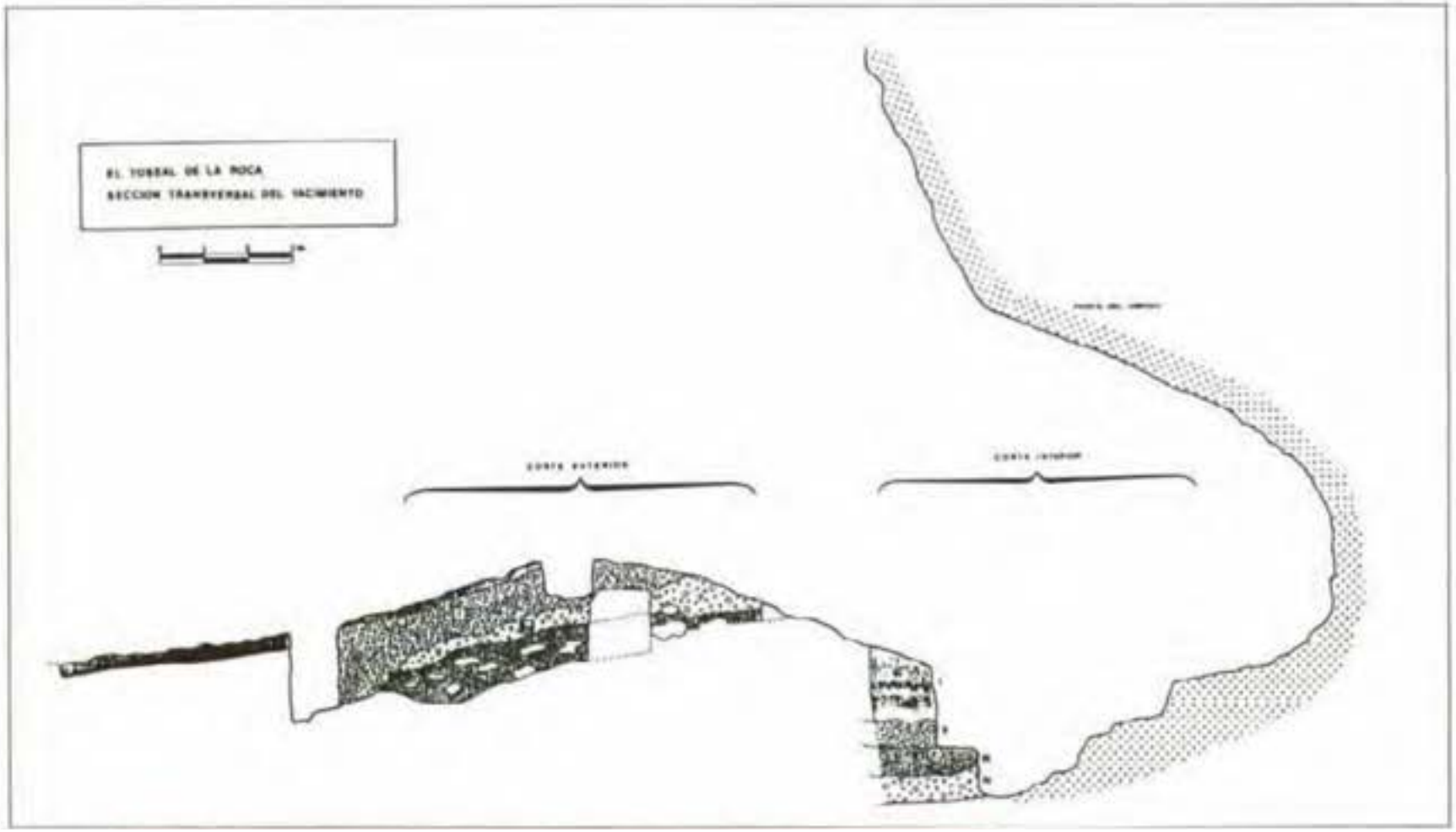
- Phase A1: Predominance of trapezes.
- Phase A2: Trapezes and a few Cocina type triangles.
- Sub-phase B1, Cocina type triangles have a significant presence.
- Sub-phase B2, triangles are predominant.
- Sub-phase B3, there is a drastic reduction in lithic density and the first crescents with abrupt retouch appear.

Since Bayesian models were built assuming a contiguous order, the transition between Sub-phase A0, the first evidence of human occupation in the cavity according to current radiocarbon dates, and sub-phase A1, with predominance of trapezes, is situated between 8614-8400 cal BP (García-Puchol et al. 2018: 268).

❑ Tossal de la Roca (Alicante, Spain)(ID63)

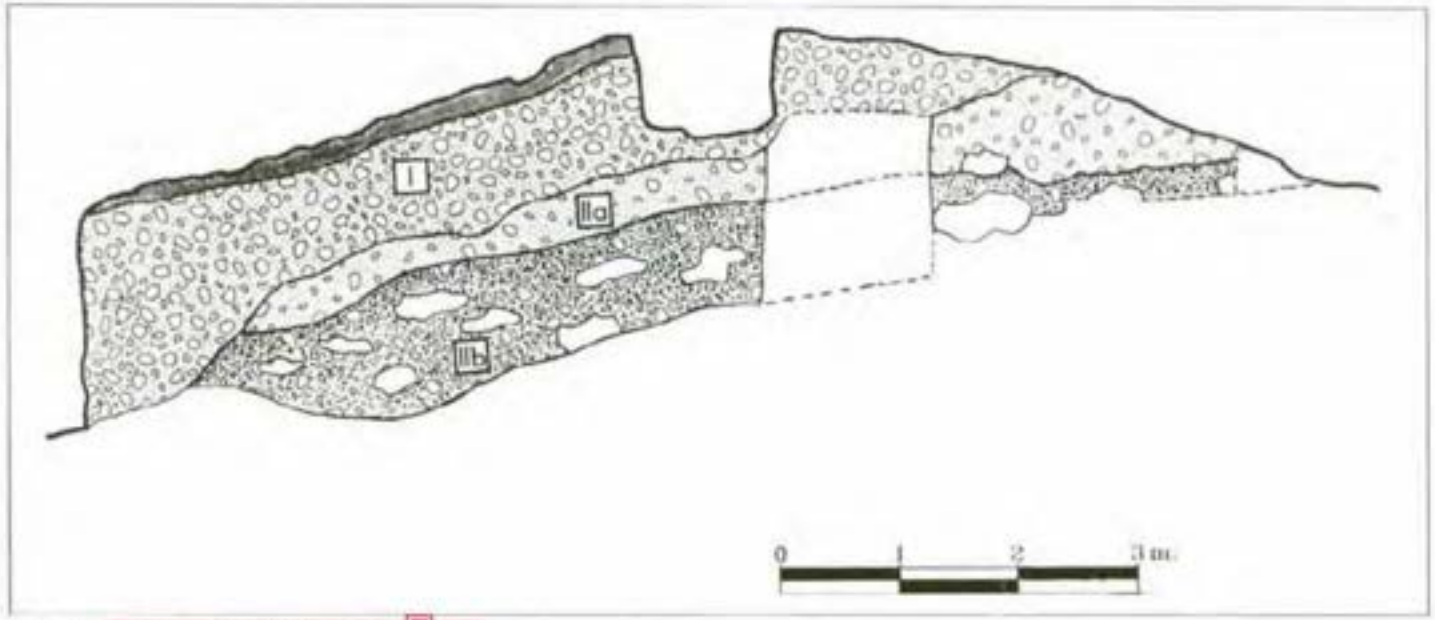


Tossal de la Roca. Plan of the different sectors excavated. Cacho et al. 1995: 16. Fig. 6

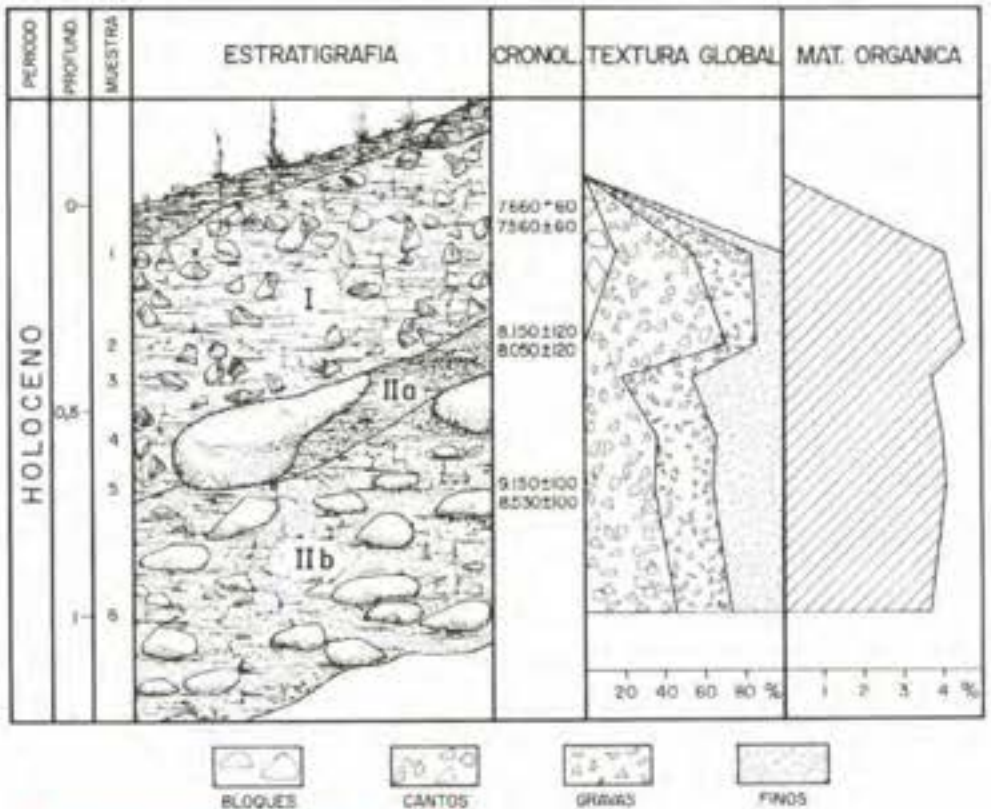


Tossal de la Roca. Stratigraphic correlation between Interior and exterior sectors. Cacho et al. 1995: 17. Fig. 7

❑ Tossal de la Roca (Alicante, Spain)(ID63)



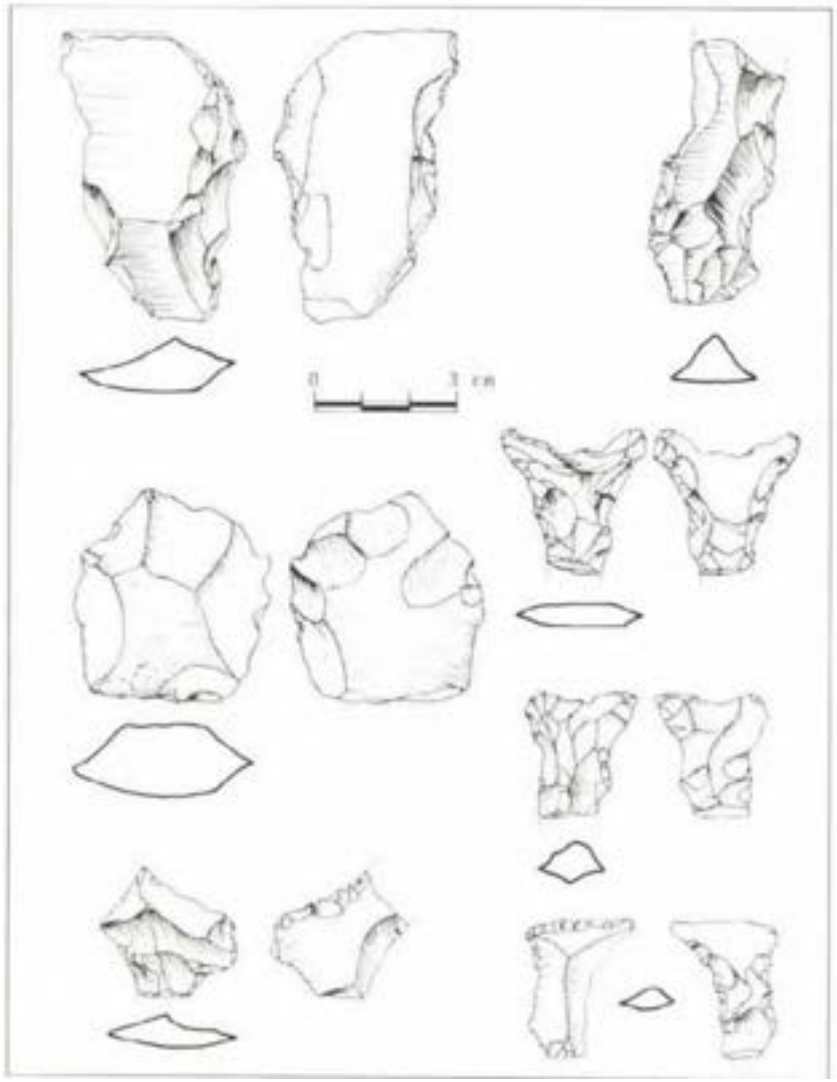
Tossal de la Roca. Stratigraphic section of the Exterior Sector. Cacho et al. 1995: 16. Fig. 8



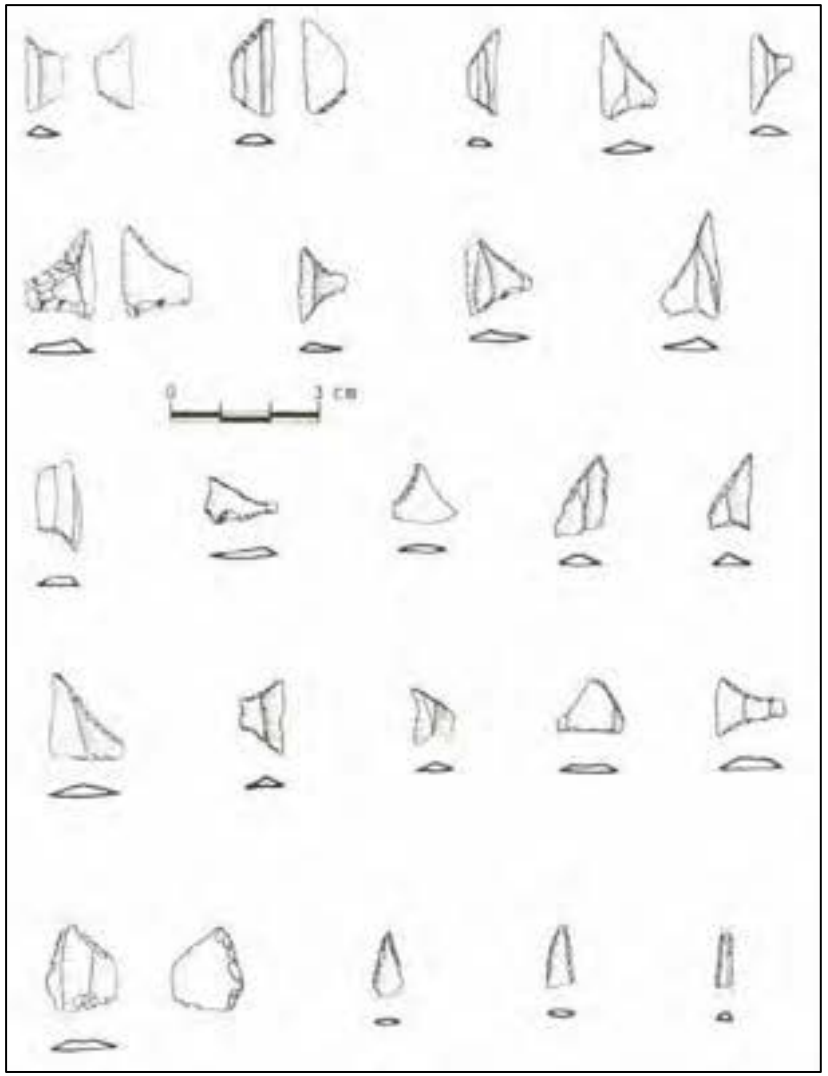
Tossal de la Roca. Sedimentary trends of the Exterior Sector. Cacho et al. 1995: 24. Fig.13

The Exterior sector deposit was formed in the first millennia of the Holocene. The geomorphic event that mediates between the accumulations of level A-I and those of Exterior sector, is the incision of the fluvial network in the Pleistocene deposits, forming terraces.
Unit I of the Exterior sector is the result of a formation of slope debris, which is lodged on the most pronounced gradient of the surface. The environmental parameters were fresher and more erosive in the slopes and identify the pre-Atlantic moments of the Mediterranean Holocene. The basins in the previous topography are filled with coarse materials, little evolved, transported in dense flows and movements of dough. Subsequently, no significant new sedimentary contributions are generated, since the Atlantic period begins (Cacho et al. 1995: 27)

❑ Tossal de la Roca (Alicante, Spain)(ID63)



Tossal de la Roca. Lithic industry from level I, Exterior sector. Cacho et al. 1995: 83. Fig. 37.

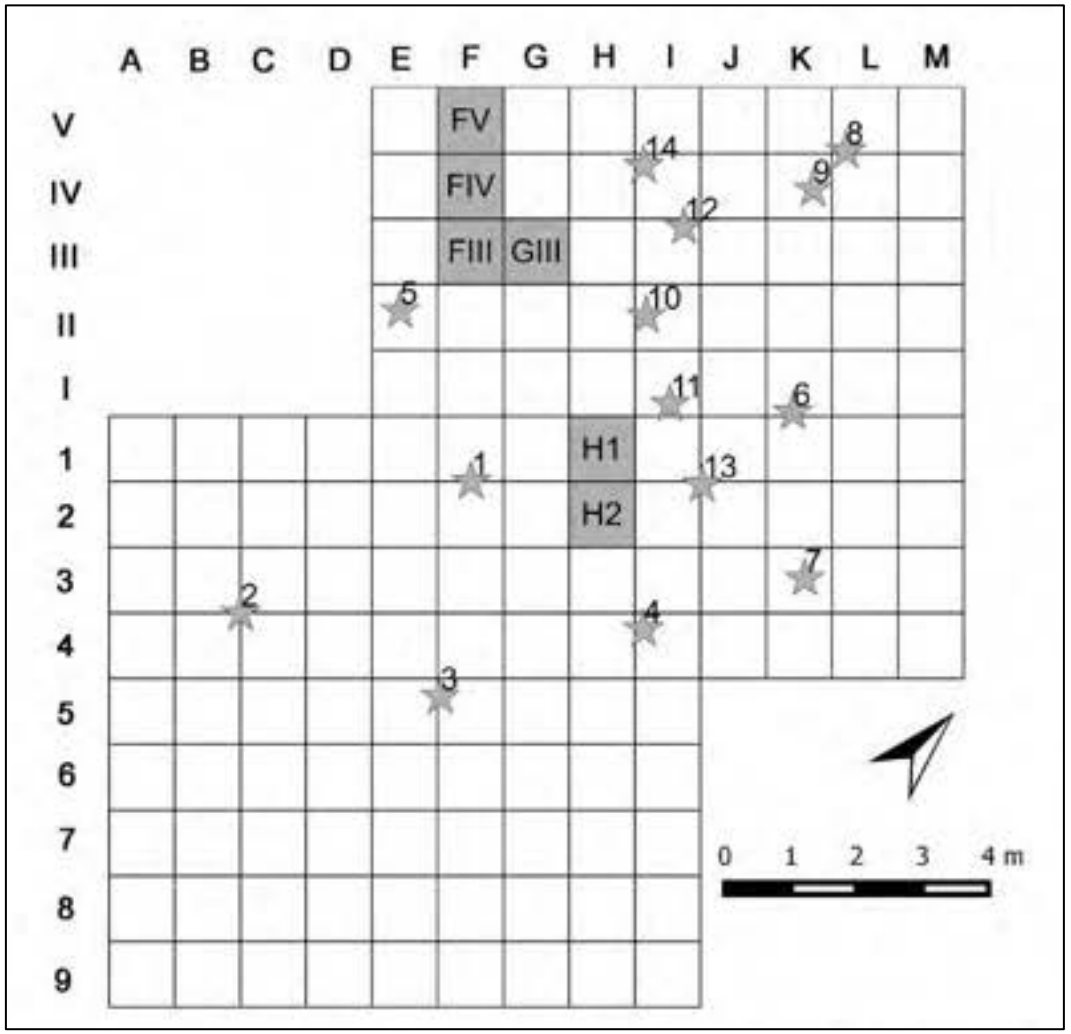


Tossal de la Roca. Lithic industry from level I, Exterior sector. Cacho et al. 1995: 84. Fig. 38

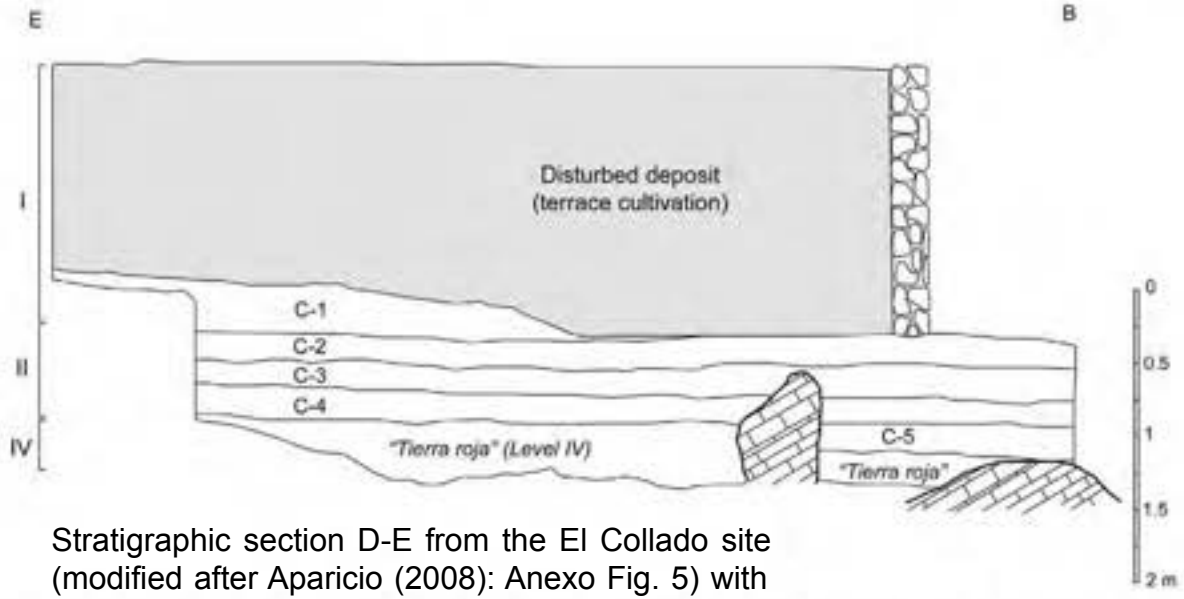
Lithic industry from level I, Exterior sector (Cacho et al. 1995: 83):
> Trapezes – 15,73%, almost all, short trapezes with about retouch
> Notched blades - 4,49%
> Notches and Denticulates - 21,34%
> Retouched blades - 17,97%

There is one radiocarbon date for this level on aggregate bone sample whose calibrated median falls at the end of TS2 (Gif-6898: 7660±60 BP, 8588-8370 cal BP 2σ, 8455 median cal BP). Considering the variable thickness of level I, from 50 cm to 110 cm in different sectors, and its sedimentological characteristics, a high presence of cobbles in a silty-clayish matrix with a stepped tilt, the stratigraphic relationship between trapezes and this radiocarbon date with a wide probability distribution, cannot be establish in an unambiguous way.

❑ 124. El Collado (Valencia, Spain) (ID124)



Plan of the El Collado site (after Aparicio 2008, modified), with the location of the sampled excavation units and the Mesolithic burials. Fernández, 2016: 97. Fig. 2



Stratigraphic section D-E from the El Collado site (modified after Aparicio (2008): Anexo Fig. 5) with the boundaries of the major stratigraphic levels (left) and the sub-divisions in horizontal layers. Fernández, 2016: 97. Fig. 3

Synthetic correlation between the major stratigraphic divisions of the El Collado site and the subdivisions in layers (according to the excavation bag labels) in the sampled trenches. Fernández, 2016: 98. Table 3.

Major	Trench 1	Trench 2
Stratigraphic Divisions	(FIII, FIV, FV, GIII) Layers	(H1–H2) Layers
Level I	C-1	C-1
	C-2	C-2
Level II	N IIA	C-3
	N IIB	C-4
	N IIC	No data
	N IID	
Level IV	IV	

❑ 124. El Collado (Valencia, Spain) (ID124)

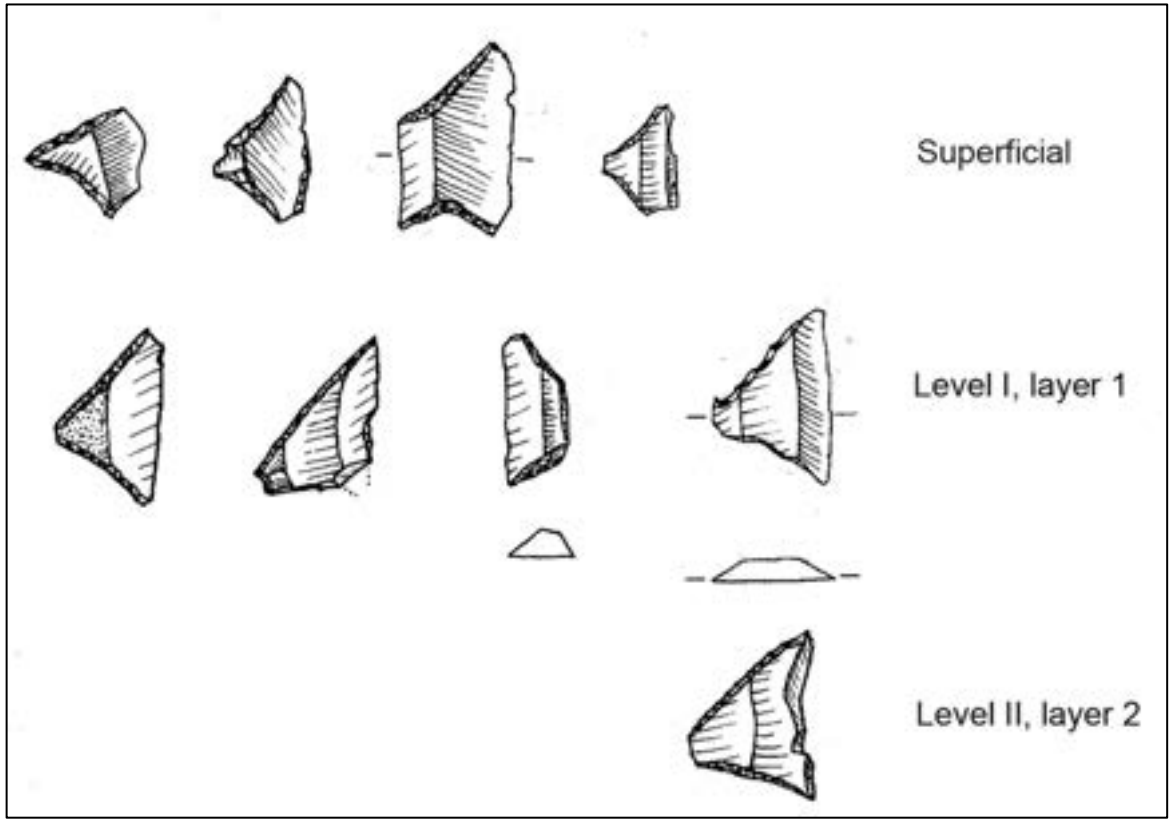
Layer	Square	Label date	MPV nº	Species	Fragment	Lab. Reference
C-1	H1–H2	24/11/1987	2279	*C. elaphus*	Phemur	UBA-27478
C-1	F/III-GIII	09/02/1989	2326	*C. elaphus*	Diaphysal	Beta-337186
II B	F/III, IV, V	14/01/1989	12457	*C. elaphus*	Metatarsal	Beta-337187
C-4	H1–H2	16/12/1987	2232	*B. primigenius*	2nd phalanx	UBA-27477
IV	F/III-IV-V	1989	13667	*C. elaphus*	Antler	UBA-27479
IV	F/III-GIII	12/01/1989	13657	*C. glaucum*	Valve	Beta-323495

Stratigraphic provenance, taxonomic description and laboratory sample identification of the new AMS ^{14}C radiocarbon dates produced in the study by Fernández, 2016: 98. Table 2

Context	Sample ID	Species	$\delta^{13}C$	$\delta^{15}N$	C:N	Yield	^{14}C Age BP	cal BP 1σ		cal BP 2σ	
Layer C-1	UBA-27478	*C. elaphus*	−19.7	4.1	3.27	2.60	7660 ± 44	8514	8404	8542	8391
Layer C-1	Beta-337186	*C. elaphus*	−19.9	nd	nd	nd	7820 ± 30	8629	8561	8685	8541
Layer II B	Beta-337187	*C. elaphus*	−20.08	nd	nd	nd	7610 ± 30	8419	8387	8449	8372
Layer C-4	UBA-27477	*B. primigenius*	−18.2	5.0	3.23	0.97	8292 ± 57	9420	9145	9461	9123
Level IV	UBA-27479	*C. elaphus*	−20.3	3.7	3.26	1.90	7939 ± 44	8971	8649	8984	8637
Level IV	Beta-323495	*C. glaucum*	−2.0	nd	nd	nd	9020 ± 40	9671	9497	9815	9444

New AMS ^{14}C radiocarbon results of the El Collado site archaeological deposit. Fernández, 2016: 100. Table 4.

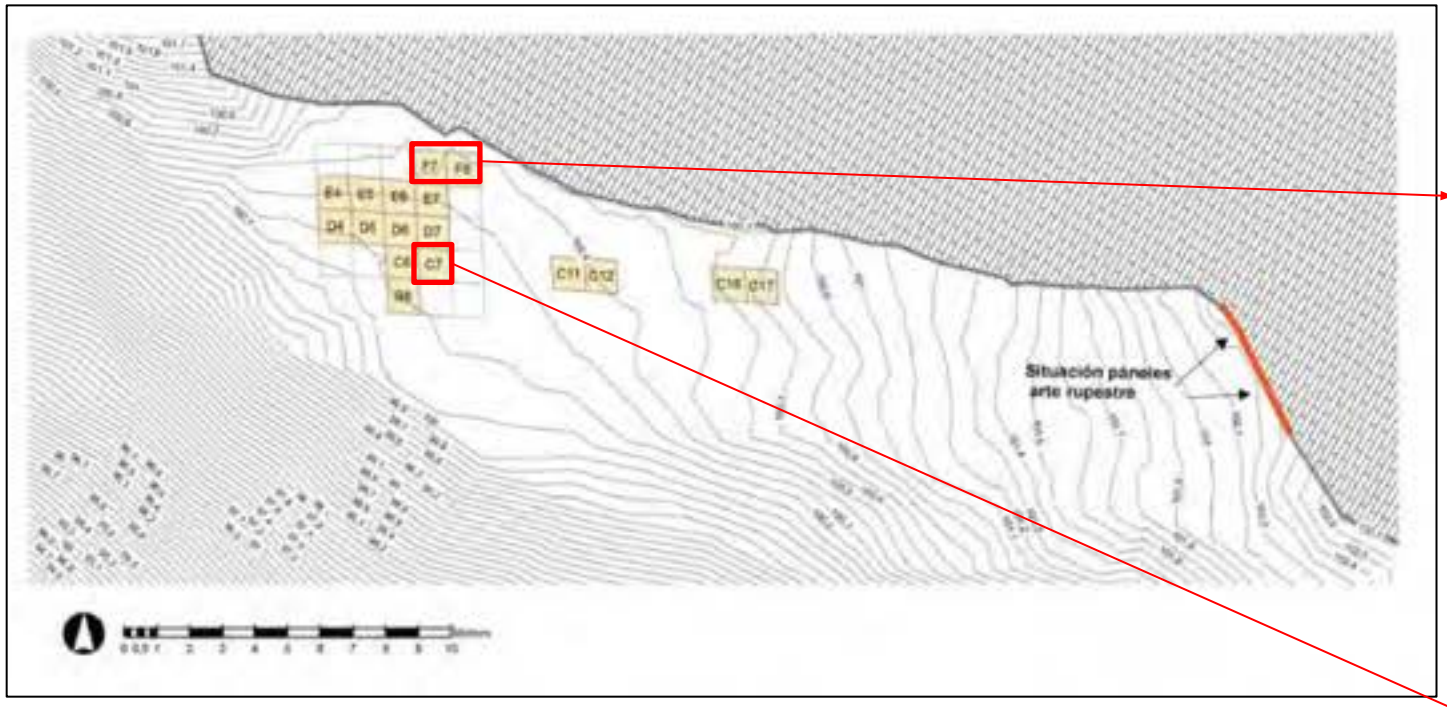
❑ 124. El Collado (Valencia, Spain) (ID124)



Stratigraphic distribution (from top to bottom) of the trapezes in El Collado site (raw data from Aparicio 2008: Figs. 27, 28, 29, 37, 40, 42 and 50 modified). Superficial layer contains concave side trapezes whereas Nivel I, capa 1 and Nivel II, capa 2 show asymmetric and symmetric trapezes of rectilinear sides. Nivel II, capa 2 is intrusive.

The vertical distribution, shows that trapezes with concave sides are concentrated in the Surface Level, whereas from Layer C-1, Level I we find symmetric and asymmetric trapezes. The isolated trapeze found at layer C-2 of Level II has a clear intrusive character. Therefore, the radiocarbon date on a bone fragment (*Cervus elaphus)* from layer C1, Level I (UBA-27478: 7660±44 BP, 8542-8383 cal BP) should be considered a maximum age for the first trapezes industries at the site.

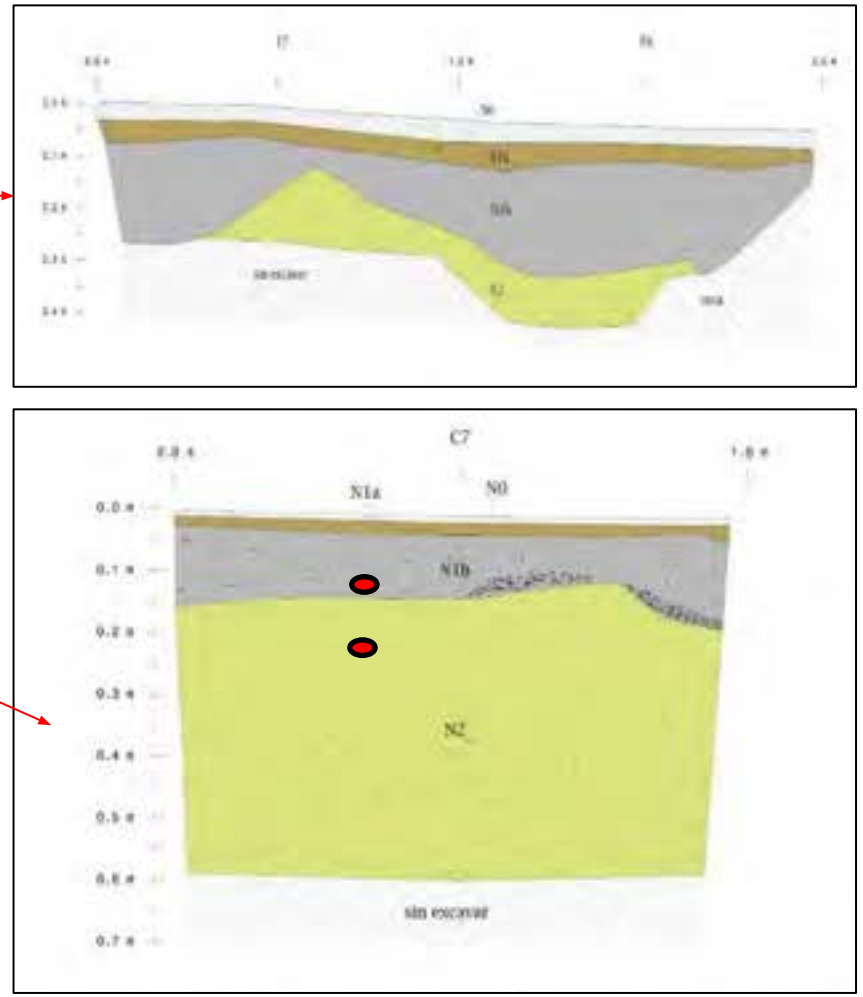
❑ Cueva Blanca (Albacete, Spain) (ID105)



Cueva Blanca rockshelter. Plan of the site indicating the excavated area. Mingo et al., 2012: 65, fig. 3. Modified.

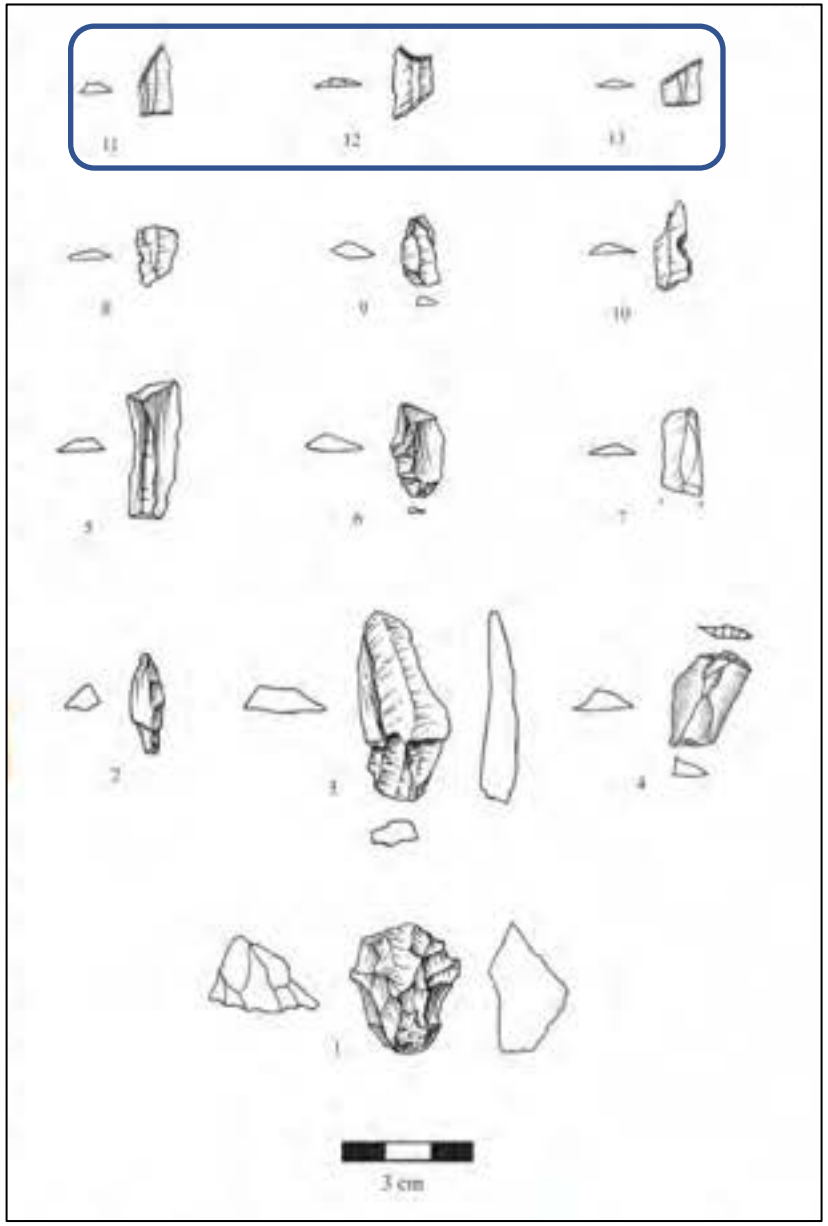
Stratigraphy	^{14}C yr BP	Cal. yr BP (2σ-range)	Sample	Lab code
L-1B 12–13 cm	6730 ± 40	7660–7560	Charcoal remain	Beta-288288
L-1B 25–26 cm	7610 ± 40	8450–8370	Charcoal remain	Beta-288287

Accelerator mass spectrometry (AMS) radiocarbon dates obtained for Cueva Blanca. Uzquiano et al., 2016: 103. Table I.



Cueva Blanca rockshelter, stratigraphic sections. Top: North profile, squares F7 and F8. Bottom: South profile, square C7. Mingo et al., 2012: 67. Figs. 4 and 5. Modified. Red circles indicate the provenance of radiocarbon dated samples.

❑ Cueva Blanca (Albacete, Spain) (ID105)



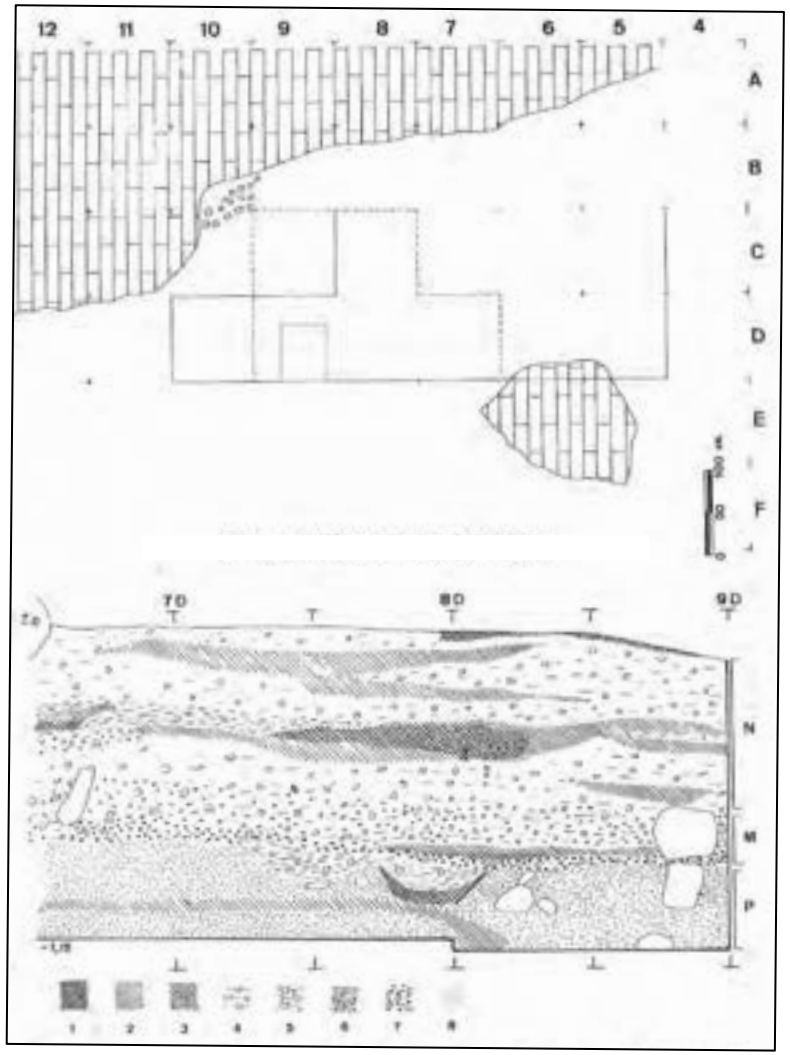
Stratigraphy	^{14}C yr BP	Cal. yr BP (2σ-range)	Sample	Lab code
L-1B 12–13 cm	6730 ± 40	7660–7560	Charcoal remain	Beta-288288
L-1B 25–26 cm	7610 ± 40	8450–8370	Charcoal remain	Beta-288287

Accelerator mass spectrometry (AMS) radiocarbon dates obtained for Cueva Blanca. Uzquiano et al., 2016: 103. Table I.

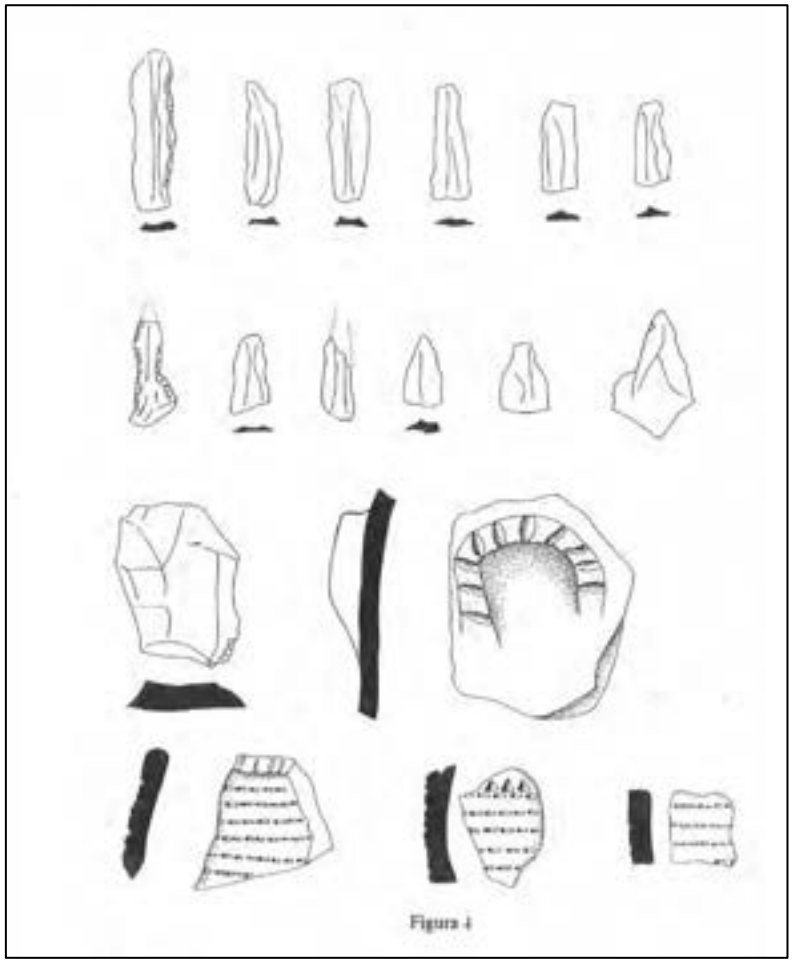
Lithic industry from Cueva Blanca rockshelter. Mingo et al., 2012: 68, fig. 6. Modified. Blue rectangle indicates trapezes.

❑ Cueva del Nacimiento (Jaén, Spain) (ID297)

In the publication by Rodríguez, G. (1979: 34), the stratigraphy was described as follows:
Level A. Layer nº1
Layer nº 2
Level B. Layer III
Level D. Layer V
Three radiocarbon dates were published:
GIF-1368: 6780±130 (layer 2)
GIF-3471: 7620±140 (layer III)
GIF: 3472:11200±200 (layer V).
Geometrics are not published



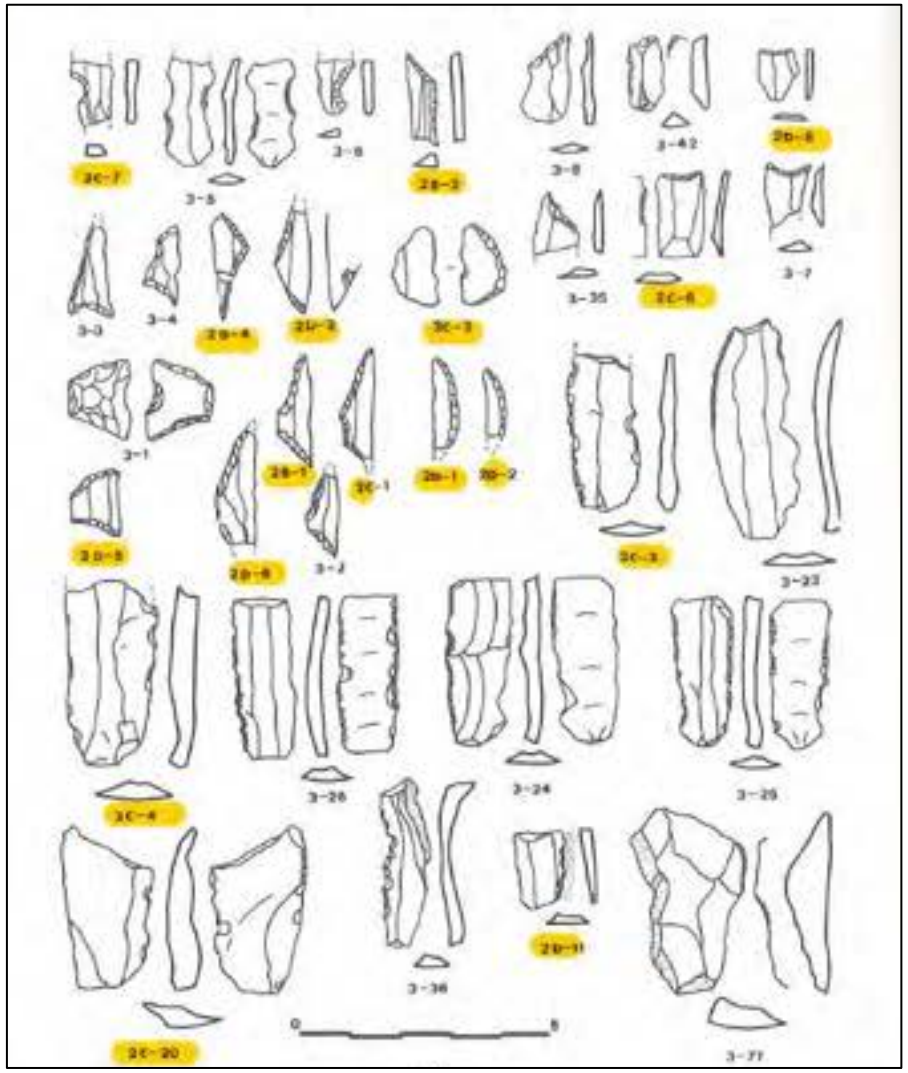
Cueva del Nacimiento. Top: Plan. Bottom: Stratigraphy. Rodríguez, G. 1979: 36. Figs. 1 and 2.



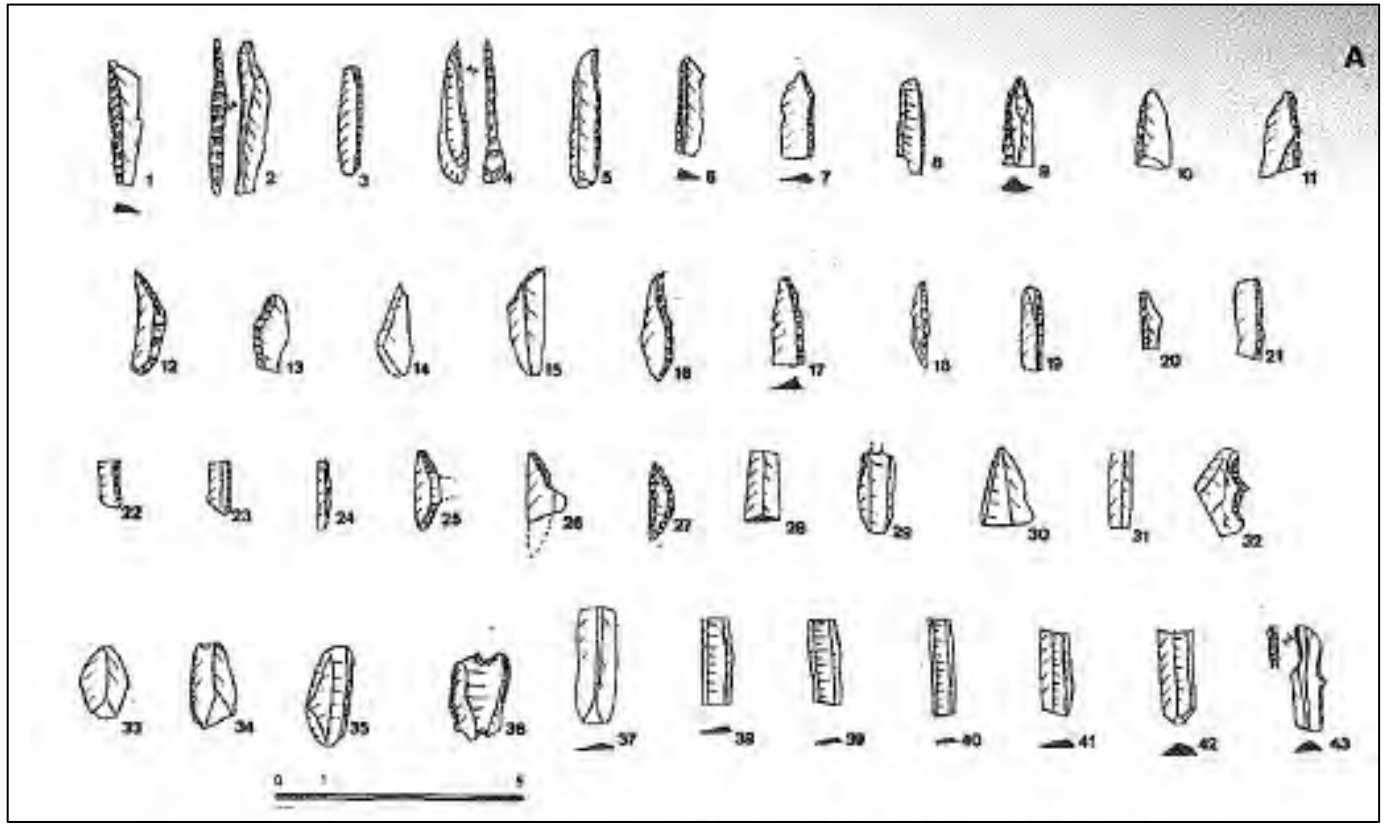
Lithic industry from Cueva del Nacimiento. Rodríguez, G. 1979: 38. Fig. 4.

During the posterior revision of the original stratigraphy,Asquerino and López renamed archaeological levels and subdivided former Layer 2 into five sublevels, due to its thickness (50 cm). Before that, the stratigraphic sequence merged Layer 2 and Layer III from Rodríguez's publication, and correlated it with Level II (sublevels 2A, 2B, 2C, 2D and 3), from Asquerino and López's publication (1981). Then, this Level II was associated with two radiocarbon dates, GIF-1368:6780±130 and GIF-3471: 7620±140, originally circumscribed only to Layer 2 (Rodríguez 1979). Level II in Asquerino and López (1981: 116), was associated with trapezes and microburins from level B in a subsequent publication (Rodríguez, 1997: 407).

❑ Cueva del Nacimiento (Jaén, Spain) (ID297)

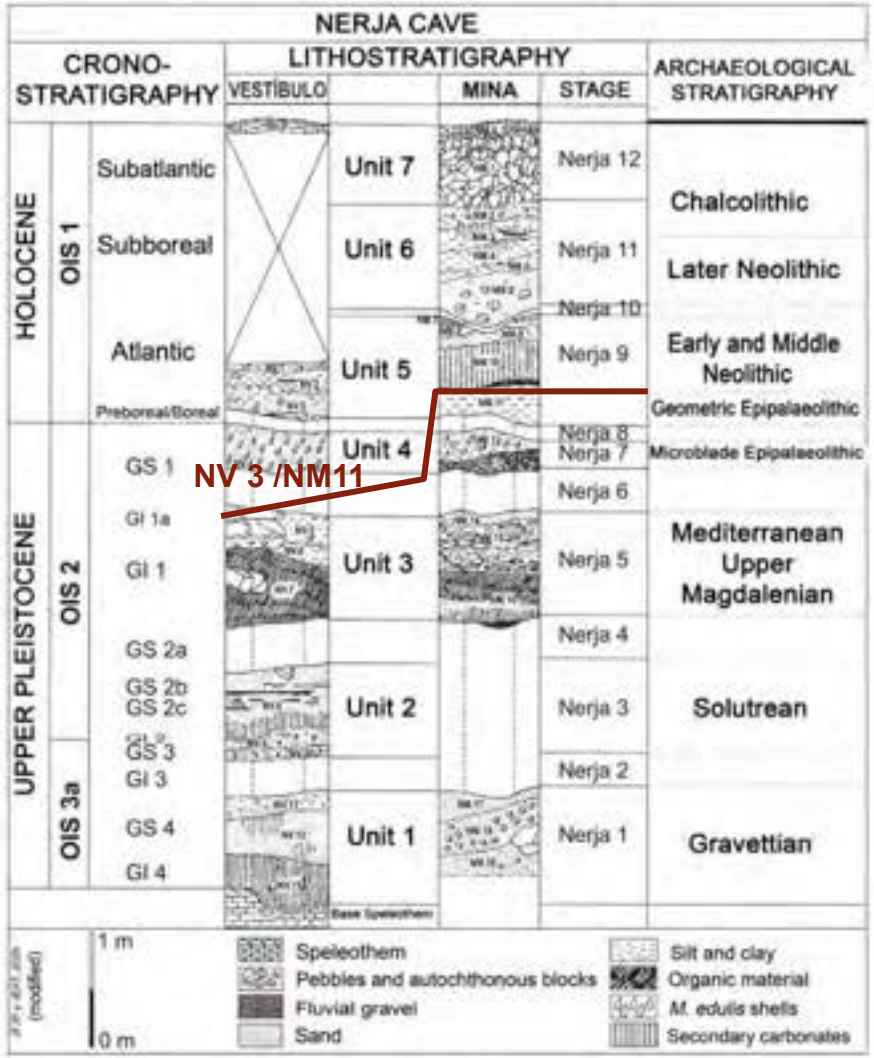


Lithic industry from old layer 2, with reference to different sublevels (3, 2D, 2C, 2B y 2A). Asquerino and López, 1981: 116. Fig. 6.

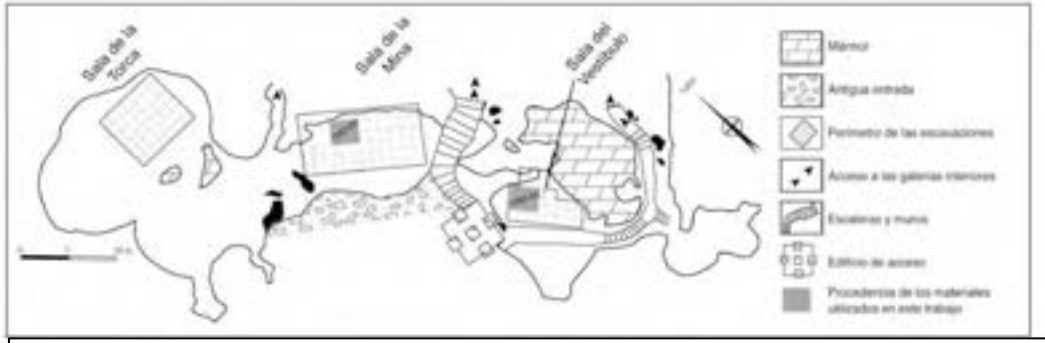


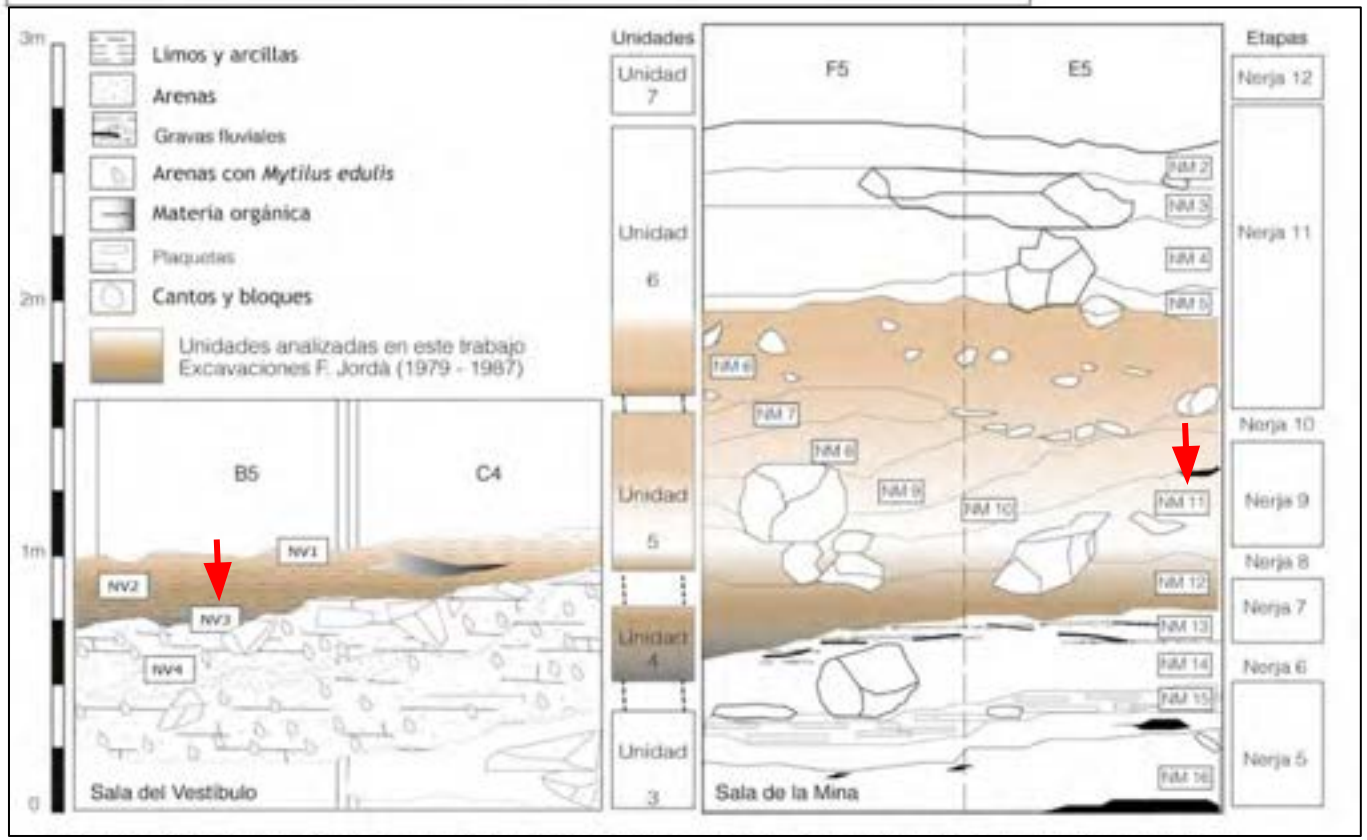
Mesolithic lithic industry from level B -Layer III. Rodríguez, 1997: 407. Fig. 1A

❑ Cueva de Nerja (Málaga, Spain) (ID67)



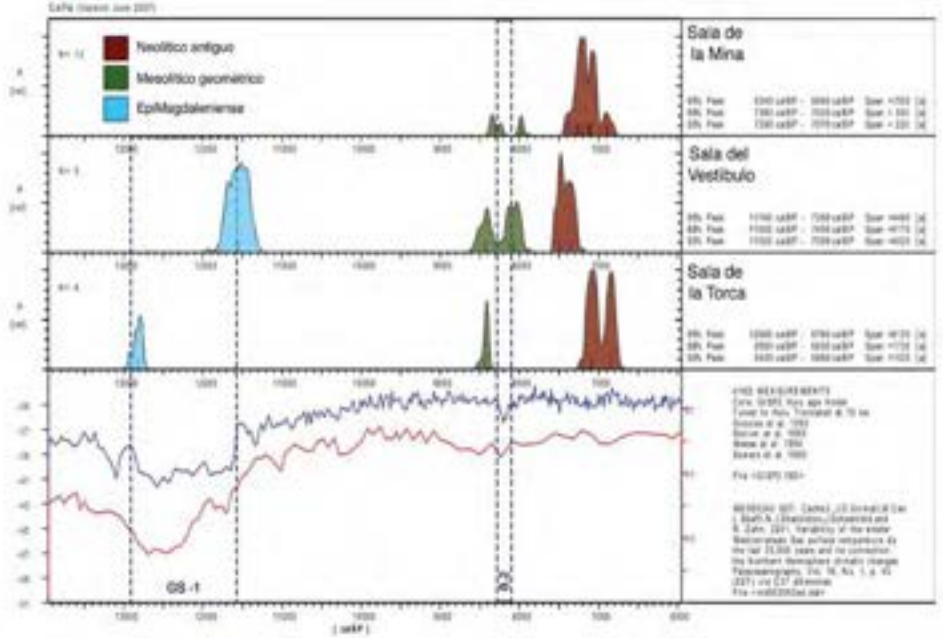
Nerja Cave: lithostratigraphy and chronostratigraphy of the sedimentary sequences of Vestibulo and Mina chambers. Jordá et al., 2011: 29. Modified. Red line marks the position of NV3 and NM11 discussed in the text.



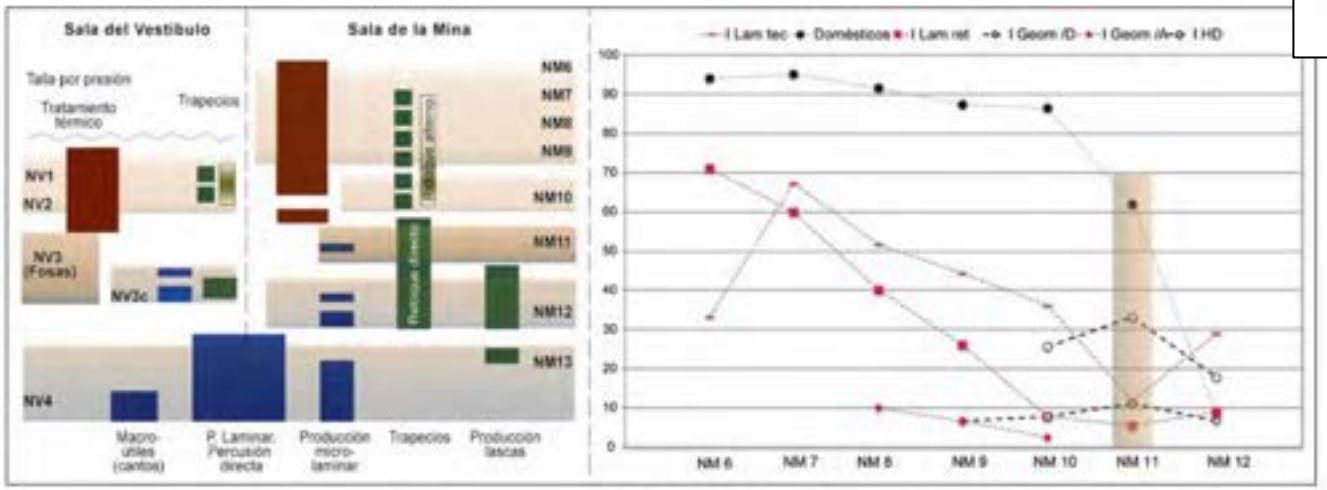


Nerja Cave. Top: Plan of the cave indicating the different areas or rooms excavated. Bottom: Lithostratigraphic correlation between Mina and Vestibule rooms. Aura et al., 2013: 56. Fig. 2. Modified. Red arrows point Geometric Mesolithic levels.

❑ Cueva de Nerja (Málaga, Spain) (ID67)



Nerja cave, probability distributions curves of calibrated dates, compared with two high-resolution paleoclimatic proxies. Aura et al., 2013: 58. Fig. 4

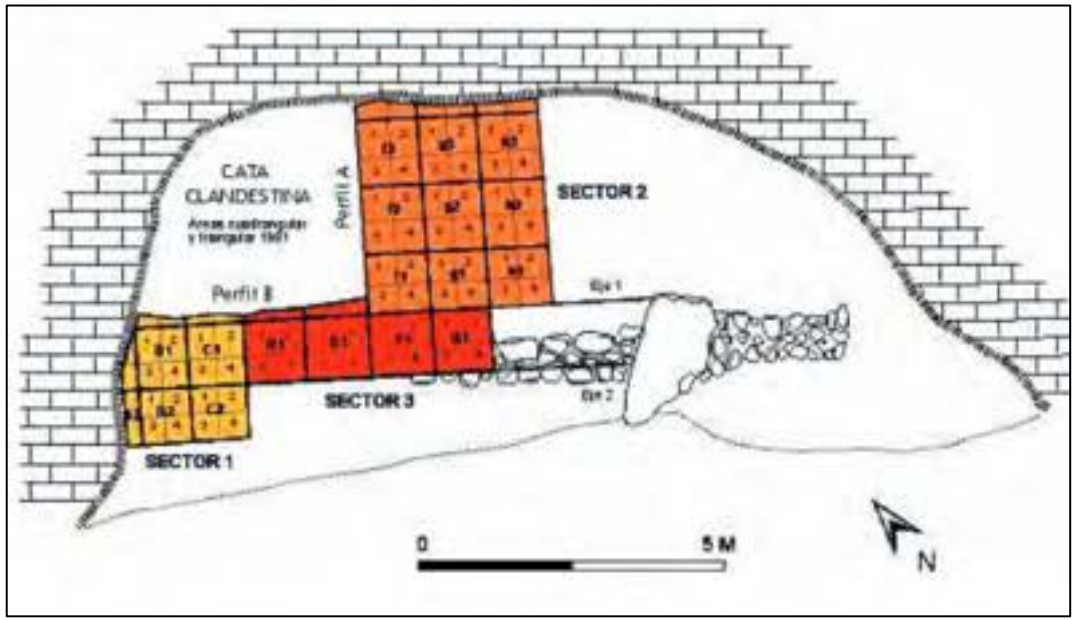


Nerja cave. Stratigraphic position of the tecnotypological groups of blade debitage. Aura et al., 2013: 61. Fig. 5

Nerja cave. Lithic industry from Early Neolithic and Geometric Mesolithic. Aura et al., 2013: 58. Plate 1. Modified. Red rectangle indicates Geometric Mesolithic blades and trapezes from NM12, NM11 and NM10/11.

- Time slice 3 (8400-8200 cal BP). Central Mediterranean area of the Iberian Peninsula

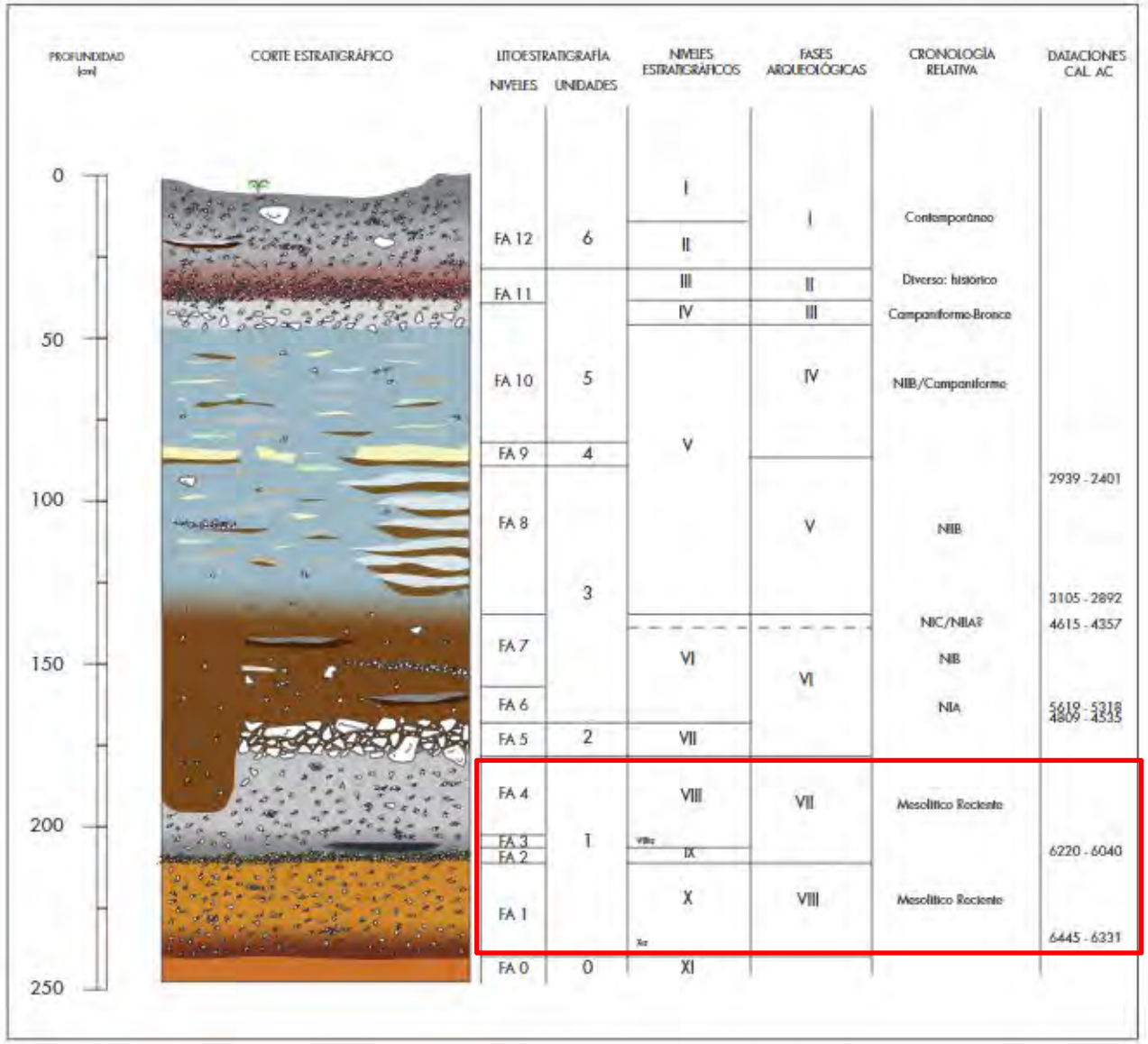
❑ 137. Falguera (Alicante, Spain) (ID137)



Plan of Falguera rockshelter. García et al. 2006: 96. Fig. 3.5

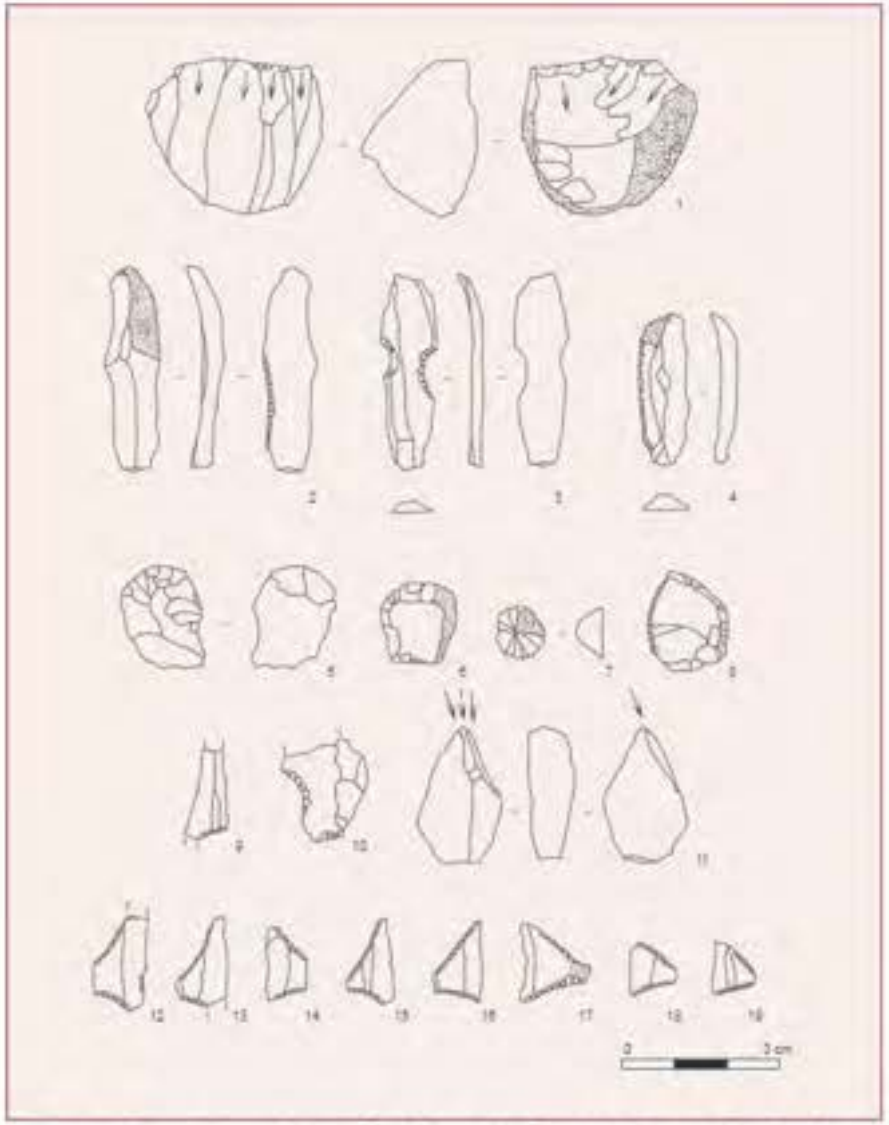
LAB.	FECHA BP	PROCEDENCIA	FASE	MATERIAL	N.º	MÉTODO	1	2
AA-2295	7410±70	II (1981)	VIII	Semilla oleo	S	AMS	6383-6218	6415-6089
AA-59519	7526±44	UE3151	VIII	Bractea piña	S	AMS	6439-6266	6455-6248
BETA-171910	7280±40	UE3201	VII (hogar)	Pinus halepensis	S	AMS	6212-6077	6222-6030
BETA-142289	6510±80	UE2051b	VI	Triticum monococcum	S	AMS	5598-5371	5616-5320
AA-60625	5833±65	UE3117	VI	Capra pyrenaica	S	AMS	4776-4602	4844-4504
AA-60627	5655±54	UE2041C	VI	Ovis/aries	S	AMS	4546-4372	4667-4357
AA-60626	4388±53	UE2031D	V	Ovis/capra	S	AMS	3088-2917	3326-2892
AA-59518	4140±120	UE2031	V	Triticum monococcum	S	AMS	2878-2579	3017-2350

Radiocarbon dates for Falguera rockshelter. García et al. 2006: 115. Table 3.1

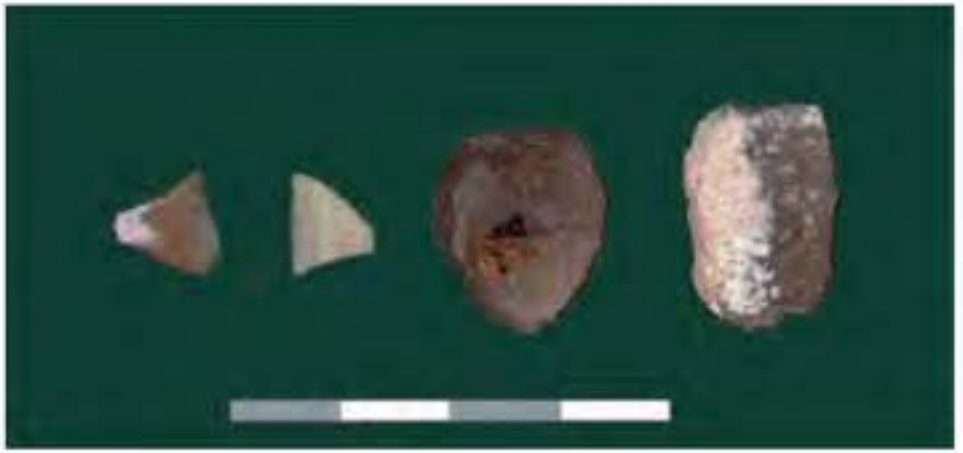


Stratigraphic sequence of Falguera rockshelter. García et al. 2006: 104. Fig. 3.7. Modified. Red rectangle indicates Late Mesolithic phases.

❑ 137. Falguera (Alicante) (ID137)



Lithic industry of the Geometric Mesolithic, Phase A. García et al. 2006: 226. Fig. 3



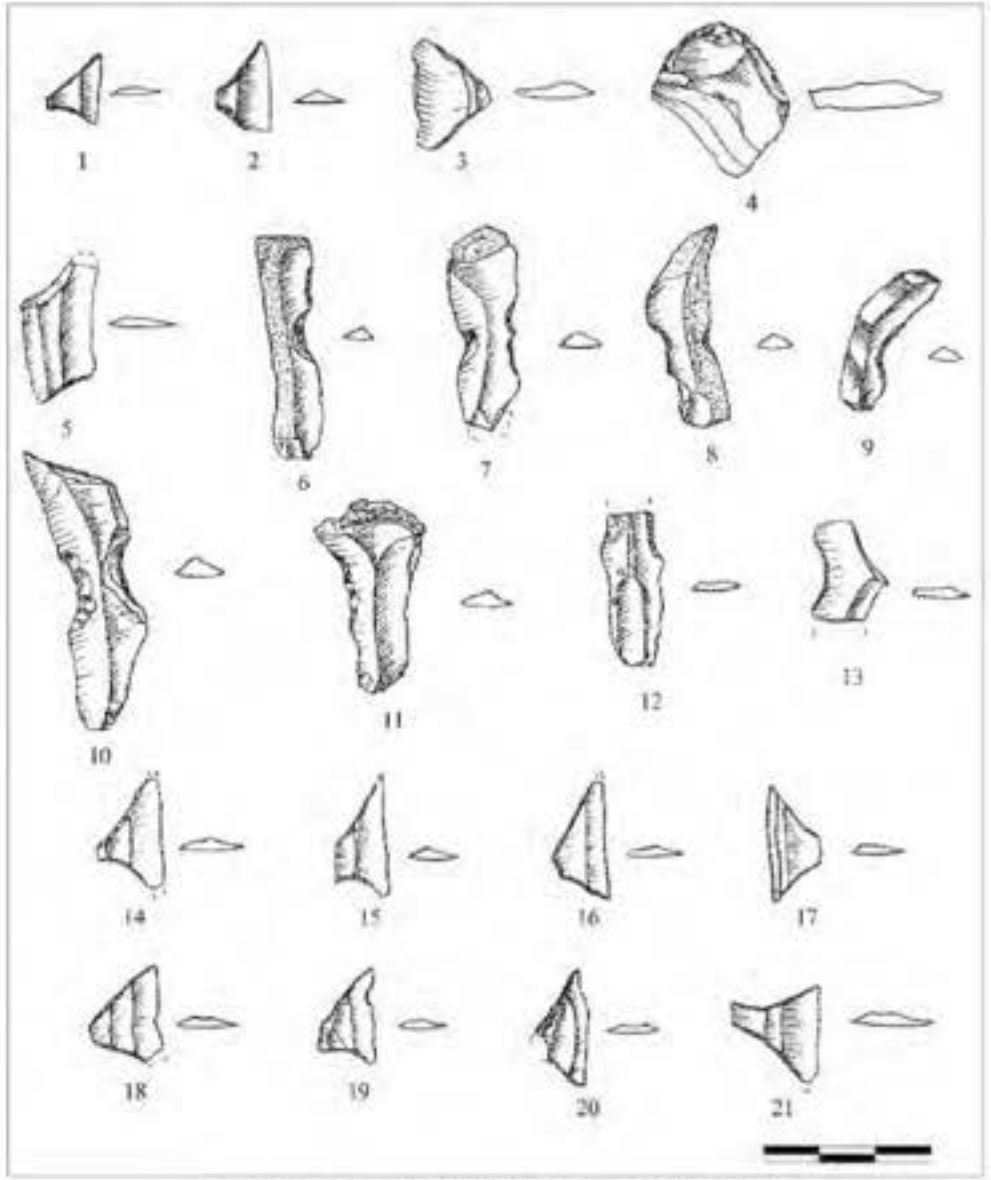
Lithic industry from the first Mesolithic level. García et al. 2006: 131. Plate 4.3

Lithic industry from phase VII (level VIIIa). García et al. 2006: 135. Plate 4.8

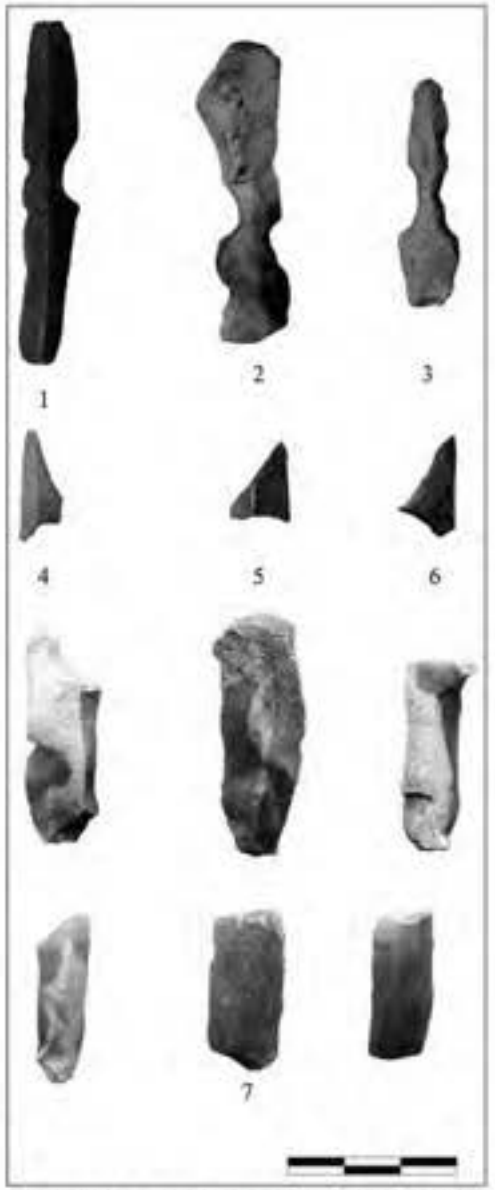
❑ Benàmer (Alicante, Spain) (ID 211)

Fases de ocupación	Sector	Adscripción cultural	Cronología	Dataciones
Benàmer I	Sector 2 Área 4	Mesolítico reciente fase A	6600-6000 cal BC	UE 2213: CNA-680: 7495±50 BP (6480-6245 cal BC) UE 2578: Beta-287331: 7460±40 BP (6450-6240 cal BC)
Benàmer II	Sector 3	Neolítico cardial	5500-5200 cal BC	UE 1017: CNA-539: 6575±50 BP (5617-5475 cal BC) UE 3034: Beta-264979-IC: 6440±30 BP (5510-4880 cal BC)
Benàmer III	Sector 2 Área 2 y 3	Neolítico postcardial (IC)	4600-4300 cal BC	UE 2006: CNA-682: 5670±60 BP (4683-4365 cal BC)
Benàmer IV	Sector 2 Área 3 y 4	Neolítico postcardial (IC-IIA)	4300-3800 cal BC	
Benàmer V	Sector 3	Ibérico pleno	IV-III a. EC	
Benàmer VI	Sectores 1 y 2	Medieval-Moderno	s. XIV-XVIII	
Benàmer VII	Sectores 1 y 2	Contemporáneo	s. XX-XXI	

Benàmer. Correlation between occupation phases and radiocarbon dates. Torregrosa et al., 2011: 86. Table VI.1



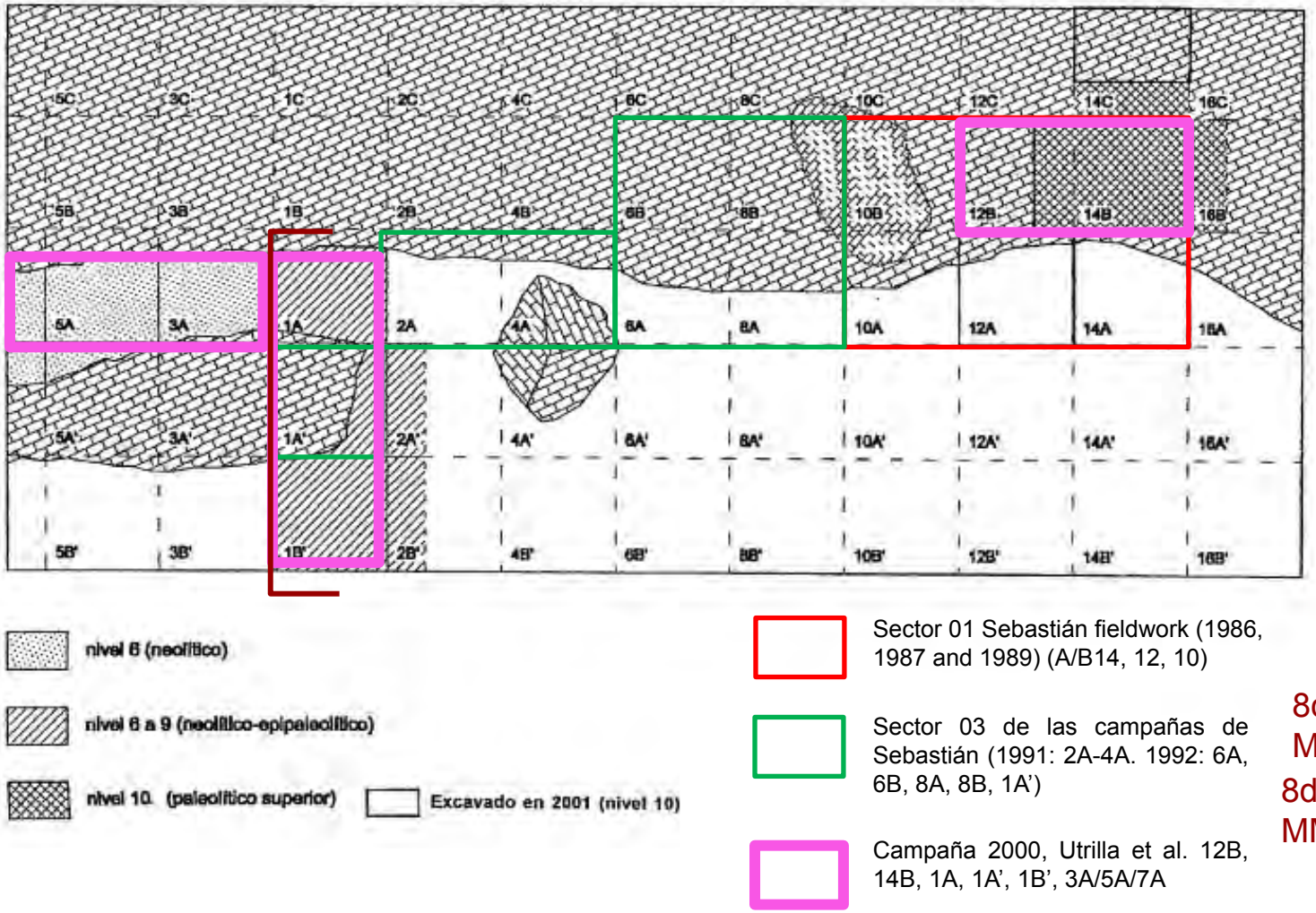
Lithic industry from SU2235 (1-13). Trapezes from SU2591 (14-21). Torregrosa et al., 2011: 161. Fig. XII.1.3



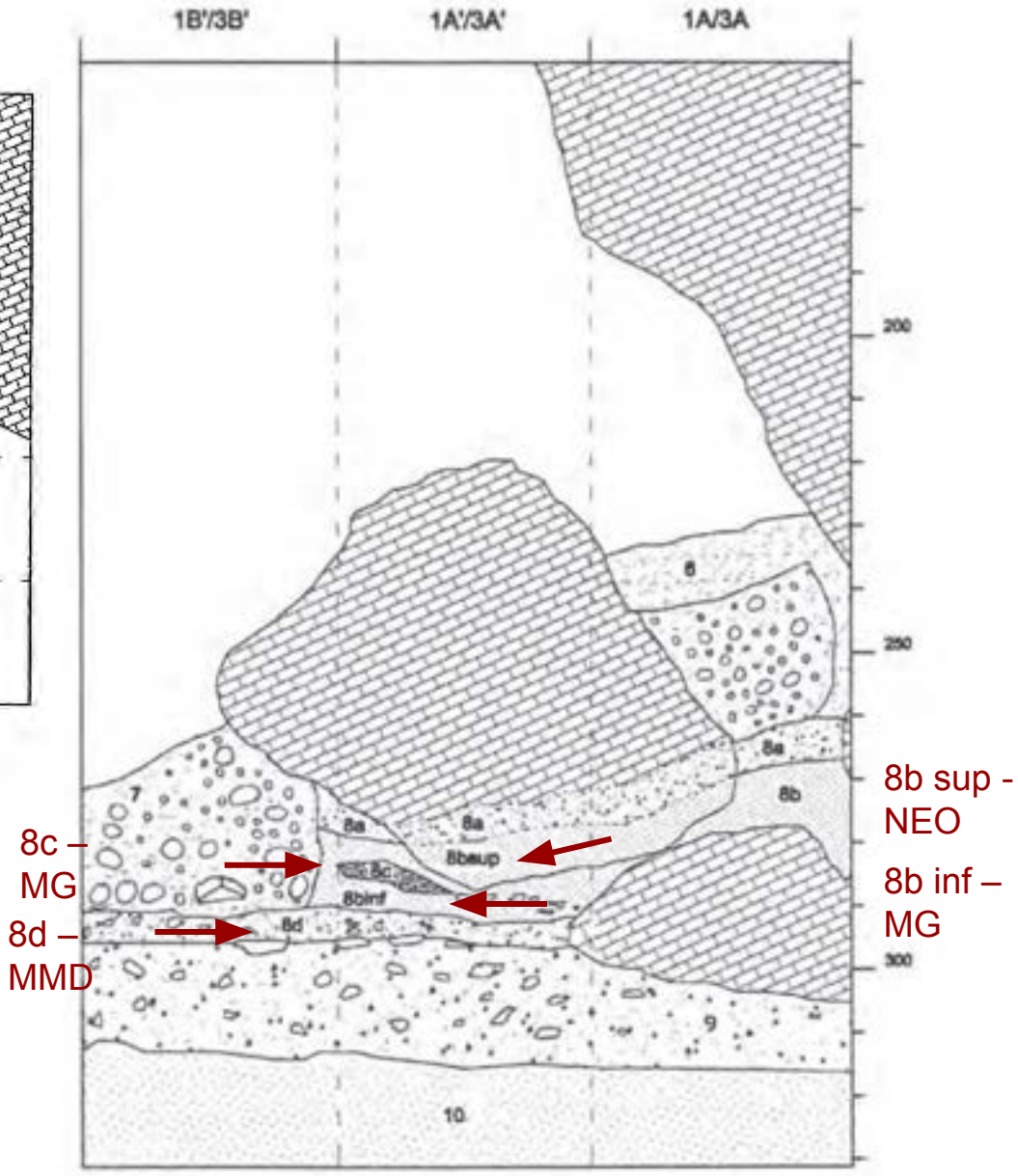
Strangled blades and trapezes with one concave side. Torregrosa et al., 2011: 171. Figure XII.2.2

- Time slice 3 (8400-8200 cal BP). Ebro Valley

❑ Ángel 1 (Teruel, Spain) (ID213)



Ángel 1, excavated areas. Utrilla and Domingo 2001: 248. Fig. 1. Modified. Rectangles indicate different sectors and squares excavated at each fieldwork campaigns. Dark red line refers to the stratigraphic section on the right.



Ángel 1. Stratigraphic profile. Utrilla et al. 2009: 143. Fig. 8. Modified. Levels 8b sup, 8b inf, 8c, and 8 d are indicated.

❑ Ángel 1 (Teruel, Spain) (ID213)

Utrilla/Domingo	Sebastián, sector 01 y 02	Sebastián, sect. 03
nivel 6	-	molino de mano
niveles 8a y 8b	-	unidades 6 y 11 (cerámicas y geométricos)
nivel 8c	unidades 8 sup. y med. (sin cerámica pero con geométricos)	
nivel 8d	unidad 8 inf. y 13 sup. (sílex toscos de mayor tamaño)	
nivel 9	unidad 13 (con cantos angulosos desprendidos del techo)	contextos 12 y 14
nivel 10 sup.	unidad 15	

Ángel 1. Correlation between archaeological levels.Utrilla and Domingo, 2001-2002: 343. Modified. Red arrows indicate the Geometric Mesolithic level, level 8c (according to Utrilla and Domingo, 2001), units 8sup and 8med (according to Sebastián).

Utrilla Niveles	Sebastián Contextos	C-14	Cultura	Restos significativos
6	9			Cerámica lisa / Ocres
7		--	Estéril	--
8a	6 (1987) 8 (1991) 25	5220±50 GrA-22825	Neolítico	Cerámica lisa / Hojas de hoz. Hojitas de dorso curvo abrupto Triángulos - segmentos doble bisel Segmentos abruptos
8b sup.	11.12.19 21.23. 26.27		Neolítico Antiguo	Cerámica lisa Triángulos abruptos y doble bisel Segmentos y lba
8c	28. 35. 45 (1991) 8-11 (1986) 8 (1987) 45	7435±45 GrA-27274 7955±45 GrA-27278	Mesolítico Geométrico	Trapecios abruptos alargados y achaparrados Triángulos y segmentos abruptos lba diminutas / Microburiles Columbella / Cerithium
8b inf.	34-36.37, 39	--	Mesolítico Geométrico	Algunos Geométricos en los contextos de Sebastián
8d	13 (1986) 11 (1987) 8 inf. (1986) 88 20.29.49	8390±60 GrA-22826 8210±210 GrN-15519 8150±170 GrN-15220 8060±70 GrN-15518	Epip. Macrolítico	MD / piezas retoques toscos / ecaillés Puntitas de dorso curvo

Ángel 1 (Arenal de Fonseca). Neolithic and Mesolithic sequence correlating Utrilla levels and Sebastián contexts. Utrilla et al., 2003: 303. Table 5.

2001	01	02	03	Ocres	Colum	Núcleos	Mb-Gm	Dor+Tr	Rasp	Bur+rec	Macrol.	Dent.	Las. Ret	Perf.	Cer.	Hojas hoz	Total
6			9	1				1									1
8a 5220±50			6	"		2	6	4	2			3	8		39	2	66
			6-11					1	1			2	5				9
			25				1										1
8bsup			21			1	1	2	1								5
			11-12-19	"									4		13		17
			26-27	"		1	5					4	6		33		49
			23	"		1	1		2			1			2		7
8c			28	"	1	3	6	1	4		1		7	2			25
	8 (1986)			"	3	4	6	6	2			2	3	1			27
	8-11 (1986)						23										23
	8 (1987)			8		5	2	8	3		1	5	8	1			28
			35			1											1
			45	"	4	1	9	1	5		16	4	6	1			47
8binf			34-36-37	"	3			1	2			1	1				8
			39				2					2	2				6
			41+40	2				3	1		2						6
			38					1	3			2	5				11
		20				1			1			3					5
8d 8390±60			29	6				3	1			3	3				10
		88		"		2	2		2		3	3	8				20
			49			1					1	4					6
	13								3	1	6	8	9	2			29
	12 (1987)	12 (1989 y 91)				1		3	3	1		3	9				20
			46 (base)	"		1		1				1	1				4
10 sup			52+53	2		1			2		5	1	1				10
			53-54	2					2			1					3
	15			1		1		8	1	4		5	5				24
10 sup a			47			1							1				2
			54			1											1
TOTAL					11	29	65	42	41	6	35	58	90	7	87	2	472

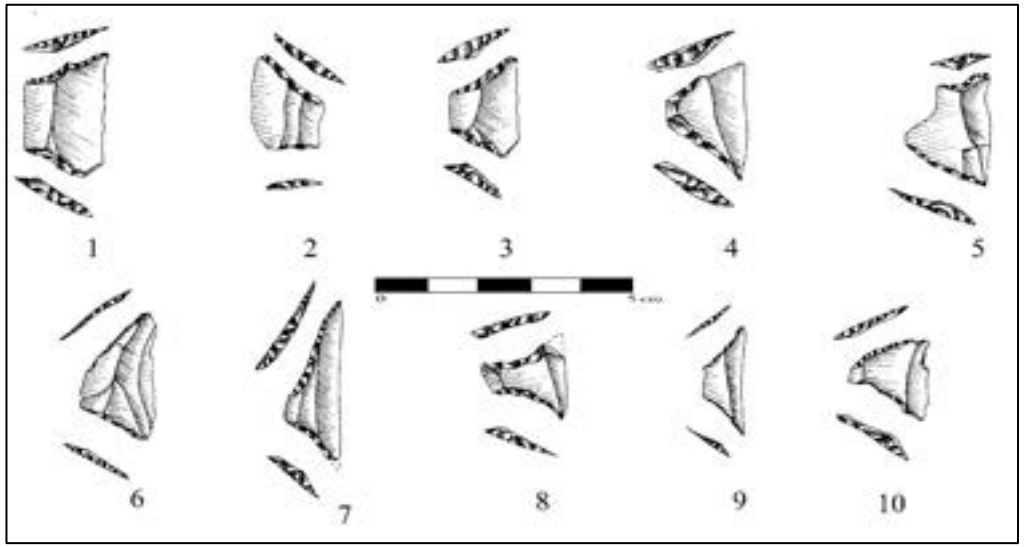
Ángel 1. Absolute frequency of retouched lithic industry. Utrilla et al., 2003: 303. Table I. Modified. Red arrow points the maximum density of Geometrics on level 8c.

❑ Ángel 1 (Teruel, Spain) (ID213)

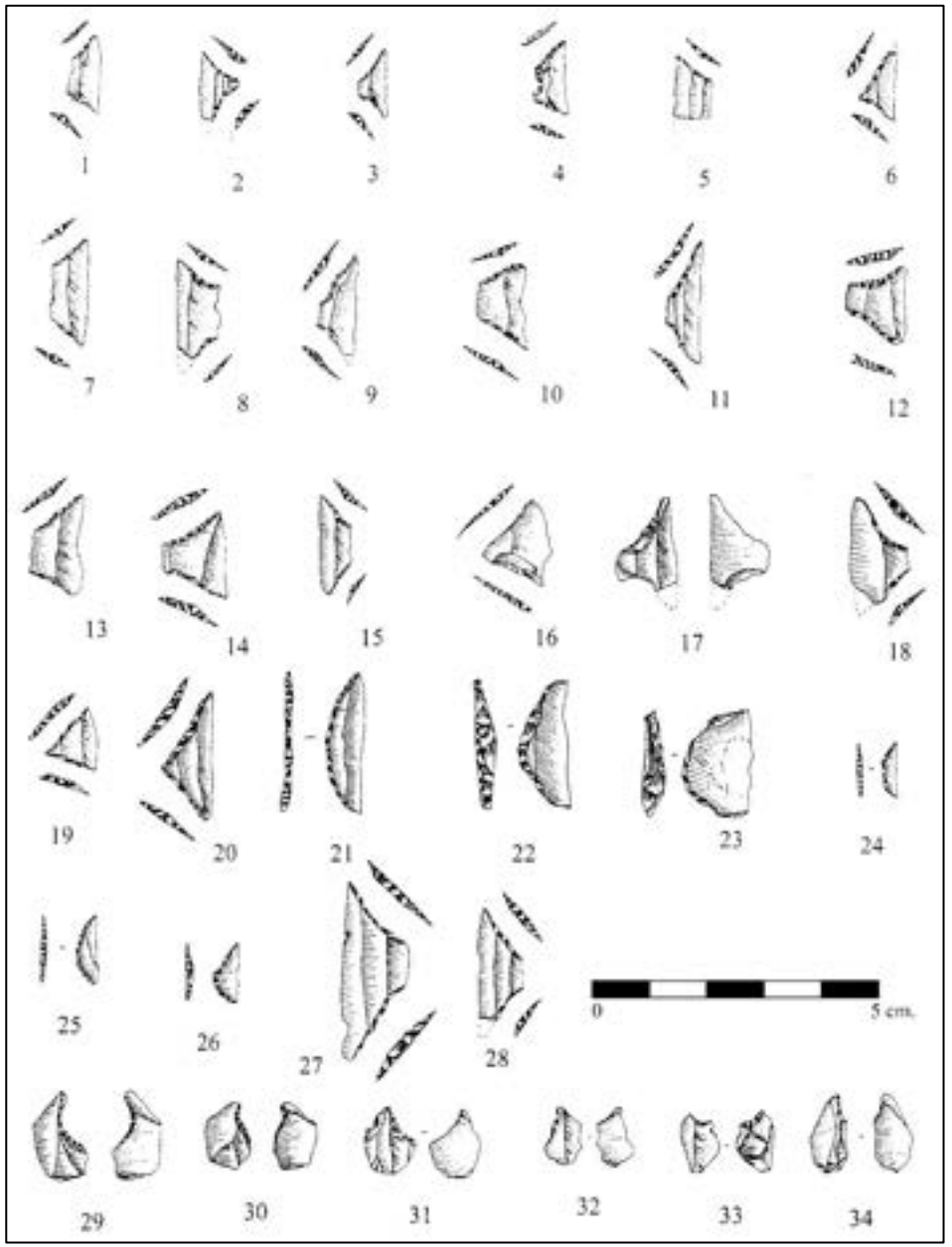
Lithic industry from levels 8c and 8b-inf was ascribed to the Geometric Mesolithic. However, the relationship between the trapezes microliths and the radiocarbon record requires to be discussed. From level 8c two radiocarbon dates are available, both on a single charcoal sample. Level 8b-inf doesn't have radiocarbon dates.

Site	Unit	Lab.code	Sample	Age BP	Std	Cal BP 2σ	Median cal BP
Ángel 1	8c (U8-11)	Gra-27278	Charcoal	7955	45	8989-8644	8822
Ángel 1	8c (U28)	Gra-27274	Charcoal	7435	45	8366-8175	8263

Lithic assemblage of Level 8c is characterized by trapezoids with abrupt retouch, both short and elongated and microburins.



Ángel 1. Geometrics from context 45 = level 8c, squares 6A/8A (03) and 10A (02). Utrilla et al. 2003: 306. Fig. 4.



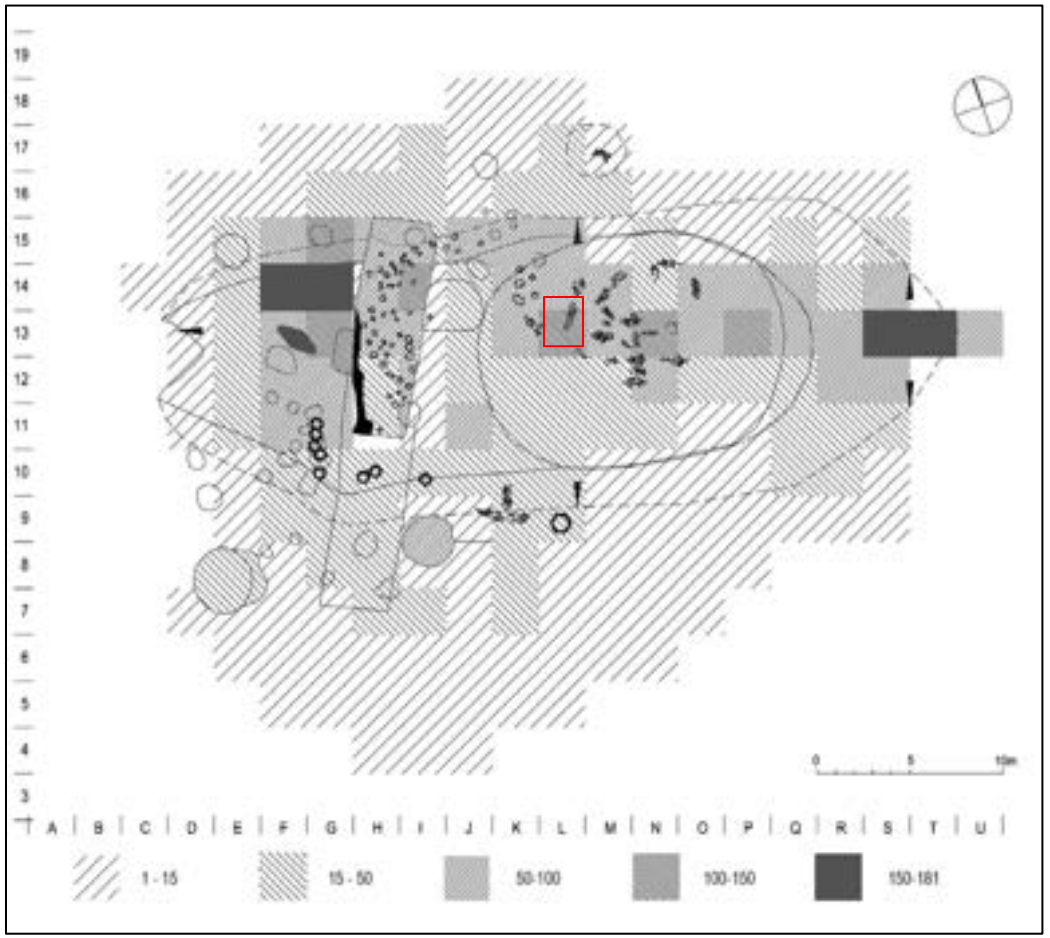
Ángel 1. Geometrics and microburins from levels 8b-inf and 8c, squares 6A/8A (03), 10A (02), 14A-14B (01) and 1A'. Utrilla et al. 2003: 305. Fig. 3.

- Time slice 3 (8400-8200 cal BP). South-central coast of Portugal

❑ Moita do Sebastião (Muge, Portugal) (ID129)

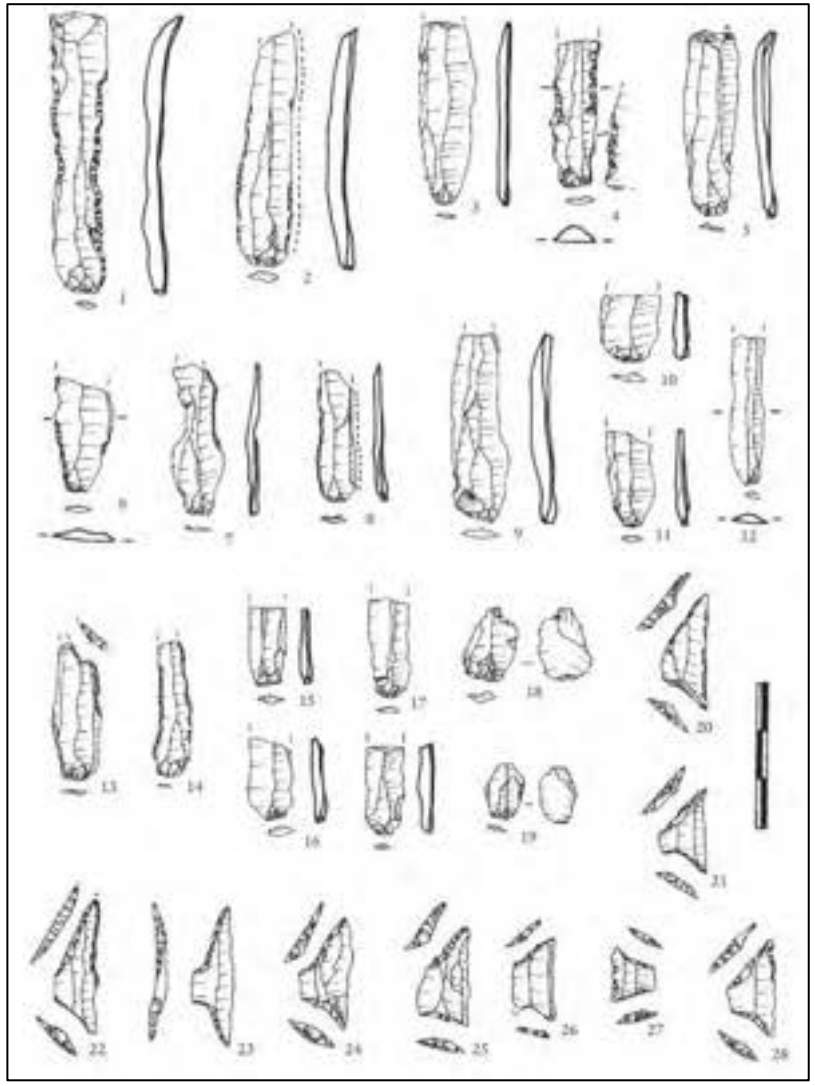
The main problem is to establish the correlation between the oldest funerary activity in this site and the lithic assemblages of the basal levels from Roche's collection. New radiocarbon dates on human samples from Roche's 1952-54 excavations, have provided ages that could date the appearance of trapezes during the TS3. The oldest one is radiocarbon date from Sk. 9 Ua-46264: 7621±50 BP, 8140 median cal BP, which has been calibrated, considering the 42,9 % of marine origin diet according to recent palaeodietary evidence (Peyroteo 2016: 269), and a local reservoir offset for the Tagus paleostuary of Δr= -48±143 (recalculated from Martins et al. 2008).

Moita do Sebastião. Archaeological structures and burials from basal levels. Alvim, 2010: 39. Fig. 6. Red rectangle indicates the location of burial 9, excavated in a breccia and sands zone.

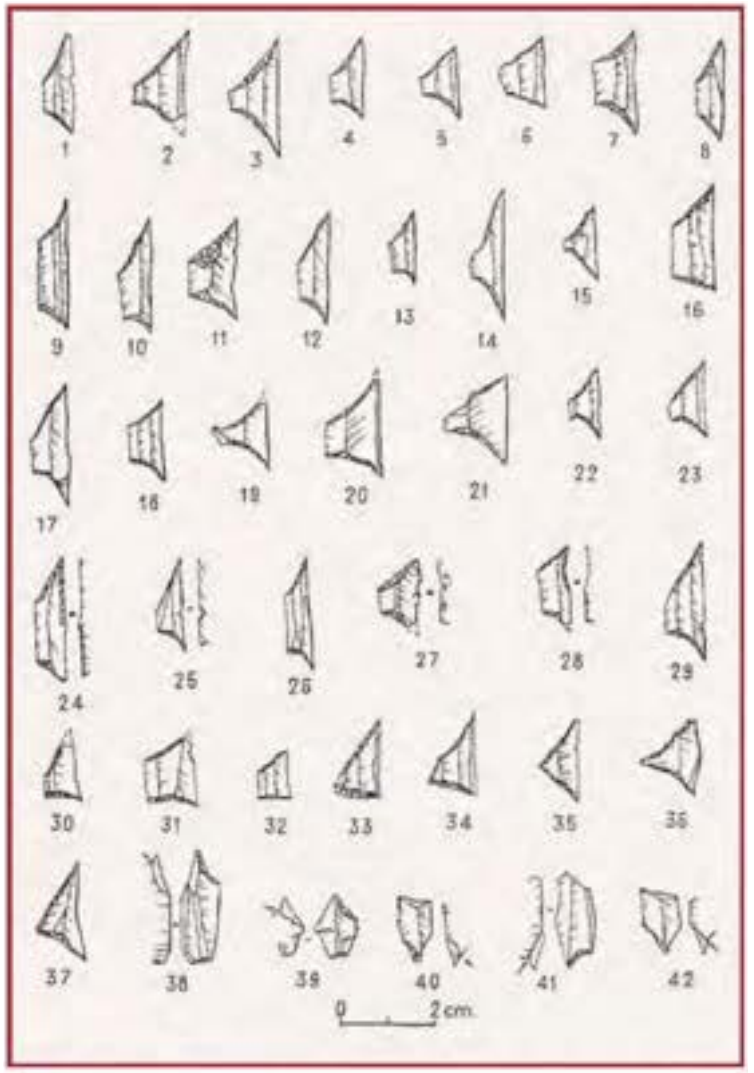


Moita do Sebastião. Lithic artifacts spatial distribution according to Roche (1960), reinterpreted by Alvim. Alvim, 2010: 43. Fig. 11. Red rectangle indicates the location of burial 9, excavated in a breccia and ashes zone.

❑ Moita do Sebastião (Muge, Portugal) (ID129)



Moita do Sebastião (J. Roche collection). Blade débitage. Marchand, 2001: 94.



Moita do Sebastião. Geometric armatures and microburins. Carvalho, 2009: 45. Fig. 13

❑ Vale Romeiras (Sado, Portugal)(ID160)

Vale Romeiras (ID160), the smallest shellmidden in the Sado valley entirely excavated between during the 60s of XXth century (Arnaud 1989; Peyroteo 2016: 292). Despite recovery of finding was intensive there is no precise stratigraphic attribution for the lithic assemblages. Studies on lithic collections have identified a predominance of asymmetric trapezes at this site (Arnaud 1999: 621-624), interpreted as the oldest phase of the Late Mesolithic in Portugal (Marchand 2001).

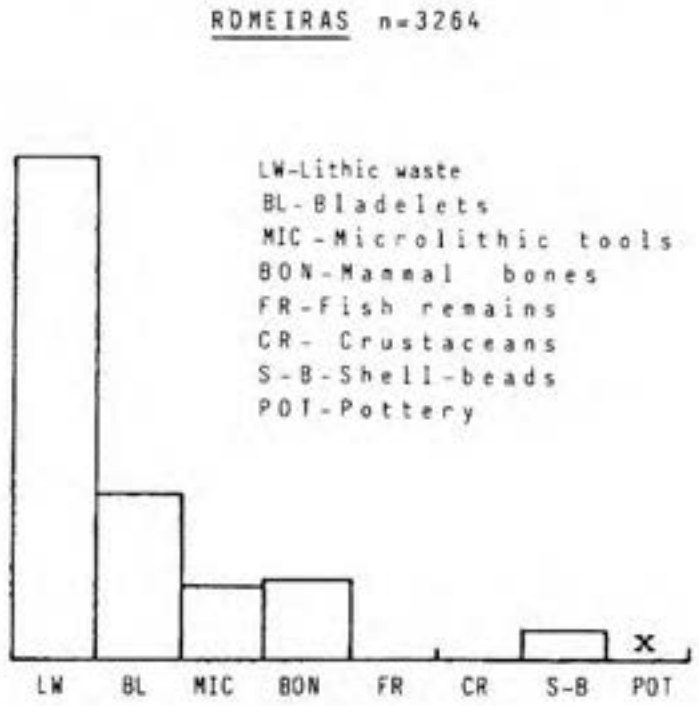
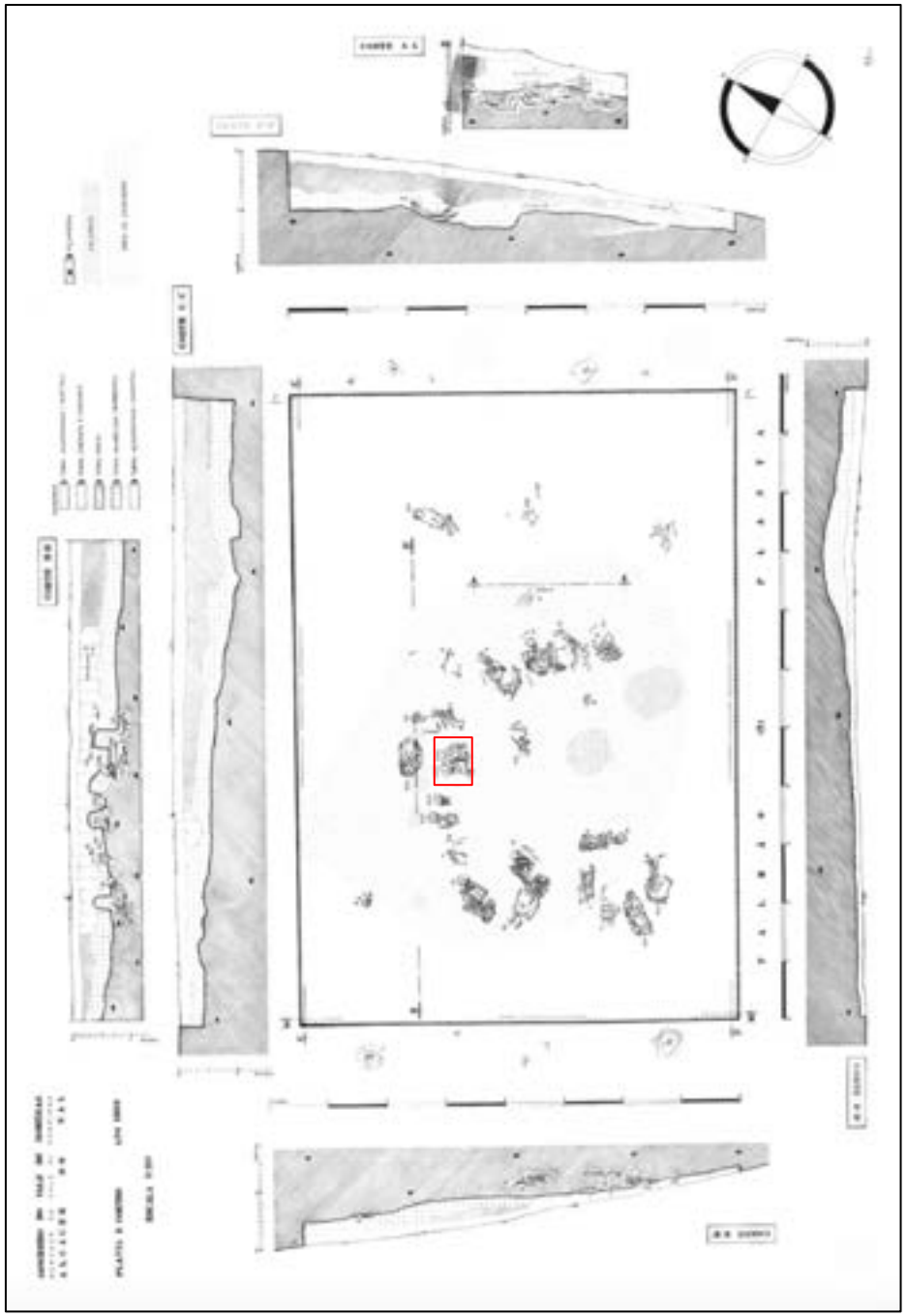


Diagram of the major classes of artifacts and faunal remains. Arnaud, 1989: p.623, fig. 7

The oldest radiocarbon date corresponds to a bone collagen sample from Sk. 19 (Ua-46972: 7640 ±55 BP, 8376 median cal BP). According to the graphic documentation, this burial was found in layer 5, penultimate layer over the bedrock, at 60 cm depth, (Peyroteo 2016: 295).

Sado valley: site plan and profiles of the excavation area. (Adapted from a photograph by J. P. Ruas. MNA, 1959, D. Sousa, A120). Peyroteo-Stjerna, R. (2016, 293, fig. 4.45)



❑ Vale Romeiras (Sado, Portugal)(ID160)

Peyroteo, 2016: 476.
At the Sado valley, the association of the human remains with deposits of shells is not always clear. Most burials were found in the basal sand layer below the more compact layer with shells (Arnaud 1989, 621), as indicated by the site profiles. However, some burials seem to be eccentric to this pattern. At Vale de Romeiras, individuals 19 and 21 were found outside the shell midden area (fig. 4.45) in chestnut brown sand (layer 5) without being covered by a layer of shells (fig. 6.6).

Peyroteo, 2016: 477.
VR1959, Sk19 is the oldest burial known at both the Sado and Tagus valley (6593– 6370 cal BCE, 95% probability) and this shell-free deposition supports the hypothesis of the burial activity preceding the deposits of shells.

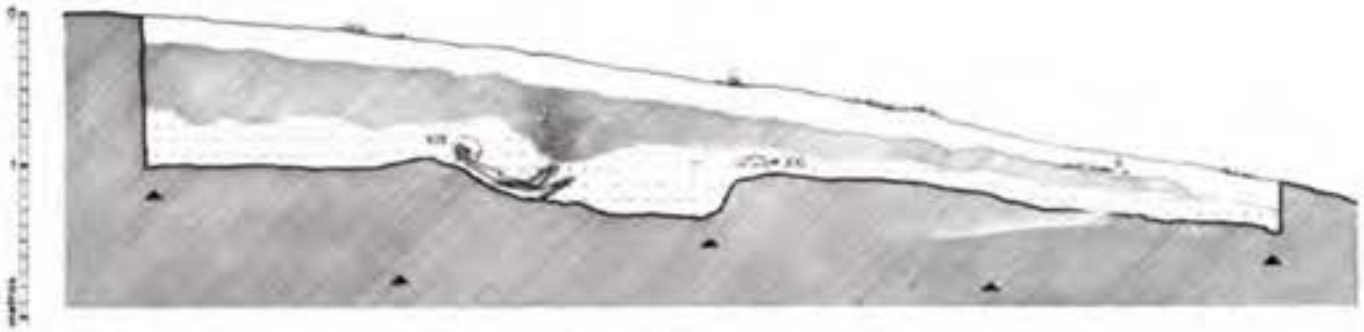


Figure 6.6. Profile F–F', Vale de Romeiras, Sado valley. Individuals 19 and 21 lie in the chestnut brown sand (layer 5) at 60 cm and 41 cm deep, respectively. This layer is covered by black soil (layer 3) and the top soil (layer 1). In this part of the site, the grey soil with shells (layer 2) and yellowish clay-like soil (layer 4) were not identified. (Adapted from a photograph by J. P. Ruas. MNA, 1959, D. Sousa, A120-detail)

Peyroteo-Stjerna, R. (2016, 476, fig. 6.6)