

UNIVERSIDADE DE LISBOA

Faculdade de Letras



**Last hunter-gatherers in Eurasia: a comparative approach to shell midden site structure
and function between Atlantic Europe and Japan**

(Appendices)

Diana Rita da Graça Nukushina

Orientador(es): Prof. Doutora Mariana Teodósia de Lemos Castelo Branco Diniz

Prof. Doutor Grégor Marchand †

Prof. Doutora Naoko Matsumoto

Tese especialmente elaborada para obtenção do grau de Doutor em Arqueologia e Pré-História

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Júri:

Presidente:

Doutor Luís Filipe Sousa Barreto, Professor Catedrático da Área de História da Faculdade de Letras da Universidade de Lisboa e membro do Conselho Científico

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- Doutora Mariana Teodósia de Lemos Castelo Branco Diniz, Professora Associada, Departamento de História da Faculdade de Letras da Universidade de Lisboa (Orientadora)

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A. Supplementary material of Chapter 4

Table A 1: Summary table of archaeological site data classified by parameter.

Name	Country	Group	Altitude (m)	Distance to the main water source	Main aquatic environment	Shell midden type	Area of distribution of shells (m ²)	Thickness of shell deposit (m)	Malacological species	Animal classes	Artefacts	Chipped stone tools	Human burials	No of human burials	Non-burial features	No of non-burial features	Dwelling features	Activities	Shell midden accumulation	Period of site occupation
Moita do Sebastião	PT	Tejo	20	Between 2 and 5 km	Brackish water	Mound	5888	2.5	Diverse	Diverse	Diverse	Diverse	Yes	Abundant	Yes	Abundant	Possible	Diverse	Unknown	More than 1000 years
Cabeço da Arruda	PT	Tejo	10	Between 2 and 5 km	Brackish water	Mound	4710	7	Diverse	Diverse	Diverse	Diverse	Yes	Abundant	Yes	Abundant?	No	Diverse	Unknown	More than 1000 years
Cabeço da Amoreira	PT	Tejo	20	Between 2 and 5 km	Brackish water	Mound	3533	2.5	Diverse	Diverse	Diverse	Diverse	Yes	Abundant	Yes	Abundant	No	Diverse	Between 200 to 1000 years	More than 1000 years
Cabeço dos Morros	PT	Tejo	7	Between 2 and 5 km	Brackish water	Mound?	Unknown	0.50?	Diverse	Diverse	Limited	Diverse	Possible	Rare	Yes	Rare	No	Diverse	Unknown	Unknown
Magos de Baixo	PT	Tejo	Unknown	Less than 2 km	Brackish water	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Cabeço da Barragem	PT	Tejo	Unknown	Less than 2 km	Brackish water	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Arneiro do Roquete/Cova da Onça	PT	Tejo	20	Less than 2 km	Brackish water	Mound?	Unknown	Unknown	Diverse	Diverse	Limited	Diverse	Yes	Abundant	Yes	Rare	No	Diverse	Unknown	Between 200 to 1000 years?
Magos de Cima	PT	Tejo	Unknown	Less than 2 km	Brackish water	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Fonte do Padre Pedro	PT	Tejo	12	Less than 2 km	Brackish water	Unknown	3925	1?	Limited*	Limited	Limited	Diverse	Yes	Rare	No	NA	No	Limited	Unknown	Unknown
Flor da Beira	PT	Tejo	16	Between 2 and 5 km	Brackish water	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	Yes	Rare	No	NA	No	Unknown	Unknown	Unknown
Fonte da Moça I	PT	Tejo	14	Less than 2 km	Brackish water	Layer?	Unknown	Unknown	Limited	Diverse	Limited	Diverse	Possible	Rare	No	NA	No	Limited	Unknown	Unknown
Fonte da Moça II	PT	Tejo	20	Less than 2 km	Brackish water	Layer?	More than 2500	Unknown	Limited	Diverse	Limited	Diverse	Possible	Rare	No	NA	No	Limited	Unknown	Unknown
Monte dos Ossos	PT	Tejo	10	Less than 2 km	Brackish water	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Arapouco	PT	Sado	47	Less than 2 km	Brackish water	Layer	1174	Unknown	Diverse	Limited	Diverse	Diverse	Yes	Abundant	Yes	Unknown	No	Diverse	Unknown	Between 200 to 1000 years?
Cabeço do Rebolador	PT	Sado	55	Less than 2 km	Brackish water	Layer	1000	Unknown	Limited	Limited	Diverse	Diverse	No	NA	No	NA	No	Limited	Unknown	Unknown
Amoreiras	PT	Sado	52	Less than 2 km	Brackish water	Layer	1270	0.9	Diverse	Limited	Diverse	Diverse	Yes	Rare	Yes	Rare	No	Diverse	Unknown	More than 1000 years
Cabeço do Pez	PT	Sado	57	Less than 2 km	Brackish water	Layer	8000	0.7	Limited	Diverse	Diverse	Diverse	Yes	Abundant	Yes	Abundant	No	Diverse	Unknown	More than 1000 years
Vale de Romeiras	PT	Sado	55	Less than 2 km	Brackish water	Layer	54	0.5	Limited	Limited	Diverse	Diverse	Yes	Abundant	Yes	Rare	No	Diverse	Unknown	More than 1000 years
Poças de S. Bento	PT	Sado	80	Between 2 and 5 km	Brackish water	Layer	3500	0.8	Limited	Diverse	Diverse	Diverse	Yes	Abundant	Yes	Abundant	No	Diverse	Between 200 to 1000 years?	More than 1000 years
Barreirão	PT	Sado	66	Less than 2 km	Brackish water	Layer	Unknown	Unknown	Unknown	Unknown	Limited	Unknown or absent	No	NA	No	NA	No	Limited	Unknown	Unknown
Fonte da Mina	PT	Sado	70	Between 2 and 5 km	Brackish water	Layer	Unknown	0.3	Limited	Limited	Limited	Diverse*	No	NA	No	NA	No	Unknown	Unknown	Unknown
Barrada das Vieiras	PT	Sado	20	Less than 2 km	Brackish water	Layer	100	Unknown (total 1m)	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Várzea da Mó	PT	Sado	19	Less than 2 km	Brackish water	Layer	Unknown	1.2	Unknown	Unknown	Limited	Diverse	Yes	Rare	No	NA	No	Diverse	Unknown	Unknown
Barrada do Grilo	PT	Sado	61	Between 2 and 5 km	Brackish water	Layer	Unknown	0.45	Limited	Unknown	Limited	Limited*	No	NA	No	NA	No	Unknown	Unknown	Unknown
Barranco da Moura	PT	Sado	50	More than 5 km	Brackish water	Layer	300	Unknown	Limited	Unknown	Limited	Diverse*	No	NA	Possible	Rare	No	Unknown	Unknown	Unknown
Samouqueira I	PT	SW Coast	20	Less than 2 km	Saltwater (open coast)	Layer	Unknown	Unknown	Limited	Diverse	Limited	Diverse	Yes	Rare	No	NA	No	Diverse	Unknown	Unknown
Vidigal	PT	SW Coast	64	Less than 2 km	Brackish water + saltwater (open coast)	Layer	5000	0.3	Diverse	Limited	Limited	Diverse	No	NA	Yes	Rare	No	Diverse	Unknown	Unknown
Medo Tojeiro	PT	SW Coast	50	Less than 2 km	Saltwater (open coast)	Layer	50	0.9	Diverse	Limited	Diverse	Diverse	No	NA	Yes	Rare	No	Diverse	Unknown	Unknown

Fiais	PT	SW Coast	110	Between 2 and 5 km	Brackish water + saltwater (open coast)	Layer	4000	0.7	Diverse	Limited	Limited	Diverse	Possible	NA	Yes	Rare	No	Diverse	Unknown	Unknown
Montes de Baixo	PT	SW Coast	20?	Between 2 and 5 km	Brackish water + saltwater (open coast)	Layer	1500	0.8	Diverse	Limited	Limited	Limited	No	NA	No	NA	No	Limited	Unknown	Unknown
Paço Velho 2	PT	SW Coast	64	Between 2 and 5 km	Brackish water + saltwater (open coast)	Layer	Unknown	Unknown	Limited	Limited	Limited	Diverse*	No	NA	No	NA	No	Limited	Unknown	Unknown
Castelejo	PT	SW Coast	20	Less than 2 km	Saltwater (open coast)	Layer	Unknown	Unknown	Limited	Limited	Limited	Limited	No	NA	No	Rare	No	Limited	Unknown	Unknown
Armação Nova/Rocha das Gaivotas	PT	SW Coast	60	Less than 2 km	Saltwater (open coast)	Layer	Unknown	0.35	Diverse	Limited	Limited	Limited	No	NA	Yes	Rare	No	Limited	Between 200 to 1000 years?	More than 1000 years
São Julião C	PT	Estremadura	10	Less than 2 km	Brackish water + saltwater (open coast)	Layer	Unknown	0.25	Diverse	Limited	Limited	Limited*	No	NA	Yes	Abundant	No	Limited	Between 200 to 1000 years?	More than 1000 years
Abrigo Grande das Bocas	PT	Estremadura	100	More than 5 km	Brackish water + saltwater (open coast)	Layer	Unknown	Unknown	Limited	Limited	Limited	Diverse	No	NA	No	NA	No	Limited	Unknown	More than 1000 years
Forno da Cal	PT	Estremadura	200	Less than 2 km	Brackish water	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Buraca Grande	PT	Estremadura	270	More than 5 km	Saltwater (open coast)?	Layer	?	?	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Forno da Telha	PT	Estremadura	110	More than 5 km	Brackish water	Layer	?	?	Limited	Limited	Limited	Diverse	No	NA	No	NA	No	Unknown	Unknown	More than 1000 years
Beg-er-Vil	FR	Brittany	5	Less than 2 km	Saltwater (open coast)	Layer	130	0.4	Diverse	Diverse	Diverse	Diverse	No	NA	Yes	Abundant	Yes	Diverse	Less than 200 years	Less than 200 years
Beg-an-Dorchenn	FR	Brittany	16	Less than 2 km	Saltwater (open coast)	Layer (mound?)	100	0.4 (1.6?)	Diverse	Diverse	Diverse	Diverse	No	NA	Yes	Abundant	No	Diverse	Between 200 to 1000 years?	Between 200 to 1000 years?
Tévic	FR	Brittany	10	Less than 2 km	Saltwater (open coast)	Layer	200	1	Diverse	Diverse	Diverse	Diverse*	Yes	Abundant	Yes	Abundant	No	Diverse	Unknown	More than 1000 years?
Hoëdic	FR	Brittany	6	Less than 2 km	Saltwater (open coast)	Layer	200	0.5	Diverse	Diverse	Diverse	Diverse	Yes	Abundant	Yes	Rare?	No	Diverse	Unknown	Between 200 to 1000 years?
Saint-Gildas 1B	FR	Brittany	8.5	Less than 2 km	Brackish water	Spot	2?	0.25	Limited	Limited	Limited	Diverse	No	NA	No	NA	No	Limited	Between 200 to 1000 years?	Between 200 to 1000 years?
Saint-Gildas 1C	FR	Brittany	?	Less than 2 km	Brackish water	Unknown	Unknown	Unknown	Limited	Limited	Limited	Diverse	No	NA	No	NA	No	Limited	Unknown	Unknown
Arida	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Limited	Limited	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Less than 200 years?
Jomi (Higashiodo)	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Unknown	Diverse	Unknown or absent	Yes	Unknown	No	NA	No	Unknown	Unknown	Less than 200 years?
Daido iseki 1	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Daido iseki 2	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Higashi Mura	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Limited?	Unknown	Limited	Unknown or absent	Yes	Unknown	No	NA	No	Unknown	Unknown	Unknown
Kasaoka Kougyou Koukou Guraundo iseki	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Limited	Diverse	Limited	No	NA	No	NA	No	Diverse	Unknown	More than 1000 years
Tsukumo	JP	Okayama	4	Less than 2 km	Saltwater (inner bay)	Layer	2400	0.9	Diverse	Diverse	Diverse	Diverse	Yes	Abundant	No	NA	No	Diverse	Unknown	More than 1000 years
Hara	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Layer	Unknown	Unknown	Limited	Limited	Diverse	Limited	Yes	Unknown	No	NA	No	Diverse?	Unknown	More than 1000 years
Nakatsu	JP	Okayama	5	Less than 2 km	Saltwater (inner bay)	Layer	Unknown	0.1	Diverse	Limited	Diverse	Diverse	Yes	Abundant	No	NA	No	Diverse	Unknown	More than 1000 years
Nishimoto hama	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Layer	Unknown	Unknown	Unknown	Unknown	Limited	Unknown or absent	Yes	Rare	No	NA	No	Limited	Unknown	More than 1000 years
Higashimoto hama	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Unknown	Limited	Limited	Unknown or absent	No	NA	No	NA	No	Limited	Unknown	Unknown
Awara	JP	Okayama	2	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Limited	Diverse	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	More than 1000 years
Kishimoto	JP	Okayama	4	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Limited	Diverse	Limited	No	NA	No	NA	No	Limited	Unknown	More than 1000 years
Tsukinoki	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Unknown	Limited	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	More than 1000 years

Hama	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	More than 1000 years
Shimaji	JP	Okayama	7	Less than 2 km	Saltwater (inner bay)	Layer	400	0.16?	Unknown	Unknown	Limited	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	More than 1000 years
Suzumimatsu	JP	Okayama	3.4	Less than 2 km	Saltwater (inner bay)	Layer	600?	0.3	Diverse	Limited	Diverse	Limited	Yes	Abundant	Yes	Rare	No	Diverse	Unknown	More than 1000 years
Satogi	JP	Okayama	4	Less than 2 km	Saltwater (inner bay)	Layer	2000	0.7	Limited	Limited	Diverse	Limited	Yes	Abundant	No	NA	No	Diverse	More than 1000 years?	More than 1000 years
Tsurajimanishi no ura	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Unknown	Unknown	Limited	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Nishioka	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Layer	3000	0.05?	Limited	Limited	Diverse	Limited	Yes	Abundant	No	NA	No	Diverse	Unknown	Less than 200 years?
Kurosaki	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Limited	Limited	Unknown or absent	No	NA	No	NA	No	Limited	Unknown	More than 1000 years
Nakaobie	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Itsukaichi	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Hashima	JP	Okayama	2	Less than 2 km	Saltwater (inner bay)	Unknown	750	Unknown	Limited	Limited	Diverse	Limited	Yes	Abundant	No	NA	No	Diverse	Between 200 to 1000 years?	More than 1000 years
Funagura	JP	Okayama	7	Less than 2 km	Saltwater (inner bay)	Layer	64	0.4	Diverse	Diverse	Diverse	Diverse*	Yes	Rare	Yes	Rare	No	Diverse	Unknown	More than 1000 years
Urada	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Fukuda	JP	Okayama	3	Less than 2 km	Saltwater (inner bay)	Layer	Unknown	1	Limited	Diverse	Diverse	Unknown or absent	Yes	Rare	No	NA	No	Diverse	Between 200 to 1000 years?	More than 1000 years
Funamoto	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Layer	Unknown	0.6	Limited	Limited	Limited	Limited	Yes	Abundant	No	NA	No	Diverse	Unknown	More than 1000 years
Iso no mori	JP	Okayama	5	Less than 2 km	Saltwater (inner bay)	Layer	300	1.2	Diverse	Diverse	Diverse	Limited	Yes	Unknown	No	NA	No	Diverse	Between 200 to 1000 years?	More than 1000 years
Funatsubara	JP	Okayama	5	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Diverse	Diverse	Limited	No	NA	No	NA	No	Diverse	Unknown	More than 1000 years
Hikozaki	JP	Okayama	6	Less than 2 km	Saltwater (inner bay)	Mound	10000	1.7	Diverse	Diverse	Diverse	Diverse	Yes	Abundant	Yes	Abundant	No	Diverse	More than 1000 years	More than 1000 years
Yabeokuda iseki	JP	Okayama	18	Between 2 and 5 km	Brackish water + saltwater (inner bay)	Layer	450	1	Diverse	Diverse	Diverse	Diverse*	Possible	NA	Yes	Rare	No	Diverse	Unknown	More than 1000 years
Nishio	JP	Okayama	3	Less than 2 km	Brackish water + saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Limited	Diverse	Limited	No	NA	No	NA	No	Limited	Unknown	Unknown
Ouchida	JP	Okayama	Unknown	Less than 2 km	Brackish water + saltwater (inner bay)	Layer	Unknown	0.85	Limited	Limited	Limited	Unknown or absent	No	NA	No	NA	No	Limited	Unknown	More than 1000 years
Senoo	JP	Okayama	Unknown	Less than 2 km	Saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Limited	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	More than 1000 years
Asanebana	JP	Okayama	Unknown	Less than 2 km	Brackish water	Layer	Unknown	0.26	Limited	Diverse	Diverse	Diverse	No	NA	Yes	Rare	No	Diverse	Unknown	More than 1000 years
Hyakkengawa sawada iseki	JP	Okayama	Unknown	Less than 2 km	Brackish water + saltwater (inner bay)	Spot	Less than 8	0.1	Limited	Diverse*	Diverse*	Diverse*	No	NA	Yes*	Abundant*	No	Diverse	Unknown	More than 1000 years
Numa	JP	Okayama	5	Less than 2 km?	Brackish water + saltwater (inner bay)	Layer	Unknown	0.3	Limited	Limited	Diverse	Limited	No	NA	No	NA	No	Limited	Unknown	Unknown
Takehara	JP	Okayama	Unknown	Less than 2 km	Brackish water + saltwater (inner bay)	Layer	Unknown	Unknown	Limited	Limited	Limited	Limited	No	NA	No	NA	No	Limited	Unknown	Unknown
Kanayama nishi	JP	Okayama	10	Less than 2 km	Brackish water + saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Limited	Limited	Unknown or absent	No	NA	No	NA	No	Limited	Unknown	Unknown
Miyashita	JP	Okayama	6	Less than 2 km	Brackish water + saltwater (inner bay)	Layer	Unknown	Unknown	Limited	Limited	Limited	Limited	No	NA	No	NA	No	Limited	Unknown	More than 1000 years
Yamate	JP	Okayama	Unknown	Less than 2 km	Brackish water + saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown
Shintoku Kaizuka B	JP	Okayama	Unknown	Less than 2 km	Brackish water + saltwater (inner bay)	Layer	Unknown	0.8	Diverse	Limited	Limited	Unknown or absent	No	NA	No	NA	No	Limited	Unknown	Unknown

Ohashi	JP	Okayama	8	Less than 2 km	Brackish water + saltwater (inner bay)	Mound	3750	More than 2	Diverse	Limited	Diverse	Limited	Yes	Rare	No	NA	No	Diverse	Unknown	More than 1000 years
Enbari Higashi	JP	Okayama	0.4	Less than 2 km	Brackish water	Layer	Unknown	0.4	Limited	Limited	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	More than 1000 years
Kurowa	JP	Okayama	Unknown	Less than 2 km	Unknown	Mound	Unknown	2	Unknown	Unknown	Diverse	Limited	No	NA	No	NA	No	Limited	Unknown	Unknown
Habarizaki	JP	Okayama	11	Less than 2 km	Brackish water + saltwater (inner bay)	Unknown	Unknown	Unknown	Limited	Limited	Unknown	Unknown or absent	No	NA	Yes	Rare	No	Unknown	Unknown	Unknown
Inujima	JP	Okayama	10.75	Less than 2 km	Brackish water + saltwater (inner bay)	Layer	Unknown	0.4	Diverse	Limited	Diverse	Unknown or absent	Possible	NA	No	NA	No	Limited?	Unknown	Unknown
Kuroshima	JP	Okayama	33	Less than 2 km	Brackish water + saltwater (inner bay)	Layer	9	0.1	Diverse	Limited	Limited	Limited	No	NA	Yes	Rare	Possible	Diverse?	Unknown	Unknown
Kishima	JP	Okayama	30	Less than 2 km	Brackish water + saltwater (inner bay)	Layer	129	0.25	Diverse	Limited	Diverse	Limited	No	NA	No	NA	No	Limited	Unknown	Unknown
Naganawate	JP	Okayama	Unknown	Less than 2 km	Unknown	Layer	Unknown	Unknown	Unknown	Unknown	Diverse	Limited	No	NA	Yes*	Abundant*	Yes*	Diverse	Unknown	Unknown
Yanagi no tani	JP	Okayama	Unknown	Less than 2 km	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown or absent	No	NA	No	NA	No	Unknown	Unknown	Unknown

Notes:

PT (Portugal), FR (France), JP (Japan)

*Based on limited information

A1. Supplementary material of subchapter 4.2 (case studies from the Late Mesolithic of Atlantic Europe)

A1.1. Portugal

Table A 2: Site description table of Moita do Sebastião, Portugal.

Name	Moita do Sebastião (Fonte da Burra)
Location	Salvaterra de Magos, Santarém, Portugal
Coordinates (datum WGS84)	39.106428, -8.682857
Site setting	20 m of altitude, riverbank terrace
Distance to the main water source in the past	Between 2 and 5 km
Preservation	Almost destroyed (national monument)
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary)
Shell midden type	Mound
Area of distribution of shells	About 5888 m ² (90–100 m x 75 m, oval form)
Total thickness of the shell deposit	2.5 m (minimum estimated volume: 6500 m ³)
Malacological species	Diverse
Main malacological species	<i>Cerastoderma edule</i> , <i>Scrobicularia plana</i> , <i>Neritina fluviatilis</i>
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (abundant, with possible dwelling features)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Mesolithic

Table A 3: Site description table of Cabeço da Arruda, Portugal.

Name	Cabeço da Arruda
Location	Salvaterra de Magos, Santarém, Portugal
Coordinates (datum WGS84)	39.111495, -8.664779
Site setting	10 m of altitude, riverbank terrace
Distance to the main water source in the past	Between 2 and 5 km
Preservation	Almost destroyed (national monument)
Excavations in the twenty-first century	Yes (limited)
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary)
Shell midden type	Mound
Area of distribution of shells	About 4710 m ² (100 m x 60 m, oval form)
Total thickness of the shell deposit	7 m (estimated volume: 5000 m ³)
Malacological species	Diverse
Main malacological species	<i>Cerastoderma edule</i>
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (abundant?)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Mesolithic (Early Neolithic)

Table A 4: Site description table of Cabeço da Amoreira, Portugal.

Name	Cabeço da Amoreira
Location	Salvaterra de Magos, Santarém, Portugal
Coordinates (datum WGS84)	39.103338, -8.674119
Site setting	20 m of altitude, riverbank terrace
Distance to the main water source in the past	Between 2 and 5 km
Preservation	Good (national monument)
Excavations in the twenty-first century	Yes
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary)
Shell midden type	Mound
Area of distribution of shells	About 3533 m ² (90 x 50 m, oval form)
Total thickness of the shell deposit	2.5 m (estimated volume: 5000 m ³)
Malacological species	Diverse
Main malacological species	<i>Scrobicularia plana</i> (<i>Cerastoderma edule</i>)
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (abundant)
Activities	Diverse
Estimated period of shell midden accumulation	Between 200 and 1000 years (400-600 years?)
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Mesolithic (Early Neolithic)

Table A 5: Analysis of general parameters of the Tejo shell middens, Portugal.

Total number of considered sites		
13		
Mean altitude		
14.9 m (n=10)		
Distance to the main water source in the past		
<i>Distance</i>	<i>N</i>	<i>%</i>
Less than 2 km	8	61.54%
Between 2 and 5 km	5	38.46%
Total	13	100.00%
Main aquatic environment (associated with the shell midden or exploited)		
<i>Aquatic environment</i>	<i>N</i>	<i>%</i>
Brackish water	13	100.00%
Total	13	100.00%
Shell midden type		
<i>Type</i>	<i>N</i>	<i>%</i>
Layer?	2	15.38%
Mound	3	23.08%
Mound?	2	15.38%
Unknown	6	46.15%
Total	13	100.00%
Mean area of distribution of shells		
4514 m ² (n=4)		
Mean thickness of the shell deposit		
4 m (n=3)		
Animal classes		
<i>Animal classes</i>	<i>N</i>	<i>%</i>
Diverse	7	53.85%
Limited	1	7.69%
Unknown	5	38.46%
Total	13	100.00%

Malacological species

<i>Malacological species</i>	<i>N</i>	<i>%</i>
Diverse	5	38.46%
Limited	2	15.38%
Limited*	1	7.69%
Unknown	5	38.46%
Total	13	100.00%

Artefacts

<i>Artefacts</i>	<i>N</i>	<i>%</i>
Diverse	3	23.08%
Limited	5	38.46%
Unknown	5	38.46%
Total	13	100.00%

Chipped stone tools

<i>Chipped stone tools</i>	<i>N</i>	<i>%</i>
Diverse	8	61.54%
Unknown or absent	5	38.46%
Total	13	100.00%

Human burials

<i>Presence of human burials</i>	<i>N</i>	<i>%</i>
Yes	6	46.15%
No	4	30.77%
Possible	3	23.08%
Total	13	100.00%

<i>Number of human burials</i>	<i>N</i>	<i>%</i>
Abundant	4	30.77%
Rare	5	38.46%
NA	4	30.77%
Total	13	100.00%

Non-burial features

<i>Presence of non-burial features</i>	<i>N</i>	<i>%</i>
Yes	5	38.46%
No	8	61.54%
Total	13	100.00%

<i>Number of non-burial features</i>	<i>N</i>	<i>%</i>
Abundant	2	15.38%
Abundant?	1	7.69%
Rare	2	15.38%
NA	8	61.54%
Total	13	100.00%

Dwelling features

<i>Presence of dwelling features</i>	<i>N</i>	<i>%</i>
No	12	92.31%
Possible	1	7.69%
Total	13	100.00%

Activities

<i>Activities</i>	<i>N</i>	<i>%</i>
Diverse	5	38.46%
Limited	3	23.08%
Unknown	5	38.46%
Total	13	100.00%

Estimated period of shell midden accumulation

<i>Estimated period of shell midden accumulation</i>	<i>N</i>	<i>%</i>
Between 200 and 1000 years	1	7.69%
Unknown	12	92.31%
Total	13	100.00%

Estimated period of site occupation

<i>Estimated period of site occupation</i>	<i>N</i>	<i>%</i>
Between 200 and 1000 years?	1	7.69%
More than 1000 years	3	23.08%
Unknown	9	69.23%
Total	13	100.00%

Notes:

* Based on limited information

(Main references: Ribeiro, 1884; Roche, 1963; 1966; 1972; 1989; Rolão, 1999; Cardoso and Rolão, 2000; Rolão et al., 2006; Bicho et al., 2013; 2017; Gonçalves, 2014; Gonçalves et al., 2014; Dupont and Bicho, 2015; Peyroteo Stjerna, 2016)

Table A 6: Site description table of Poças de São Bento, Portugal.

Name	Poças de São Bento
Location	Alcácer do Sal, Setúbal, Portugal
Coordinates (datum WGS84)	38.252235228, -8.439803509
Site setting	80 m of altitude, riverbank plateau
Distance to the main water source in the past	Between 2 and 5 km
Preservation	Good
Excavations in the twenty-first century	Yes
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary)
Shell midden type	Layer
Area of distribution of shells	3500 m ² (irregular form)
Total thickness of the shell deposit	0.15–0.80 m
Malacological species	Limited
Main malacological species	<i>Scrobicularia plana</i> (<i>Cerastoderma edule</i>)
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (abundant)
Activities	Diverse
Estimated period of shell midden accumulation	Between 200 and 1000 years?
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Mesolithic (Early Neolithic, Middle Neolithic)

Table A 7: Site description table of Cabeço do Pez, Portugal.

Name	Cabeço do Pez (Quinta de Baixo and Quinta de D. Rodrigo)
Location	Alcácer do Sal, Setúbal, Portugal
Coordinates (datum WGS84)	38.252590007, -8.3351109
Site setting	57 m of altitude, riverbank hill
Distance to the main water source in the past	Less than 2 km
Preservation	Bad
Excavations in the twenty-first century	Yes (limited)
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary)
Shell midden type	Layer
Area of distribution of shells	4000–8000 m ² (irregular form)
Total thickness of the shell deposit	About 0.70 m
Malacological species	Limited
Main malacological species	<i>Scrobicularia plana</i> , <i>Cerastoderma edule</i>
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (abundant)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Mesolithic (Middle Neolithic)

Table A 8: Site description table of Vale de Romeiras, Portugal.

Name	Vale de Romeiras
Location	Alcácer do Sal, Setúbal, Portugal
Coordinates (datum WGS84)	38.253408712, -8.336452077
Site setting	55 m of altitude, riverbank hill
Distance to the main water source in the past	Less than 2 km
Preservation	Partially destroyed
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary)
Shell midden type	Layer
Area of distribution of shells	54 m ²
Total thickness of the shell deposit	About 0.50 m
Malacological species	Limited
Main malacological species	<i>Scrobicularia plana</i> , <i>Cerastoderma edule</i>
Faunal remains (other than shells)	Yes
Animal classes	Limited
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (rare)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Mesolithic

Table A 9: Site description table of Arapouco, Portugal.

Name	Arapouco
Location	Alcácer do Sal, Setúbal, Portugal
Coordinates (datum WGS84)	38.310281907, -8.492853314
Site setting	47 m of altitude, riverbank hill
Distance to the main water source in the past	Less than 2 km
Preservation	Partially destroyed
Excavations in the twenty-first century	Yes (limited)
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary)
Shell midden type	Layer
Area of distribution of shells	1174 m ² (oval form)
Total thickness of the shell deposit	Unknown
Malacological species	Diverse
Main malacological species	<i>Scrobicularia plana</i> , <i>Cerastoderma edule</i>
Faunal remains (other than shells)	Yes
Animal classes	Limited
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (unknown quantity)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	Between 200 and 1000 years
Main periods of occupation	Late Mesolithic

Table A 10: Site description table of Amoreiras, Portugal.

Name	Amoreiras (Cabeço das Amoreiras, São Romão)
Location	Alcácer do Sal, Setúbal, Portugal
Coordinates (datum WGS84)	38.24689407, -8.362704549
Site setting	52 m of altitude, riverbank hill
Distance to the main water source in the past	Less than 2 km
Preservation	Partially destroyed
Excavations in the twenty-first century	Yes (limited)
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary)
Shell midden type	Layer
Area of distribution of shells	1270 m ²
Total thickness of the shell deposit	0.90 m
Malacological species	Diverse
Main malacological species	<i>Scrobicularia plana</i> , <i>Cerastoderma edule</i>
Faunal remains (other than shells)	Yes
Animal classes	Limited
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (rare)
Presence of non-burial features	Yes (rare)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Mesolithic (Early Neolithic)

Table A 11: Analysis of general parameters of the Sado shell middens, Portugal.

Total number of considered sites		
12		
Mean altitude		
52.7 m (n=12)		
Distance to the main water source in the past		
<i>Distance</i>	<i>N</i>	<i>%</i>
Less than 2 km	8	66.67%
Between 2 and 5 km	3	25.00%
More than 5 km	1	8.33%
Total	12	100.00%
Main aquatic environment (associated with the shell midden or exploited)		
<i>Aquatic environment</i>	<i>N</i>	<i>%</i>
Brackish water	12	100.00%
Total	12	100.00%
Shell midden type		
<i>Type</i>	<i>N</i>	<i>%</i>
Layer	12	100.00%
Total	12	100.00%
Mean area of distribution of shells		
1925 m ² (n=8)		
Mean thickness of the shell deposit		
0.69 m (n=7)		
Animal classes		
<i>Animal classes</i>	<i>N</i>	<i>%</i>
Diverse	2	16.67%
Limited	5	41.67%
Unknown	5	41.67%
Total	12	100.00%

Malacological species

<i>Malacological species</i>	<i>N</i>	<i>%</i>
Diverse	2	16.67%
Limited	7	58.33%
Unknown	3	25.00%
Total	12	100.00%

Artefacts

<i>Artefacts</i>	<i>N</i>	<i>%</i>
Diverse	6	50.00%
Limited	5	41.67%
Unknown	1	8.33%
Total	12	100.00%

Chipped stone tools

<i>Chipped stone tools</i>	<i>N</i>	<i>%</i>
Diverse	7	58.33%
Diverse*	2	16.67%
Limited*	1	8.33%
Unknown or absent	2	16.67%
Total	12	100.00%

Human burials

<i>Presence of human burials</i>	<i>N</i>	<i>%</i>
Yes	6	50.00%
No	6	50.00%
Total	12	100.00%

<i>Number of human burials</i>	<i>N</i>	<i>%</i>
Abundant	4	33.33%
Rare	2	16.67%
NA	6	50.00%
Total	12	100.00%

Non-burial features

<i>Presence of non-burial features</i>	<i>N</i>	<i>%</i>
Yes	5	41.67%
No	6	50.00%
Possible	1	8.33%
Total	12	100.00%

<i>Number of non-burial features</i>	<i>N</i>	<i>%</i>
Abundant	2	16.67%
Rare	3	25.00%
NA	6	50.00%
Unknown	1	8.33%
Total	12	100.00%

Dwelling features

<i>Presence of dwelling features</i>	<i>N</i>	<i>%</i>
No	12	100.00%
Total	12	100.00%

Activities

<i>Activities</i>	<i>N</i>	<i>%</i>
Diverse	6	50.00%
Limited	2	16.67%
Unknown	4	33.33%
Total	12	100.00%

Estimated period of shell midden accumulation

<i>Estimated period of shell midden accumulation</i>	<i>N</i>	<i>%</i>
Between 200 and 1000 years?	1	8.33%
Unknown	11	91.67%
Total	12	100.00%

Estimated period of site occupation

<i>Estimated period of site occupation</i>	<i>N</i>	<i>%</i>
Between 200 and 1000 years?	1	8.33%
More than 1000 years	4	33.33%
Unknown	7	58.33%
Total	12	100.00%

Notes:

* Based on limited information

(Main references: Santos, 1967; 1968; Santos et al., 1974; Arnaud, 1986; 1987a; Arnaud and Larsson, 1987; Arnaud, 1988b; 1989; Araújo, 1995–1997; Arnaud, 2000; Marchand, 2001; Arnaud, 2002; Diniz and Arias, 2011; 2012; Diniz et al., 2013; Arias et al., 2015; 2016; Peyroteo Stjerna, 2016; Duarte et al., 2017)

Table A 12: Site description table of Fiais, Portugal.

Name	Fiais
Location	Odemira, Beja, Portugal
Coordinates (datum WGS84)	37.583423, -8.671986
Site setting	100 m of altitude, high river terrace (at approx. 10–12 km from the modern coast)
Distance to the main water source in the past	Between 2 and 5 km
Preservation	Partially destroyed
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary), saltwater (open rocky coast)
Shell midden type	Layer
Area of distribution of shells	4000 m ² (oval form)
Total thickness of the shell deposit	0.70 m
Malacological species	Diverse
Main malacological species	<i>Scrobicularia plana</i> , <i>Ostrea edulis</i>
Faunal remains (other than shells)	Yes
Animal classes	Limited
Artefacts	Limited
Chipped stone tools	Diverse
Presence of human burials	Possible (human remains)
Presence of non-burial features	Yes (rare)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	Unknown
Main periods of occupation	Late Mesolithic

Table A 13: Site description table of Montes de Baixo, Portugal.

Name	Montes de Baixo
Location	Odemira, Beja, Portugal
Coordinates (datum WGS84)	37.436918, -8.780535
Site setting	At 20 m(?) of altitude, riverbank hill (at 2 km from the coast)
Distance to the main water source in the past	Between 2 and 5 km
Preservation	Good
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary), saltwater (open rocky coast)
Shell midden type	Layer
Area of distribution of shells	1500 m ²
Total thickness of the shell deposit	0.80 m
Malacological species	Diverse
Main malacological species	<i>Mytilus sp.</i> , <i>Ostrea sp.</i> and <i>Scrobicularia plana</i>
Faunal remains (other than shells)	No
Animal classes	Limited
Artefacts	Limited
Chipped stone tools	Limited
Presence of human burials	No
Presence of non-burial features	No
Activities	Limited
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	Unknown
Main periods of occupation	Late Mesolithic (Chalcolithic)

Table A 14: Site description table of Rocha das Gaivotas/Armação Nova, Portugal.

Name	Rocha das Gaivotas/Armação Nova
Location	Vila do Bispo, Faro, Portugal
Coordinates (datum WGS84)	37.029955, -8.989244
Site setting	At 60 m of altitude, on a cliff
Distance to the main water source in the past	Less than 2 km
Preservation	Partially destroyed
Excavations in the twenty-first century	Yes
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (open rocky coast)
Shell midden type	Layer
Area of distribution of shells	Unknown
Total thickness of the shell deposit	0.35 m
Malacological species	Diverse
Main malacological species	<i>Pollicipes pollicipes</i> , <i>Patella sp.</i> and <i>Mytilus sp.</i>
Faunal remains (other than shells)	No
Animal classes	Limited
Artefacts	Limited
Chipped stone tools	Limited
Presence of human burials	No
Presence of non-burial features	Yes (rare)
Activities	Limited
Estimated period of shell midden accumulation	Between 200–1000 years?
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Early and Late Mesolithic (Early Mesolithic–Early Neolithic)

Table A 15: Analysis of general parameters of the shell middens of the southwestern coast of Alentejo and Algarve, Portugal.

Total number of considered sites		
8		
Mean altitude		
55 m (n=7)		
Distance to the main water source in the past		
<i>Distance</i>	<i>N</i>	<i>%</i>
Less than 2 km	5	62.50%
Between 2 and 5 km	3	37.50%
Total	8	100.00%
Main aquatic environment (associated with the shell midden or exploited)		
<i>Aquatic environment</i>	<i>N</i>	<i>%</i>
Brackish water + saltwater (open coast)	4	50.00%
Saltwater (open coast)	4	50.00%
Total	8	100.00%
Shell midden type		
<i>Type</i>	<i>N</i>	<i>%</i>
Layer	8	100.00%
Total	8	100.00%
Mean area of distribution of shells		
2638 m ² (n=4)		
Mean thickness of the shell deposit		
0.61 m (n=5)		
Animal classes		
<i>Animal classes</i>	<i>N</i>	<i>%</i>
Diverse	1	12.50%
Limited	7	87.50%
Total	8	100.00%

Malacological species

<i>Malacological species</i>	<i>N</i>	<i>%</i>
Diverse	5	62.50%
Limited	3	37.50%
Total	8	100.00%

Artefacts

<i>Artefacts</i>	<i>N</i>	<i>%</i>
Diverse	1	12.50%
Limited	7	87.50%
Total	8	100.00%

Chipped stone tools

<i>Chipped stone tools</i>	<i>N</i>	<i>%</i>
Diverse	4	50.00%
Diverse*	1	12.50%
Limited	3	37.50%
Total	8	100.00%

Human burials

<i>Presence of human burials</i>	<i>N</i>	<i>%</i>
Yes	1	12.50%
No	6	75.00%
Possible	1	12.50%
Total	8	100.00%

<i>Number of human burials</i>	<i>N</i>	<i>%</i>
Rare	1	12.50%
NA	7	87.50%
Total	8	100.00%

Non-burial features

<i>Presence of non-burial features</i>	<i>N</i>	<i>%</i>
Yes	4	50.00%
No	4	50.00%
Total	8	100.00%

<i>Number of non-burial features</i>	<i>N</i>	<i>%</i>
Rare	5	62.50%
NA	3	37.50%
Total	8	100.00%

Dwelling features

<i>Presence of dwelling features</i>	<i>N</i>	<i>%</i>
No	8	100.00%
Total	8	100.00%

Activities

<i>Activities</i>	<i>N</i>	<i>%</i>
Diverse	4	50.00%
Limited	4	50.00%
Total	8	100.00%

Estimated period of shell midden accumulation

<i>Estimated period of shell midden accumulation</i>	<i>N</i>	<i>%</i>
Between 200 and 1000 years?	1	12.50%
Unknown	7	87.50%
Total	8	100.00%

Estimated period of site occupation

<i>Estimated period of site occupation</i>	<i>N</i>	<i>%</i>
More than 1000 years	1	12.50%
Unknown	7	87.50%
Total	8	100.00%

Notes:

* Based on limited information

(Main references: Arnaud, 1987b; 1988a; 2002; Straus et al., 1990; Soares, 1996; Silva and Soares, 1997; Zilhão, 1998; Soares and Silva, 2004; Lubell et al., 2007; Reis, 2014; Valente et al., 2014; Jackes et al., 2019)

Table A 16: Analysis of general parameters of the Late Mesolithic shell middens in Portugal.

Total number of considered sites

38

Mean altitude

55 m (n=34)

Distance to the main water source in the past

<i>Distance</i>	<i>N</i>	<i>%</i>
Less than 2 km	23	60.53%
Between 2 and 5 km	11	28.95%
More than 5 km	4	10.53%
Total	38	100.00%

Main aquatic environment (associated with the shell midden or exploited)

<i>Aquatic environment</i>	<i>N</i>	<i>%</i>
Brackish water	27	71.05%
Brackish water + saltwater (open coast)	6	15.79%
Saltwater (open coast)	4	10.53%
Saltwater (open coast)?	1	2.63%
Total	38	100.00%

Shell midden type

<i>Type</i>	<i>N</i>	<i>%</i>
Layer	24	63.16%
Layer?	2	5.26%
Mound	3	7.89%
Mound?	2	5.26%
Unknown	7	18.42%
Total	38	100.00%

Mean area of distribution of shells

2750 m² (n=16)

Mean thickness of the shell deposit

1.26 m (n=16)

Malacological species

<i>Malacological species</i>	<i>N</i>	<i>%</i>
Diverse	13	34.21%
Limited	14	36.84%
Limited*	1	2.63%
Unknown	10	26.32%
Total	38	100.00%

Artefacts

<i>Artefacts</i>	<i>N</i>	<i>%</i>
Diverse	10	26.32%
Limited	20	52.63%
Unknown	8	21.05%
Total	38	100.00%

Chipped stone tools

<i>Chipped stone tools</i>	<i>N</i>	<i>%</i>
Diverse	21	55.26%
Diverse*	3	7.89%
Limited	3	7.89%
Limited*	2	5.26%
Unknown or absent	9	23.68%
Total	38	100.00%

Human burials

<i>Presence of human burials</i>	<i>N</i>	<i>%</i>
Yes	13	34.21%
No	21	55.26%
Possible	4	10.53%
Total	38	100.00%

<i>Number of human burials</i>	<i>N</i>	<i>%</i>
Abundant	8	21.05%
Rare	8	21.05%
NA	22	57.89%
Total	38	100.00%

Non-burial features

<i>Presence of non-burial features</i>	<i>N</i>	<i>%</i>
Yes	15	39.47%
No	22	57.89%
Possible	1	2.63%
Total	38	100.00%

<i>Number of non-burial features</i>	<i>N</i>	<i>%</i>
Abundant	5	13.16%
Abundant?	1	2.63%
Rare	10	26.32%
Unknown	1	2.63%
NA	21	55.26%
Total	38	100.00%

Dwelling features

<i>Presence of dwelling features</i>	<i>N</i>	<i>%</i>
No	37	97.37%
Possible	1	2.63%
Total	38	100.00%

Activities

<i>Activities</i>	<i>N</i>	<i>%</i>
Diverse	15	39.47%
Limited	11	28.95%
Unknown	12	31.58%
Total	38	100.00%

Estimated period of shell midden accumulation

<i>Estimated period of accumulation</i>	<i>N</i>	<i>%</i>
Between 200 and 1000 years	1	2.63%
Between 200 and 1000 years?	3	7.89%
Unknown	34	89.47%
Total	38	100.00%

Estimated period of site occupation

<i>Estimated period of site occupation</i>	<i>N</i>	<i>%</i>
Between 200 and 1000 years?	2	5.26%
More than 1000 years	11	28.95%
Unknown	25	65.79%
Total	38	100.00%

Notes:

* Based on limited information

(Main references: Ribeiro, 1884; Roche, 1966; 1972; 1989; Santos et al., 1974; 1974; Arnaud, 1989; 2000; 2002; Soares, 1996; Zilhão, 1998; Rolão, 1999; Marchand, 2001; Lubell et al., 2007; Carvalho, 2008; 2009; Diniz and Arias, 2012; Bicho et al., 2013; 2017; Gonçalves, 2014; Gonçalves et al., 2014; Reis, 2014; Valente et al., 2014; Arias et al., 2015; Peyroteo Stjerna, 2016; Sousa et al., 2016)

A1.2. France

Table A 17: Site description table of Beg-er-Vil, France.

Name	Beg-er-Vil
Location	Quiberon, Morbihan, France
Coordinates (datum WGS84)	47.47261, -3.10909
Site setting	At 5 m of altitude, on a cliff of a low rocky point
Distance to the main water source in the past	Less than 2 km (150–500 m from the coast during the Mesolithic)
Preservation	Partially destroyed
Excavations in the twenty-first century	Yes
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (open rocky coast)
Shell midden type	Layer
Area of distribution of shells	130 m ² (irregular/unknown form)
Total thickness of the shell deposit	0.20–0.40 m
Malacological species	Diverse
Main malacological species	<i>Mytilus edulis</i> , <i>Patella</i> sp., <i>Littorina littorea</i> , <i>Cerastoderma edule</i> , <i>Osilinus lineatus</i> , <i>Nucella lapillus</i> and <i>Ostrea edulis</i>
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	No (some isolated human remains)
Presence of non-burial features	Yes (abundant, with dwelling features)
Activities	Diverse
Estimated period of shell midden accumulation	Less than 200 years
Estimated period of site occupation	Less than 200 years
Main periods of occupation	Late Mesolithic

Table A 18: Site description table of Beg-an-Dorchenn, France.

Name	Beg-an-Dorchenn (Pointe de la Torche, Pointe du Coussin)
Location	Plomeur, Finistère
Coordinates (datum WGS84)	47.83699, -4.35328
Site setting	At 16 m of altitude, on a cliff of a promontory
Distance to the main water source in the past	Less than 2 km (10–500 m from the coast during the Mesolithic)
Preservation	Almost destroyed
Excavations in the twenty-first century	Yes (limited)
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (open rocky coast)
Shell midden type	Layer
Area of distribution of shells	80–100 m ² (lenticular form)
Total thickness of the shell deposit	0.30–0.40 m (1.60 m in the past?)
Malacological species	Diverse
Main malacological species	<i>Patella</i> sp. (<i>Cerastoderma edule</i> and <i>Ruditapes decussatus</i>)
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	No
Presence of non-burial features	Yes (abundant)
Activities	Diverse
Estimated period of shell midden accumulation	200–1000 years?
Estimated period of site occupation	200–1000 years?
Main periods of occupation	Late Mesolithic

Table A 19: Site description table of Tévéc, France.

Name	Tévéc
Location	Tévéc, Saint-Pierre-de-Quiberon, Morbihan
Coordinates (datum WGS84)	47.55713, -3.16625
Site setting	At 10 m of altitude, on a cliff. Currently, on island.
Distance to the main water source in the past	Less than 2 km (20–1000 m from the coast during the Mesolithic)
Preservation	Almost destroyed
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (open rocky coast)
Shell midden type	Layer
Area of distribution of shells	200 m ²
Total thickness of the shell deposit	0.60–1 m
Malacological species	Diverse
Main malacological species	<i>Patella</i> sp., <i>Osilinus lineatus</i> and <i>Ostrea edulis</i>
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse*
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (abundant)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years?
Main periods of occupation	Late Mesolithic

Table A 20: Site description table of Hoëdic, France.

Name	Hoëdic (Port Neuf)
Location	Hoëdic, Quiberon, Morbihan
Coordinates (datum WGS84)	47.34158, -2.88631
Site setting	At 6 m of altitude, on a cliff. Island.
Distance to the main water source in the past	Less than 2 km (20-1000 m from the coast during the Mesolithic)
Preservation	Almost destroyed
Excavations in the twenty-first century	Yes (limited)
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (open rocky coast)
Shell midden type	Layer
Area of distribution of shells	200 m ²
Total thickness of the shell deposit	0.25–0.50 m
Malacological species	Diverse
Main malacological species	<i>Ostrea edulis</i> , <i>Mytilus edulis</i> , <i>Patella sp.</i> and <i>Osilinus lineatus</i>
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (rare?)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	200–1000 years?
Main periods of occupation	Late Mesolithic

Table A 21: Site description table of Saint-Gildas 1b, France.

Name	Saint-Gildas 1b
Location	Préfailles, Loire-Atlantique
Coordinates (datum WGS84)	Unknown
Site setting	At 6 m of altitude, on a cliff of a promontory
Distance to the main water source in the past	Less than 2 km (at 1000 m from the coast and in the ancient estuary of the Loire during the Mesolithic)
Preservation	Almost destroyed
Excavations in the twenty-first century	Yes
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary)
Shell midden type	Layer
Area of distribution of shells	500–1000 m ² (2.50 m x 0.80 m)
Total thickness of the shell deposit	0.25 m
Malacological species	Limited
Main malacological species	<i>Scrobicularia plana</i> (more than 95% of the total MNI)
Faunal remains (other than shells)	No
Animal classes	Limited
Artefacts	Limited
Chipped stone tools	Diverse
Presence of human burials	No
Presence of non-burial features	No
Activities	Limited
Estimated period of shell midden accumulation	200–1000 years?
Estimated period of site occupation	200–1000 years?
Main periods of occupation	Late Mesolithic

Table A 22: Analysis of general parameters of the Late Mesolithic shell middens in France.

Total number of considered sites		
6 sites		
Mean altitude		
9.1 m (n=5)		
Distance to the main water source in the past		
<i>Distance</i>	<i>N</i>	<i>%</i>
Less than 2 km	6	100.00%
Total	6	100.00%
Main aquatic environment (associated with the shell midden or exploited)		
<i>Aquatic environment</i>	<i>N</i>	<i>%</i>
Brackish water	2	33.33%
Saltwater (open coast)	4	66.67%
Total	6	100.00%
Shell midden type		
<i>Type</i>	<i>N</i>	<i>%</i>
Layer	3	50.00%
Layer (mound?)	1	16.67%
Spot	1	16.67%
Unknown	1	16.67%
Total	6	100.00%
Mean area of distribution of shells		
158 m ² (n=4)		
Mean thickness of the shell deposit		
0.51 m (n=5)		
Animal classes		
<i>Animal classes</i>	<i>N</i>	<i>%</i>
Diverse	4	66.67%
Limited	2	33.33%
Total	6	100.00%

Malacological species

<i>Malacological species</i>	<i>N</i>	<i>%</i>
Diverse	4	66.67%
Limited	2	33.33%
Total	6	100.00%

Artefacts

<i>Artefacts</i>	<i>N</i>	<i>%</i>
Diverse	4	66.67%
Limited	2	33.33%
Total	6	100.00%

Chipped stone tools

<i>Chipped stone tools</i>	<i>N</i>	<i>%</i>
Diverse	5	83.33%
Diverse*	1	16.67%
Total	6	100.00%

Human burials

<i>Presence of human burials</i>	<i>N</i>	<i>%</i>
Yes	2	33.33%
No	4	66.67%
Total	6	100.00%

<i>Number of human burials</i>	<i>N</i>	<i>%</i>
Abundant	2	33.33%
NA	4	66.67%
Total	6	100.00%

Non-burial features

<i>Presence of non-burial features</i>	<i>N</i>	<i>%</i>
Yes	4	66.67%
No	2	33.33%
Total	6	100.00%

<i>Number of non-burial features</i>	<i>N</i>	<i>%</i>
Abundant	3	50.00%
Rare?	1	16.67%
NA	2	33.33%
Total	6	100.00%

Dwelling features

<i>Presence of dwelling features</i>	<i>N</i>	<i>%</i>
Yes	1	16.67%
No	5	83.33%
Total	6	100.00%

Activities

<i>Activities</i>	<i>N</i>	<i>%</i>
Diverse	4	66.67%
Limited	2	33.33%
Total	6	100.00%

Estimated period of shell midden accumulation

<i>Estimated period of shell midden accumulation</i>	<i>N</i>	<i>%</i>
Less than 200 years	1	16.67%
Between 200 and 1000 years?	2	33.33%
Unknown	3	50.00%
Total	6	100.00%

Estimated period of site occupation

<i>Estimated period of site occupation</i>	<i>N</i>	<i>%</i>
Less than 200 years	1	16.67%
Between 200 and 1000 years?	3	50.00%
More than 1000 years?	1	16.67%
Unknown	1	16.67%
Total	6	100.00%

Notes:

* Based on limited information

(Main references: Péquart et al., 1937; Péquart and Péquart, 1954; Kayser, 1988; Rault, 1992; Dupont, 2003; Dupont and Marchand, 2003; Dupont et al., 2007a; 2007b; 2010; 2010; Dupont and Bicho, 2015; Marchand, 2015; Marchand and Dupont, 2018; 2019; Marchand et al., 2018; Marchand and Arias, 2021)

A1.3. Portugal and France

Table A 23: Analysis of the relationship between general parameters of the shell middens in Portugal/France.

Aquatic environment–activities								
<i>Aquatic environment / Activities</i>	<i>D</i>		<i>L</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Brackish water	11	37.93%	7	24.14%	11	37.93%	29	100.00%
Brackish water + saltwater (open coast)	2	33.33%	4	66.67%	0	0.00%	6	100.00%
Saltwater (open coast)	6	75.00%	2	25.00%	0	0.00%	8	100.00%
Saltwater (open coast)?	0	0.00%	0	0.00%	1	100.00%	1	100.00%
Total	19	43.18%	13	29.55%	12	27.27%	44	100.00%

D: diverse; L: limited; U: unknown

Mean area of distribution of shells–activities		
<i>Activities</i>	<i>Mean area of distribution (m²)</i>	<i>N</i>
Diverse	2520.6	15
Limited	2141.7	3
Unknown	200.0	2
Total	2231.7	20

Mean thickness of the shell deposits–activities		
<i>Activities</i>	<i>Mean thickness (m)</i>	<i>N</i>
Diverse	1.42	14
Limited	0.41	4
Unknown	0.38	2
Total	1.12	20

Shell midden type–activities								
<i>Shell midden type / Activities</i>	<i>D</i>		<i>L</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Layer	13	48.15%	8	29.63%	6	22.22%	27	100.00%
Layer (mound?)	1	100.00%	0	0.00%	0	0.00%	1	100.00%
Layer?	0	0.00%	2	100.00%	0	0.00%	2	100.00%
Mound	3	100.00%	0	0.00%	0	0.00%	3	100.00%
Mound?	2	100.00%	0	0.00%	0	0.00%	2	100.00%
Spot	0	0.00%	1	100.00%	0	0.00%	1	100.00%
Unknown	0	0.00%	2	25.00%	6	75.00%	8	100.00%
Total	19	43.18%	13	29.55%	12	27.27%	44	100.00%

D: diverse; L: limited; U: unknown

Animal classes–activities

<i>Animal classes/ Activities</i>	<i>D</i>		<i>L</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	12	63.16%	2	15.38%	0	0.00%	14	31.82%
Limited	6	31.58%	10	76.92%	2	16.67%	18	40.91%
Unknown	1	5.26%	1	7.69%	10	83.33%	12	27.27%
Total	19	100.00%	13	100.00%	12	100.00%	44	100.00%

D: diverse; L: limited; U: unknown

Malacological species–activities

<i>Malacological species/ Activities</i>	<i>D</i>		<i>L</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	14	73.68%	3	23.08%	0	0.00%	17	38.64%
Limited	4	21.05%	8	61.54%	4	33.33%	16	36.36%
Limited*	0	0.00%	1	7.69%	0	0.00%	1	2.27%
Unknown	1	5.26%	1	7.69%	8	66.67%	10	22.73%
Total	19	100.00%	13	100.00%	12	100.00%	44	100.00%

D: diverse; L: limited; U: unknown

Artefacts–activities

<i>Artefacts / Activities</i>	<i>D</i>		<i>L</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	13	68.42%	1	7.69%	0	0.00%	14	31.82%
Limited	6	31.58%	12	92.31%	4	33.33%	22	50.00%
Unknown	0	0.00%	0	0.00%	8	66.67%	8	18.18%
Total	19	100.00%	13	100.00%	12	100.00%	44	100.00%

D: diverse; L: limited; U: unknown

Human burials–activities

<i>Human burials/ Activities</i>	<i>D</i>		<i>L</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Yes	13	86.67%	1	6.67%	1	6.67%	15	100.00%
Possible	2	50.00%	2	50.00%	0	0.00%	4	100.00%
No	4	16.00%	10	40.00%	11	44.00%	25	100.00%
Total	19	43.18%	13	29.55%	12	27.27%	44	100.00%

<i>Number of human burials/ Activities</i>	<i>D</i>		<i>L</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Abundant	10	100.00%	0	0.00%	0	0.00%	10	100.00%
Rare	4	50.00%	3	37.50%	1	12.50%	8	100.00%
NA	5	19.23%	10	38.46%	11	42.31%	26	100.00%
Total	19	43.18%	13	29.55%	12	27.27%	44	100.00%

D: diverse; L: limited; U: unknown

Non-burial features–activities

<i>Non-burial features/ Activities</i>	<i>D</i>		<i>L</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Yes	17	89.47%	2	10.53%	0	0.00%	19	100.00%
Possible	0	0.00%	0	0.00%	1	100.00%	1	100.00%
No	2	8.33%	11	45.83%	11	45.83%	24	100.00%
Total	19	43.18%	13	29.55%	12	27.27%	44	100.00%

D: diverse; L: limited; U: unknown

Human burials–non-burial features

<i>Human burials/ non-burial features</i>	<i>Yes</i>		<i>Possible</i>		<i>No</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Yes	11	73.33%	0	0.00%	4	26.67%	15	100.00%
Possible	2	50.00%	0	0.00%	2	50.00%	4	100.00%
No	6	24.00%	1	4.00%	18	72.00%	25	100.00%
Total	19	43.18%	1	2.27%	24	54.55%	44	100.00%

A2. Supplementary material of subchapter 4.3 (case studies from the Jomon of the Japanese Archipelago)

A2.1. Okayama region (Japan)

Table A 24: Site description table of Hikozaiki, Japan.

Name	Hikozaiki
Location	Okayama-shi, Okayama-ken
Coordinates (datum WGS84)	34.5491111, 133.8350556
Site setting	At 6 m of altitude, over a coastal terrace
Distance to the main water source in the past	Less than 2 km
Preservation	Partially destroyed (national designated historic site)
Excavations in the twenty-first century	Yes
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (inner bay, muddy tideland)
Shell midden type	Mound
Area of distribution of shells	More than 10000 m ² (irregular form)
Total thickness of the shell deposit	1.7 m
Malacological species	Diverse
Main malacological species	<i>Crassostrea gigas</i> (<i>Tegillarca granosa</i>)
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (abundant)
Activities	Diverse
Estimated period of shell midden accumulation	More than 1000 years
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Early Jomon (Initial Jomon–Final Jomon)

Table A 25: Site description table of Tsukumo, Japan.

Name	Tsukumo
Location	Kasaoka-shi, Okayama-ken
Coordinates (datum WGS84)	34.4843333, 133.5331389
Site setting	About 4 m of altitude, on a gentle slope of a low hill
Distance to the main water source in the past	Less than 2 km
Preservation	Partially destroyed
Excavations in the twenty-first century	Yes
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (inner bay, muddy tideland)
Shell midden type	Layer
Area of distribution of shells	40 x 60 m (irregular form)
Total thickness of the shell deposit	0.10–0.90 m
Malacological species	Diverse
Main malacological species	<i>Cyclina sinensis</i> , <i>Meretrix lusoria</i> , <i>Ruditapes philippinarum</i> , <i>Tegillarca granosa</i> , <i>Cerithidea moerchii</i> , <i>Crassostrea gigas</i>
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	No
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Jomon–Final Jomon (Initial Jomon–Middle Jomon)

Table A 26: Site description table of Asanebana, Japan.

Name	Asanebana
Location	Okayama-shi, Okayama-ken
Coordinates (datum WGS84)	34.6909722, 133.9270000
Site setting	Alluvial plain, at the foot of a hill
Distance to the main water source in the past	Less than 2 km
Preservation	Partially destroyed
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary/lagoon)
Shell midden type	Layer
Area of distribution of shells	Unknown
Total thickness of the shell deposit	0.26 m
Malacological species	Limited
Main malacological species	<i>Corbicula japonica</i>
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	No
Presence of non-burial features	Yes (rare)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Jomon (Early Jomon)

Table A 27: Site description table of Hyakkengawa Sawada, Japan.

Name	Hyakkengawa Sawada (shell middens)
Location	Okayama-shi, Okayama-ken
Coordinates (datum WGS84)	34.6702500, 133.9626111
Site setting	Riverbank, on an alluvial plain
Distance to the main water source in the past	Less than 2 km
Preservation	Riverbed, partially excavated
Excavations in the twenty-first century	Yes
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary/lagoon)
Shell midden type	Spot-type deposits (inside a settlement site)
Area of distribution of shells	3x1.7 m (Late Jomon), irregular form 3x2.5 m (Final Jomon), irregular form
Total thickness of the shell deposit	0.10 m (Late Jomon) 0.20 m (Final Jomon)
Malacological species	Limited
Main malacological species	<i>Corbicula japonica</i> (Late Jomon) <i>Tegillarca granosa?</i> (Final Jomon)
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse (outside of the shell middens)
Chipped stone tools	Diverse (outside of the shell middens)
Presence of human burials	No
Presence of non-burial features	Yes (outside of the shell middens)
Activities	Diverse (entire site)
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Jomon Final Jomon

Table A 28: Site description table of Yabeokuda, Japan.

Name	Yabeokuda
Location	Kurashiki-shi, Okayama-ken
Coordinates (datum WGS84)	34.6645556, 133.8138056
Site setting	At 14–15 m of altitude, on a slope of a plateau
Distance to the main water source in the past	Less than 2 km
Preservation	Buried
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary/lagoon)
Shell midden type	Layer
Area of distribution of shells	More than 450 m ² (unknown form)
Total thickness of the shell deposit	0.80 m
Malacological species	Diverse
Main malacological species	<i>Corbicula japonica</i>
Faunal remains (other than shells)	Diverse
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse*
Presence of human burials	Possible (some human remains outside of the shell midden)
Presence of non-burial features	Yes (outside of the shell midden)
Activities	Diverse (entire site)
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	Unknown
Main periods of occupation	Middle Jomon–Late Jomon

Table A 29: Site description table of Nakatsu, Japan.

Name	Nakatsu
Location	Kurashiki-shi, Okayama-ken
Coordinates (datum WGS84)	34.5248889, 133.6415000
Site setting	At 5 m of altitude, on a low terrace
Distance to the main water source in the past	Less than 2 km
Preservation	Partially destroyed
Excavations in the twenty-first century	Yes
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (inner bay, muddy tideland)
Shell midden type	Layer
Area of distribution of shells	Unknown
Total thickness of the shell deposit	0.10 m
Malacological species	Diverse
Main malacological species	<i>Tegillarca granosa</i> , <i>Crassostrea gigas</i>
Faunal remains (other than shells)	Yes
Animal classes	Limited
Artefacts	Diverse
Chipped stone tools	Diverse
Presence of human burials	Yes (abundant)
Presence of non-burial features	No
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	Unknown
Main periods of occupation	Late Jomon (Incipient–Final Jomon)

Table A 30: Site description table of Suzumimatsu, Japan.

Name	Suzumimatsu
Location	Kurashiki-shi, Okayama-ken
Coordinates (datum WGS84)	34.5837500, 133.6896111
Site setting	At 3.1–3.4 m of altitude, on low terrace
Distance to the main water source in the past	Less than 2 km
Preservation	Partially destroyed
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (inner bay, muddy tideland)
Shell midden type	Layer
Area of distribution of shells	600 m ² ?
Total thickness of the shell deposit	0.10–0.30 m
Malacological species	Diverse
Main malacological species	<i>Tegillarca granosa</i>
Faunal remains (other than shells)	Limited
Animal classes	Limited
Artefacts	Diverse
Chipped stone tools	Limited
Presence of human burials	Yes (abundant)
Presence of non-burial features	Yes (rare)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	Unknown
Main periods of occupation	Early Jomon, Late Jomon

Table A 31: Site description table of Satogi, Japan.

Name	Satogi
Location	Kurashiki-shi, Okayama-ken
Coordinates (datum WGS84)	34.5898611, 133.7063889
Site setting	At 4 m of altitude, at the foot of a hill
Distance to the main water source in the past	Less than 2 km
Preservation	Almost destroyed
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (inner bay, muddy tideland)
Shell midden type	Layer
Area of distribution of shells	2000 m ²
Total thickness of the shell deposit	0.30–0.70 m
Malacological species	Limited
Main malacological species	<i>Tegillarca granosa</i> , <i>Meretrix lusoria</i> , <i>Crassostrea gigas</i>
Faunal remains (other than shells)	Yes
Animal classes	Limited
Artefacts	Diverse
Chipped stone tools	Limited
Presence of human burials	Yes (abundant)
Presence of non-burial features	No
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	Unknown
Main periods of occupation	Middle Jomon (Early–Final Jomon)

Table A 32: Site description table of Funagura, Japan.

Name	Funagura
Location	Kurashiki-shi, Okayama-ken
Coordinates (datum WGS84)	34.5894167, 133.7744444
Site setting	5–7 m of altitude, at the foot of a hill
Distance to the main water source in the past	Less than 2 km
Preservation	Destroyed
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (inner bay, muddy tideland)
Shell midden type	Layer
Area of distribution of shells	Approx. 64 m ² (unknown form)
Total thickness of the shell deposit	0.30–0.40 m
Malacological species	Diverse
Main malacological species	<i>Crassostrea gigas</i>
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Diverse*
Presence of human burials	Yes (rare)
Presence of non-burial features	Yes (rare)
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	Unknown
Main periods of occupation	Early Jomon, Late Jomon (Initial–Late Jomon)

Table A 33: Site description table of Fukuda, Japan.

Name	Fukuda
Location	Kurashiki-shi, Okayama-ken
Coordinates (datum WGS84)	34.5500000, 133.7632500
Site setting	2–3 m of altitude, at the foot of a hill
Distance to the main water source in the past	Less than 2 km
Preservation	Good
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Saltwater (inner bay, muddy tideland)
Shell midden type	Layer
Area of distribution of shells	Unknown (irregular form)
Total thickness of the shell deposit	0.75–1 m
Malacological species	Limited
Main malacological species	<i>Tegillarca granosa</i>
Faunal remains (other than shells)	Yes
Animal classes	Diverse
Artefacts	Diverse
Chipped stone tools	Unknown
Presence of human burials	Yes (Rare)
Presence of non-burial features	No
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Late Jomon (Early–Final Jomon)

Table A 34: Site description table of Ōhashi, Japan.

Name	Ōhashi
Location	Setouchi-shi, Okayama-ken
Coordinates (datum WGS84)	34.6481944, 134.0867500
Site setting	2–8 m of altitude, on a slope of a low hill
Distance to the main water source in the past	Less than 2 km
Preservation	Partially destroyed
Excavations in the twenty-first century	No
Main aquatic environment (associated with the shell midden or exploited)	Brackish water (estuary)
Shell midden type	Mound
Area of distribution of shells	3750 m ²
Total thickness of the shell deposit	More than 2 m
Malacological species	Diverse
Main malacological species	<i>Corbiculidae</i>
Faunal remains (other than shells)	Yes
Animal classes	Limited
Artefacts	Diverse
Chipped stone tools	Limited
Presence of human burials	Yes (rare)
Presence of non-burial features	No
Activities	Diverse
Estimated period of shell midden accumulation	Unknown
Estimated period of site occupation	More than 1000 years
Main periods of occupation	Early–Late Jomon

Table A 35: Analysis of general parameters of the Jomon shell middens in Okayama region, Japan.

Total number of considered sites		
52		
Mean altitude		
8 m (n=24)		
Distance to the main water source in the past		
<i>Distance</i>	<i>N</i>	<i>%</i>
Less than 2 km	50	96.15%
Less than 2 km?	1	1.92%
Between 2 and 5 km	1	1.92%
Total	52	100.00%
Main aquatic environment (associated with the shell midden or exploited)		
<i>Aquatic environment</i>	<i>N</i>	<i>%</i>
Brackish water	2	3.85%
Brackish water + saltwater (inner bay)	15	28.85%
Saltwater (inner bay)	32	61.54%
Unknown	3	5.77%
Total	52	100.00%
Shell midden type		
<i>Type</i>	<i>N</i>	<i>%</i>
Layer	24	46.15%
Mound	3	5.77%
Spot	1	1.92%
Unknown	24	46.15%
Total	52	100.00%
Mean area of distribution of shells		
1938 m ² (n=12)		
Mean thickness of the shell deposit		
0.67 m (n=20)		

Animal classes

<i>Animal classes</i>	<i>N</i>	<i>%</i>
Diverse	8	15.38%
Diverse*	1	1.92%
Limited	28	53.85%
Unknown	15	28.85%
Total	52	100.00%

Malacological species

<i>Malacological species</i>	<i>N</i>	<i>%</i>
Diverse	12	23.08%
Limited	25	48.08%
Limited?	1	1.92%
Unknown	14	26.92%
Total	52	100.00%

Artefacts

<i>Artefacts</i>	<i>N</i>	<i>%</i>
Diverse	25	48.08%
Diverse*	1	1.92%
Limited	14	26.92%
Unknown	12	23.08%
Total	52	100.00%

Chipped stone tools

<i>Chipped stone tools</i>	<i>N</i>	<i>%</i>
Diverse	4	7.69%
Diverse*	3	5.77%
Limited	19	36.54%
Unknown or absent	26	50.00%
Total	52	100.00%

Human burials

<i>Presence of human burials</i>	<i>N</i>	<i>%</i>
Yes	16	30.77%
Possible	2	3.85%
No	34	65.38%
Total	52	100.00%

<i>Number of human burials</i>	<i>N</i>	<i>%</i>
Abundant	8	15.38%
Rare	4	7.69%
Unknown	4	7.69%
NA	36	69.23%
Total	52	100.00%

Non-burial features

<i>Presence of non-burial features</i>	<i>N</i>	<i>%</i>
Yes	7	13.46%
Yes*	2	3.85%
No	43	82.69%
Total	52	100.00%

<i>Number of non-burial features</i>	<i>N</i>	<i>%</i>
Abundant	1	1.92%
Abundant*	2	3.85%
Rare	6	11.54%
NA	43	82.69%
Total	52	100.00%

Dwelling features

<i>Presence of dwelling features</i>	<i>N</i>	<i>%</i>
Yes*	1	1.92%
Possible	1	1.92%
No	50	96.15%
Total	52	100.00%

Activities

<i>Activities</i>	<i>N</i>	<i>%</i>
Diverse	18	34.62%
Diverse?	2	3.85%
Limited	13	25.00%
Limited?	1	1.92%
Unknown	18	34.62%
Total	52	100.00%

Estimated period of shell midden accumulation

<i>Estimated period of shell midden accumulation</i>	<i>N</i>	<i>%</i>
Between 200 and 1000 years?	3	5.77%
More than 1000 years	1	1.92%
More than 1000 years?	1	1.92%
Unknown	47	90.38%
Total	52	100.00%

Estimated period of site occupation

<i>Estimated period of site occupation</i>	<i>N</i>	<i>%</i>
Less than 200 years?	3	5.77%
More than 1000 years	28	53.85%
Unknown	21	40.38%
Total	52	100.00%

Relations between parameters**Aquatic environment–activities**

<i>Aquatic environment/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Brackish water	1	5.56%	0	0.00%	0	0.00%	0	0.00%	1	5.56%	2	3.85%
Brackish water + saltwater (inner bay)	3	16.67%	1	50.00%	8	61.54%	1	100.00%	2	11.11%	15	28.85%
Saltwater (inner bay)	13	72.22%	1	50.00%	4	30.77%	0	0.00%	14	77.78%	32	61.54%
Unknown	1	5.56%	0	0.00%	1	7.69%	0	0.00%	1	5.56%	3	5.77%
Total	18	100.00%	2	100.00%	13	100.00%	1	100.00%	18	100.00%	52	100.00%

D: diverse; L: limited; U: unknown

Animal classes–activities

<i>Animal classes/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	8	44.44%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	8	15.38%
Diverse*	1	5.56%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	1.92%
Limited	8	44.44%	2	100.00%	11	84.62%	1	100.00%	6	33.33%	28	53.85%
Unknown	1	5.56%	0	0.00%	2	15.38%	0	0.00%	12	66.67%	15	28.85%
Total	18	100.00%	2	100.00%	13	100.00%	1	100.00%	18	100.00%	52	100.00%

D: diverse; L: limited; U: unknown

Artefacts–activities

<i>Artefacts/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	16	88.89%	1	50.00%	5	38.46%	1	100.00%	2	11.11%	25	48.08%
Diverse*	1	5.56%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	1.92%
Limited	1	5.56%	1	50.00%	8	61.54%	0	0.00%	4	22.22%	14	26.92%
Unknown	0	0.00%	0	0.00%	0	0.00%	0	0.00%	12	66.67%	12	23.08%
Total	18	100.00%	2	100.00%	13	100.00%	1	100.00%	18	100.00%	52	100.00%

D: diverse; L: limited; U: unknown

Chipped stone tools–activities

<i>Chipped stone tools/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	4	22.22%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	4	7.69%
Diverse*	3	16.67%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	3	5.77%
Limited	10	55.56%	2	100.00%	7	53.85%	0	0.00%	0	0.00%	19	36.54%
Unknown or absent	1	5.56%	0	0.00%	6	46.15%	1	100.00%	18	100.00%	26	50.00%
Total	18	100.00%	2	100.00%	13	100.00%	1	100.00%	18	100.00%	52	100.00%

D: diverse; L: limited; U: unknown

Human burials–activities

<i>Human burials/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Yes	12	66.67%	1	50.00%	1	7.69%	0	0.00%	2	11.11%	16	30.77%
Possible	1	5.56%	0	0.00%	0	0.00%	1	100.00%	0	0.00%	2	3.85%
No	5	27.78%	1	50.00%	12	92.31%	0	0.00%	16	88.89%	34	65.38%
Total	18	100.00%	2	100.00%	13	100.00%	1	100.00%	18	100.00%	52	100.00%

D: diverse; L: limited; U: unknown

Non-burial features–activities

	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
<i>Non-burial features / Activities</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Yes	5	27.78%	1	50.00%	0	0.00%	0	0.00%	1	5.56%	7	13.46%
Yes*	2	11.11%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	3.85%
No	11	61.11%	1	50.00%	13	100.00%	1	100.00%	17	94.44%	43	82.69%
Total	18	100.00%	2	100.00%	13	100.00%	1	100.00%	18	100.00%	52	100.00%

D: diverse; L: limited; U: unknown

Notes

* Based on limited information

(Main references: Kiyono et al., 1920; Makabe, 1971; 2012; Okayama-ken Kyoiku Inkai, 1979; Suzuki, 1986; Kake Gakuen Maizo Bunkazai Chosa-shitsu, 1998; Yamamoto, 2004; Okayama-ken Kodai Kibi Bunkazai Senta, 2005; Kawase, 2006; Tajima et al., 2006; 2007; 2013; Tajima, 2014; 2015; Dai 26kai Chu-Shikoku Jomon Kenkyukai, 2015; Yamamoto et al., 2018; Ando et al., 2020; Ono and Fujiwara, 2021)

A2.2. Portugal/France (Europe) and Okayama region (Japan)

Table A 36: Comparative and joint analysis of the general parameters of the shell middens in Portugal/France and Okayama.

Distance to the main water source in the past						
<i>Distance</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Less than 2 km	29	65.91%	50	96.15%	79	82.29%
Less than 2 km?	0	0.00%	1	1.92%	1	1.04%
Between 2 and 5 km	11	25.00%	1	1.92%	12	12.50%
More than 5 km	4	9.09%	0	0.00%	4	4.17%
Total	44	100.00%	52	100.00%	96	100.00%

Main aquatic environment (associated with the shell midden or exploited)						
<i>Aquatic environment</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Brackish water	29	30.21%	2	2.08%	31	32.29%
Brackish water + saltwater (inner bay)		0.00%	15	15.63%	15	15.63%
Brackish water + saltwater (open coast)	6	6.25%	0	0.00%	6	6.25%
Saltwater (inner bay)	0	0.00%	32	33.33%	32	33.33%
Saltwater (open coast)	8	8.33%	0	0.00%	8	8.33%
Saltwater (open coast)?	1	1.04%	0	0.00%	1	1.04%
Unknown	0	0.00%	3	3.13%	3	3.13%
Total	44	45.83%	52	54.17%	96	100.00%

Shell midden type						
<i>Type</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Layer	27	28.13%	24	25.00%	51	53.13%
Layer (mound?)	1	1.04%	0	0.00%	1	1.04%
Layer?	2	2.08%	0	0.00%	2	2.08%
Mound	3	3.13%	3	3.13%	6	6.25%
Mound?	2	2.08%	0	0.00%	2	2.08%
Spot	1	1.04%	1	1.04%	2	2.08%
Unknown	8	8.33%	24	25.00%	32	33.33%
Total	44	45.83%	52	54.17%	96	100.00%

Mean area of distribution of shells

<i>Region</i>	<i>Mean area of dispersion (m²)</i>	<i>N</i>
PT/FR	2231.70	20
JP (OKA)	1937.67	12
Total	2121.44	32

Mean thickness of the shell deposit

<i>Region</i>	<i>Mean thickness (m)</i>	<i>N</i>
PT/FR	1.12	20
JP (OKA)	0.67	20
Total	0.89	40

Animal classes

<i>Animal classes</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	14	31.82%	8	15.38%	22	22.92%
Diverse*	0	0.00%	1	1.92%	1	1.04%
Limited	18	40.91%	28	53.85%	46	47.92%
Unknown	12	27.27%	15	28.85%	27	28.13%
Total	44	100.00%	52	100.00%	96	100.00%

Malacological species

<i>Malacological species</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	17	38.64%	12	23.08%	29	30.21%
Limited	16	36.36%	26	48.08%	41	42.71%
Limited*	1	2.27%	0	0.00%	1	1.04%
Limited?	0	0.00%	1	1.92%	1	1.04%
Unknown	10	22.73%	14	26.92%	24	25.00%
Total	44	100.00%	52	100.00%	96	100.00%

Artefacts

<i>Artefacts</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	14	31.82%	25	48.08%	39	40.63%
Diverse*	0	0.00%	1	1.92%	1	1.04%
Limited	22	50.00%	14	26.92%	36	37.50%
Unknown	8	18.18%	12	23.08%	20	20.83%
Total	44	100.00%	52	100.00%	96	100.00%

Chipped stone tools

<i>Chipped stone tools</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	26	59.09%	4	7.69%	29	31.25%
Diverse*	4	9.09%	3	5.77%	7	7.29%
Limited	3	6.82%	19	36.54%	23	22.92%
Limited*	2	4.55%	0	0.00%	2	2.08%
Unknown or absent	9	20.45%	26	50.00%	35	36.46%
Total	44	100.00%	52	100.00%	96	100.00%

Human burials

<i>Presence of human burials</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Yes	15	34.09%	16	30.77%	31	32.29%
Possible	4	9.09%	2	3.85%	6	6.25%
No	25	56.82%	34	65.38%	59	61.46%
Total	44	100.00%	52	100.00%	96	100.00%

<i>Number of human burials</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Abundant	10	22.73%	8	15.38%	18	18.75%
Rare	8	18.18%	4	7.69%	12	12.50%
Unknown	0	0.00%	4	7.69%	4	4.17%
NA	26	59.09%	36	69.23%	62	64.58%
Total	44	100.00%	52	100.00%	96	100.00%

Non-burial features

<i>Presence of non-burial features</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Yes	19	43.18%	7	13.46%	26	27.08%
Yes*	0	0.00%	2	3.85%	2	2.08%
Possible	1	2.27%	0	0.00%	1	1.04%
No	24	54.55%	43	82.69%	67	69.79%
Total	44	100.00%	52	100.00%	96	100.00%

<i>Number of non-burial features</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Abundant	8	18.18%	1	1.92%	9	9.38%
Abundant*	0	0.00%	2	3.85%	2	2.08%
Abundant?	1	2.27%	0	0.00%	1	1.04%
Rare	10	22.73%	6	11.54%	16	16.67%
Rare?	1	2.27%	0	0.00%	1	1.04%
Unknown	1	2.27%	0	0.00%	1	1.04%
NA	23	52.27%	43	82.69%	66	68.75%
Total	44	100.00%	52	100.00%	96	100.00%

Dwelling features

<i>Presence of dwelling features</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Yes	1	2.27%	0	0.00%	1	1.04%
Yes*	0	0.00%	1	1.92%	1	1.04%
Possible	1	2.27%	1	1.92%	2	2.08%
No	42	95.45%	50	96.15%	92	95.83%
Total	44	100.00%	52	100.00%	96	100.00%

Activities

<i>Activities</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	19	43.18%	18	34.62%	37	38.54%
Diverse?	0	0.00%	2	3.85%	2	2.08%
Limited	13	29.55%	13	25.00%	26	27.08%
Limited?	0	0.00%	1	1.92%	1	1.04%
Unknown	12	27.27%	18	34.62%	30	31.25%
Total	44	100.00%	52	100.00%	96	100.00%

Estimated period of shell midden accumulation

<i>Estimated period of shell midden accumulation</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Less than 200 years	1	2.27%	0	0.00%	1	1.04%
Between 200 and 1000 years	1	2.27%	0	0.00%	1	1.04%
Between 200 and 1000 years?	5	11.36%	3	5.77%	8	8.33%
More than 1000 years	0	0.00%	1	1.92%	1	1.04%
More than 1000 years?	0	0.00%	1	1.92%	1	1.04%
Unknown	37	84.09%	47	90.38%	84	87.50%
Total	44	100.00%	52	100.00%	96	100.00%

Estimated period of site occupation

<i>Estimated period of site occupation</i>	<i>PT/FR</i>		<i>JP (OKA)</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Less than 200 years	1	2.27%	0	0.00%	1	1.04%
Less than 200 years?	0	0.00%	3	5.77%	3	3.13%
Between 200 and 1000 years?	5	11.36%	0	0.00%	5	5.21%
More than 1000 years	11	25.00%	28	53.85%	39	40.63%
More than 1000 years?	1	2.27%	0	0.00%	1	1.04%
Unknown	26	59.09%	21	40.38%	47	48.96%
Total	44	100.00%	52	100.00%	96	100.00%

Notes :

PT/FR: Portugal/France

JP (OKA): Japan (Okayama)

* Based on limited information

Table A 37: Joint analysis of the relationship between parameters of the shell middens in Portugal/France and Okayama (Japan).

Shell midden type–activities												
<i>Type/Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Layer	25	49.02%	2	3.92%	15	29.41%	1	1.96%	8	15.69%	51	100.00%
Layer (mound?)	1	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
Layer?	0	0.00%	0	0.00%	2	100.00%	0	0.00%	0	0.00%	2	100.00%
Mound	5	83.33%	0	0.00%	1	16.67%	0	0.00%	0	0.00%	6	100.00%
Mound?	2	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	100.00%
Spot	1	50.00%	0	0.00%	1	50.00%	0	0.00%	0	0.00%	2	100.00%
Unknown	3	9.38%	0	0.00%	7	21.88%	0	0.00%	22	68.75%	32	100.00%
Total	37	38.54%	2	2.08%	26	27.08%	1	1.04%	30	31.25%	96	100.00%

D: diverse; L: limited; U: unknown

Mean thickness of the shell deposits–activities		
<i>Activities</i>	<i>Mean thickness (m)</i>	<i>N</i>
Diverse	1.08	26
Diverse?	0.10	1
Limited	0.65	9
Limited?	0.40	1
Unknown	0.38	3
Total	0.89	40

Animal classes–activities												
<i>Animal classes/Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	20	54.05%	0	0.00%	2	7.69%	0	0.00%	0	0.00%	22	22.93%
Diverse*	1	2.70%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	1.04%
Limited	14	37.84%	2	100.00%	21	80.77%	1	100.00%	8	26.67%	46	47.92%
Unknown	2	5.41%	0	0.00%	3	11.54%	0	0.00%	22	73.33%	27	28.13%
Total	37	100.00%	2	100.00%	26	100.00%	1	100.00%	30	100.00%	96	100.00%

D: diverse; L: limited; U: unknown

Malacological species–activities

<i>Malacological species/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	22	59.46%	1	50.00%	5	19.23%	1	100.00%	0	0.00%	29	30.21%
Limited	13	35.14%	1	50.00%	16	61.54%	0	0.00%	11	36.67%	41	42.71%
Limited*	0	0.00%	0	0.00%	1	3.85%	0	0.00%	0	0.00%	1	1.04%
Limited?	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	3.33%	1	1.04%
Unknown	2	5.41%	0	0.00%	4	15.38%	0	0.00%	18	60.00%	24	25.00%
Total	37	100.00%	2	100.00%	26	100.00%	1	100.00%	30	100.00%	96	100.00%

D: diverse; L: limited; U: unknown

Artefacts–activities

<i>Artefacts/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	29	78.38%	1	50.00%	6	23.08%	1	100.00%	2	6.67%	39	40.63%
Diverse*	1	2.70%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	1.04%
Limited	7	18.92%	1	50.00%	20	76.92%	0	0.00%	8	26.67%	36	37.50%
Unknown	0	0.00%	0	0.00%	0	0.00%	0	0.00%	20	66.67%	20	20.83%
Total	37	100.00%	2	100.00%	26	100.00%	1	100.00%	30	100.00%	96	100.00%

D: diverse; L: limited; U: unknown

Chipped stone tools–activities

<i>Chipped stone tools/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Diverse	22	59.46%	0	0.00%	7	26.92%	0	0.00%	1	3.33%	30	31.25%
Diverse*	4	10.81%	0	0.00%	1	3.85%	0	0.00%	2	6.67%	7	7.29%
Limited	10	27.03%	2	100.00%	10	38.46%	0	0.00%	0	0.00%	22	22.92%
Limited*	0	0.00%	0	0.00%	1	3.85%	0	0.00%	1	3.33%	2	2.08%
Unknown or absent	1	2.70%	0	0.00%	7	26.92%	1	100.00%	26	86.67%	35	36.46%
Total	37	100.00%	2	100.00%	26	100.00%	1	100.00%	30	100.00%	96	100.00%

D: diverse; L: limited; U: unknown

Human burials–activities

<i>Human burials/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Yes	25	67.57%	1	50.00%	2	7.69%	0	0.00%	3	10.00%	31	32.29%
Possible	3	8.11%	0	0.00%	2	7.69%	1	100.00%	0	0.00%	6	6.25%
No	9	24.32%	1	50.00%	22	84.62%	0	0.00%	27	90.00%	59	61.46%
Total	37	100.00%	2	100.00%	26	100.00%	1	100.00%	30	100.00%	96	100.00%

<i>Number of human burials/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Abundant	18	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	18	100.00%
Rare	7	58.33%	0	0.00%	4	33.33%	0	0.00%	1	8.33%	12	100.00%
Unknown	1	25.00%	1	25.00%	0	0.00%	0	0.00%	2	50.00%	4	100.00%
NA	11	17.74%	1	1.61%	22	35.48%	1	1.61%	27	43.55%	62	100.00%
Total	37	38.54%	2	2.08%	26	27.08%	1	1.04%	30	31.25%	96	100.00%

D: diverse; L: limited; U: unknown

Non-burial features–activities

<i>Non-burial features/ Activities</i>	<i>D</i>		<i>D?</i>		<i>L</i>		<i>L?</i>		<i>U</i>		<i>Total N</i>	<i>Total %</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>		
Yes	22	59.46%	1	50.00%	2	7.69%	0	0.00%	1	3.33%	26	27.08%
Yes*	2	5.41%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	2.08%
Possible	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	3.33%	1	1.04%
No	13	35.14%	1	50.00%	24	92.31%	1	100.00%	28	93.33%	67	69.79%
Total	37	100.00%	2	100.00%	26	100.00%	1	100.00%	30	100.00%	96	100.00%

D: diverse; L: limited; U: unknown

Notes:

* Based on limited information

B. Supplementary material of Chapter 5

B1. Poças de São Bento



Figure B 1: Poças de São Bento, area S1 in 2012 (Sado-Meso project) (Diniz et al., 2013)



Figure B 2: Poças de São Bento, area S1 – pit filled with a dense deposit of shells, which was found during the excavations of 2010 (Sado-Meso project) (Diniz and Arias, 2011).



Figure B 3: Poças de São Bento, area S6 during the excavations of 2013 (photo by author)

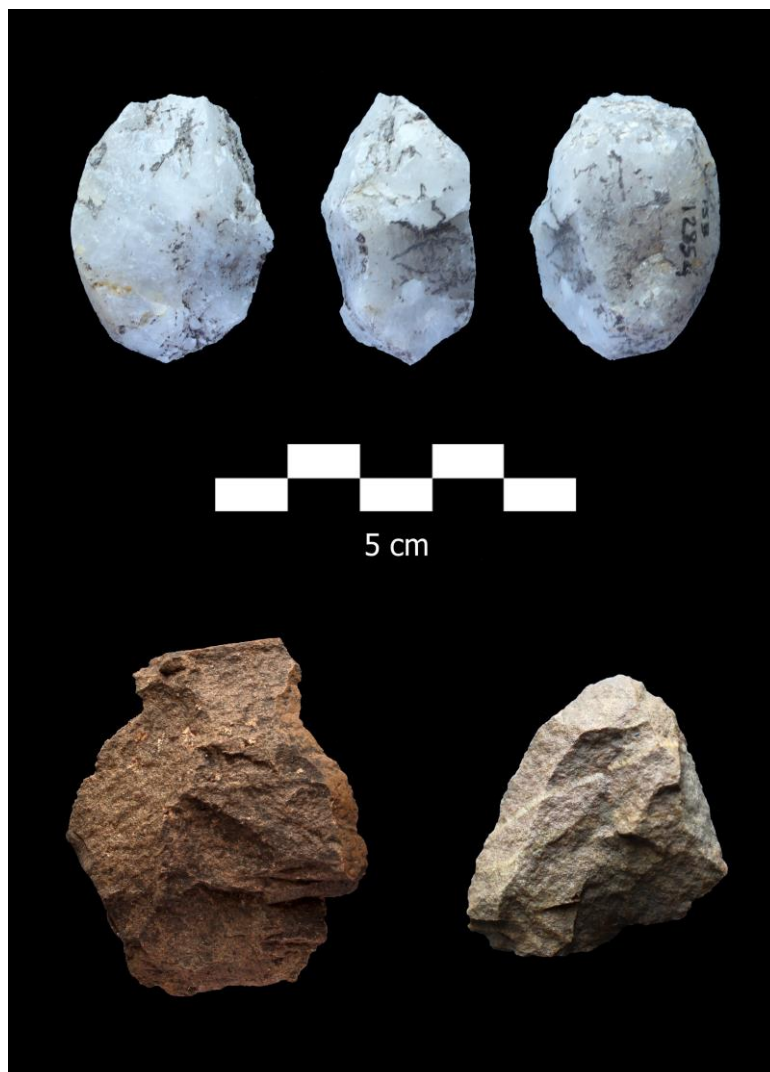


Figure B 4: Poças de São Bento, area S1 – core on quartz (top); flakes (bottom) (photos by author).



Figure B 5: Poças de São Bento, area S9 – retouched flake (top left), core (top right) and geometric microliths (bottom) (photos by author).



Figure B 6: Poças de São Bento, area S9 – flake on quartz hyaline (left) and bladelets (right) (photos by author).

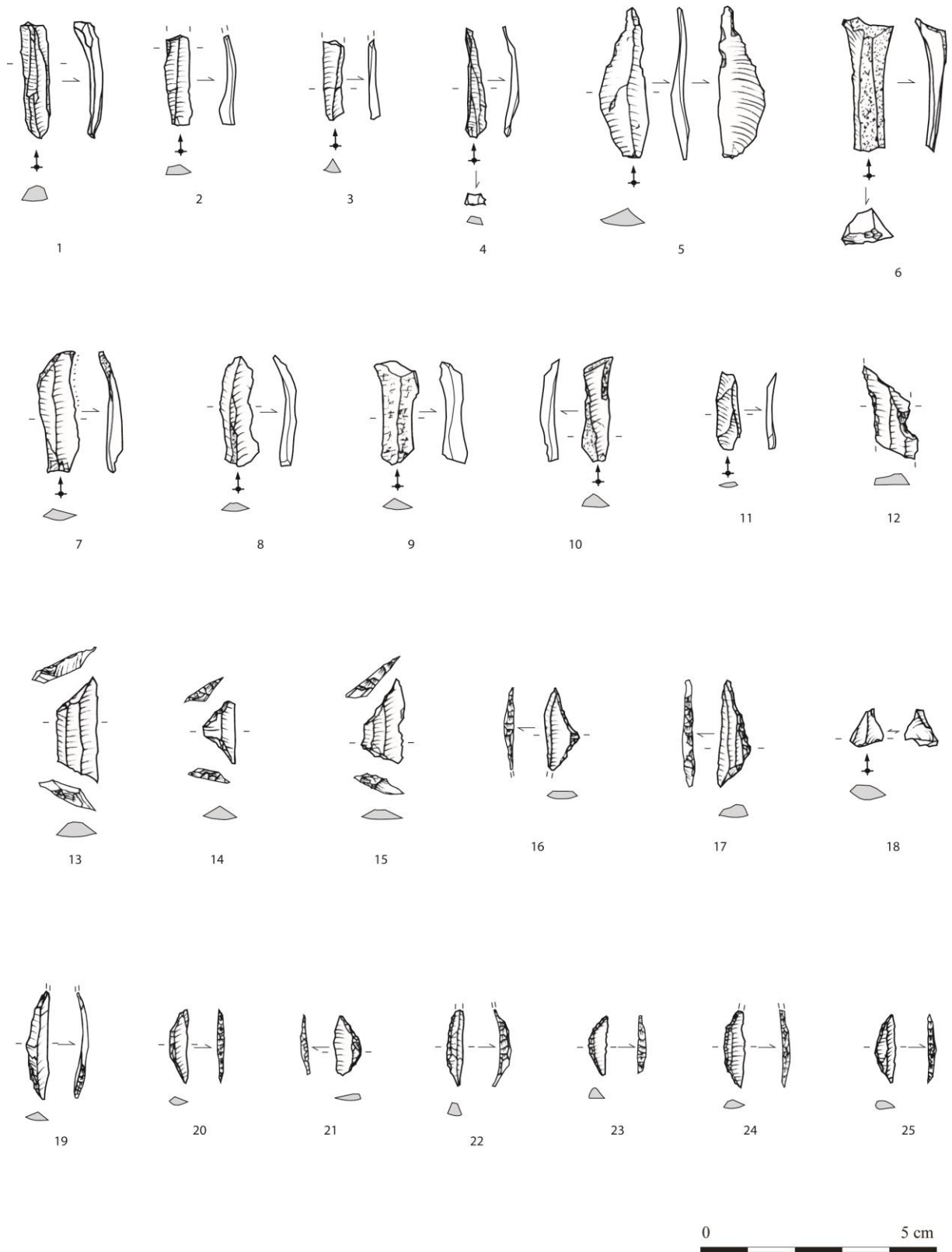


Figure B 7: Poças de São Bento, area S1 – bladelets (1–4, 6 to 11), marginally retouched bladelet (5), notch (12), geometric microliths (13–17, 19–25) and microburin (18) (drawings by author).

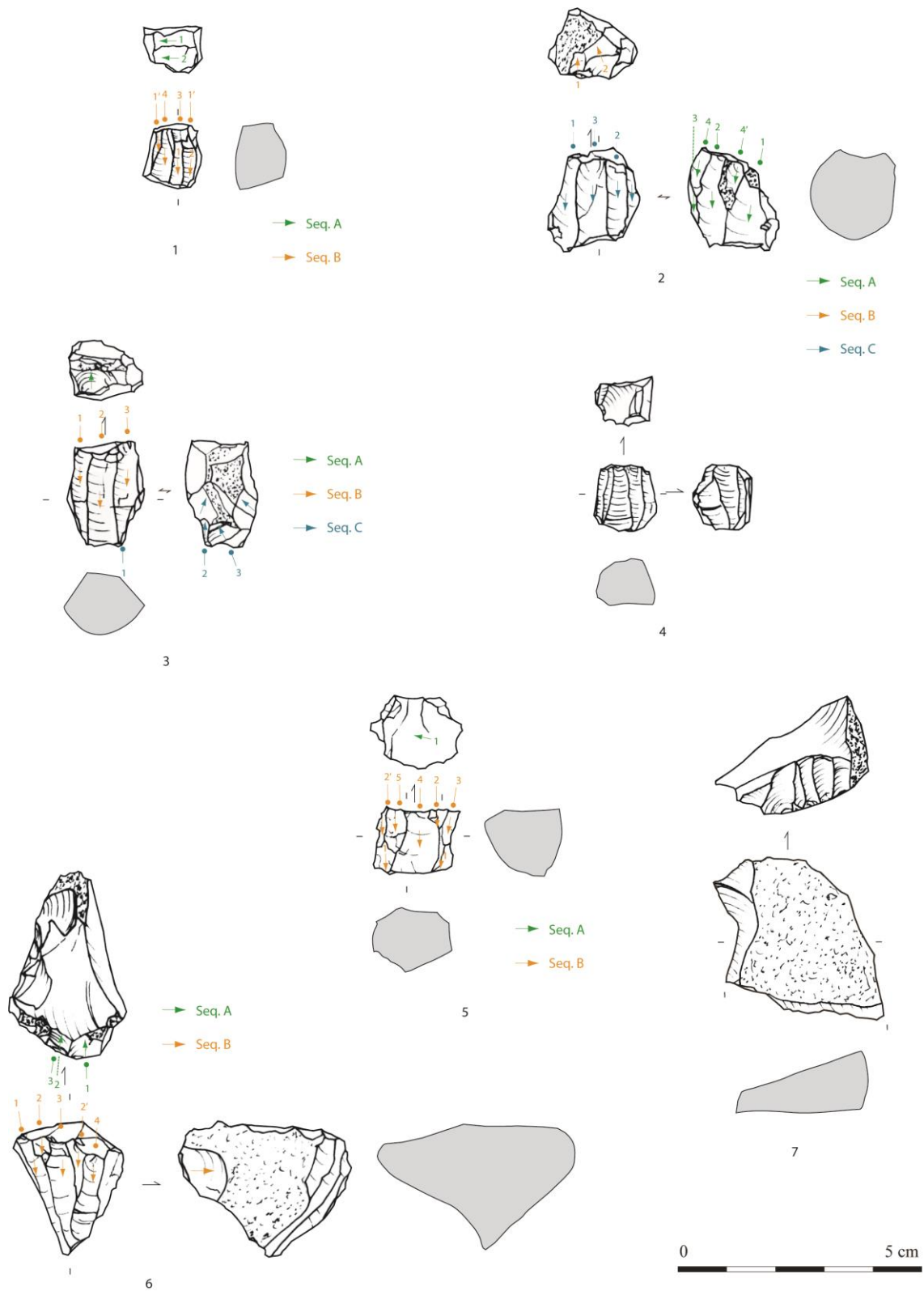


Figure B 8: Poças de São Bento, area S1 – prismatic cores (1–6) and partial core tablet (7) (drawings by author).

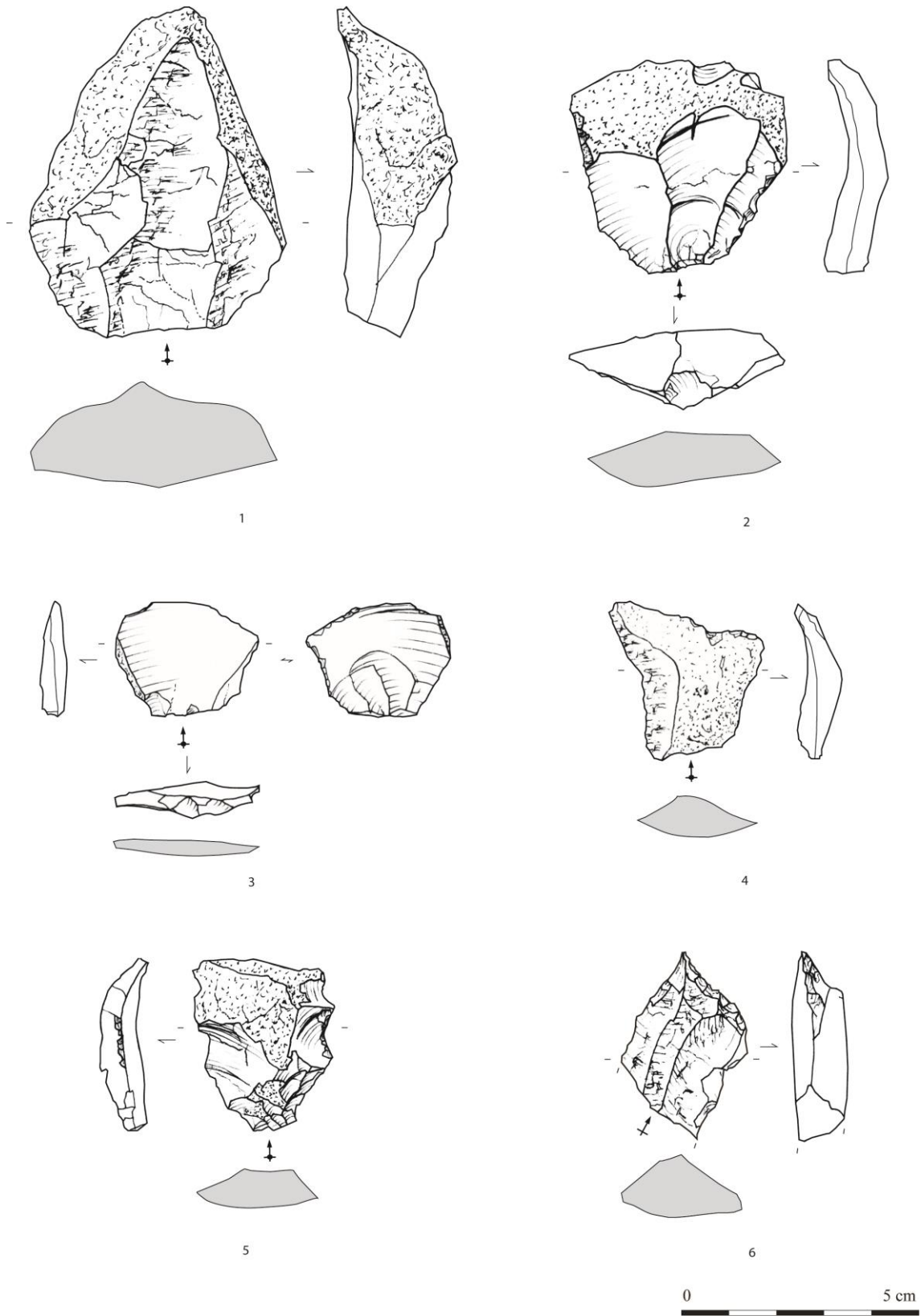


Figure B 9: Poças de São Bento, area S1 – unretouched flake (1), marginally retouched flakes (2–4), notch on flake (5) and drill (6) (drawings by author).

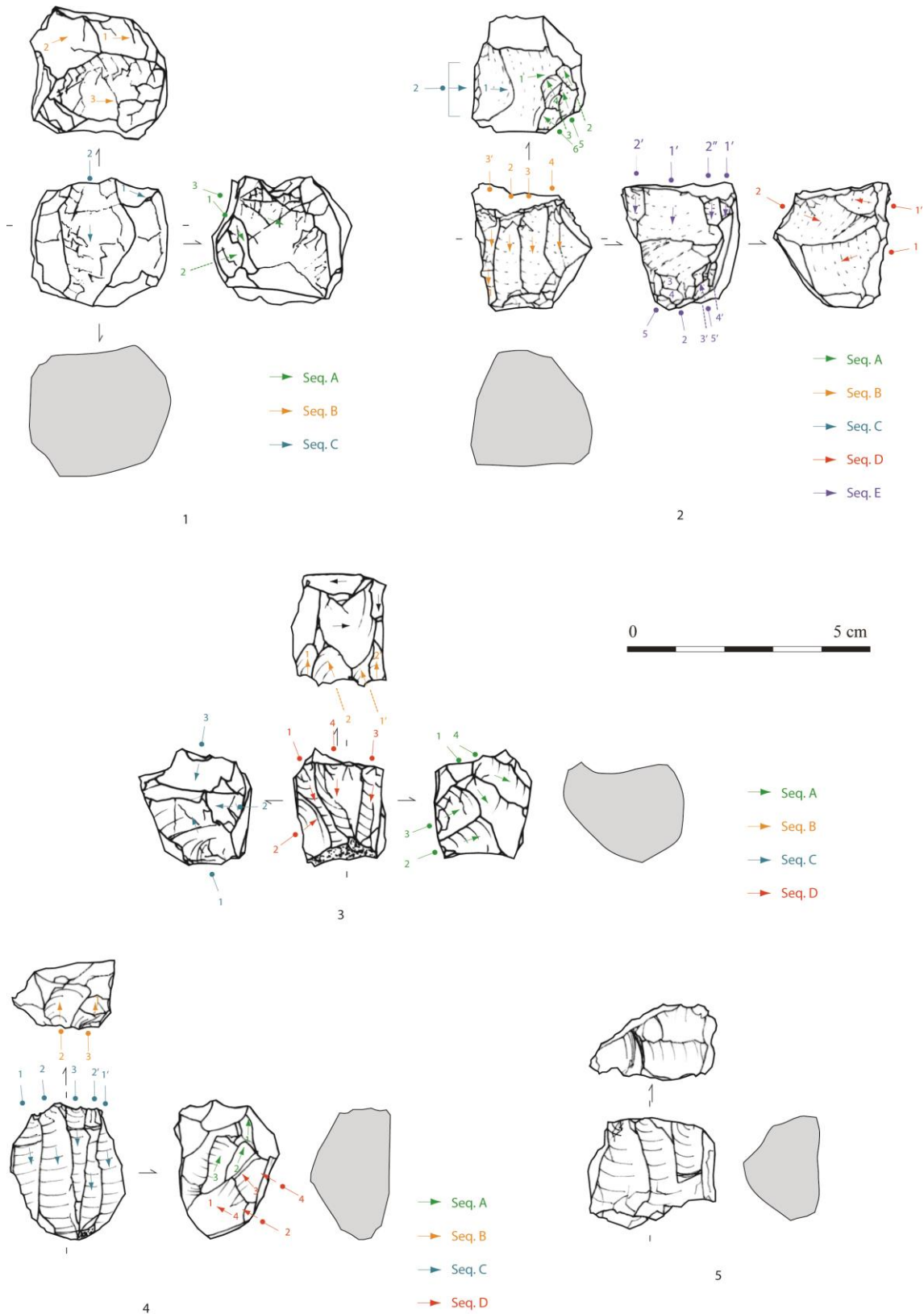


Figure B 10: Poças de São Bento, area S6 – polyhedral core (1) and prismatic cores (2–5) (drawings by author).

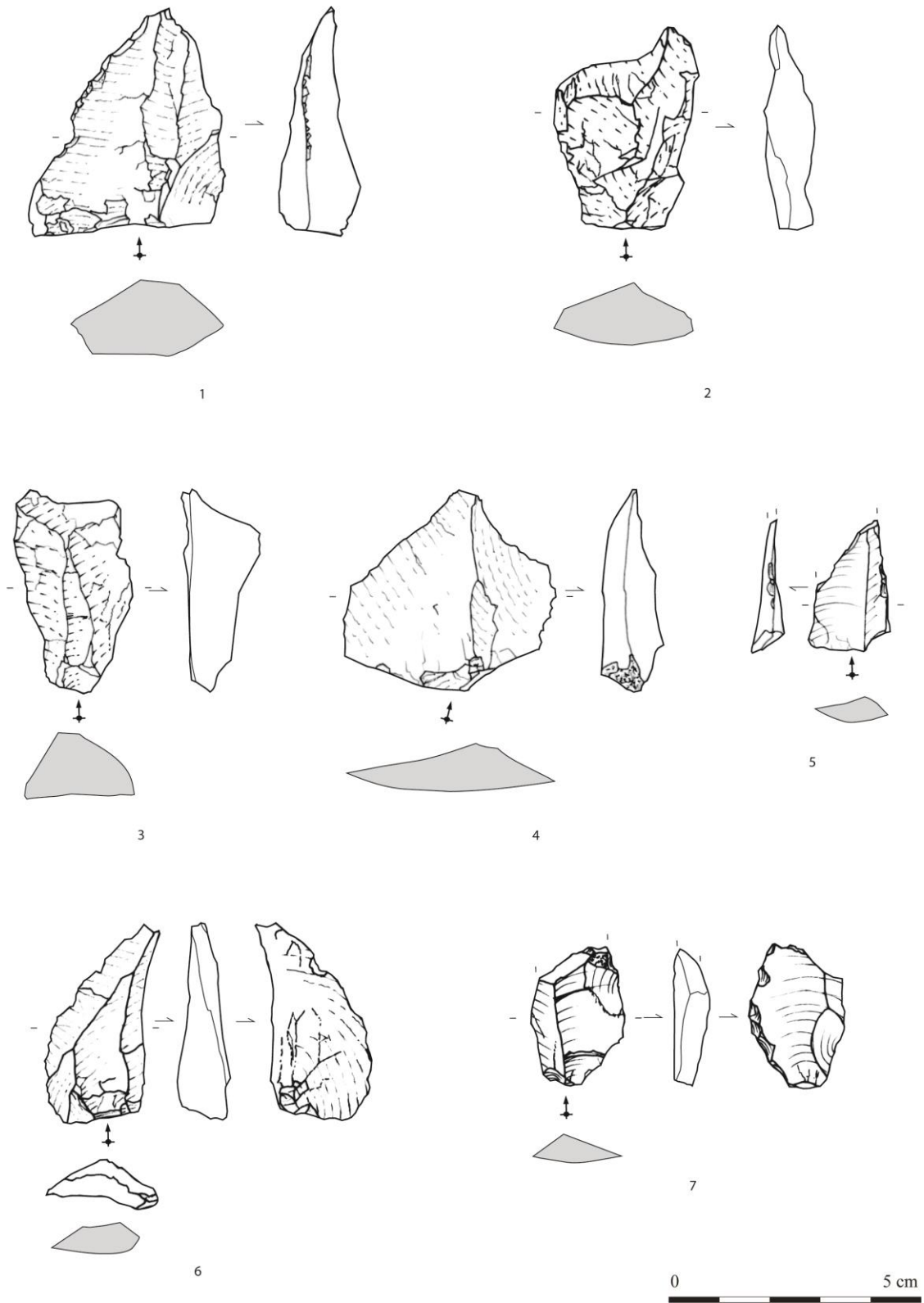


Figure B 11: Poças de São Bento, area S6 – marginally retouched flakes (1, 5, 7) and unretouched flakes (2–4, 6) (drawings by author).

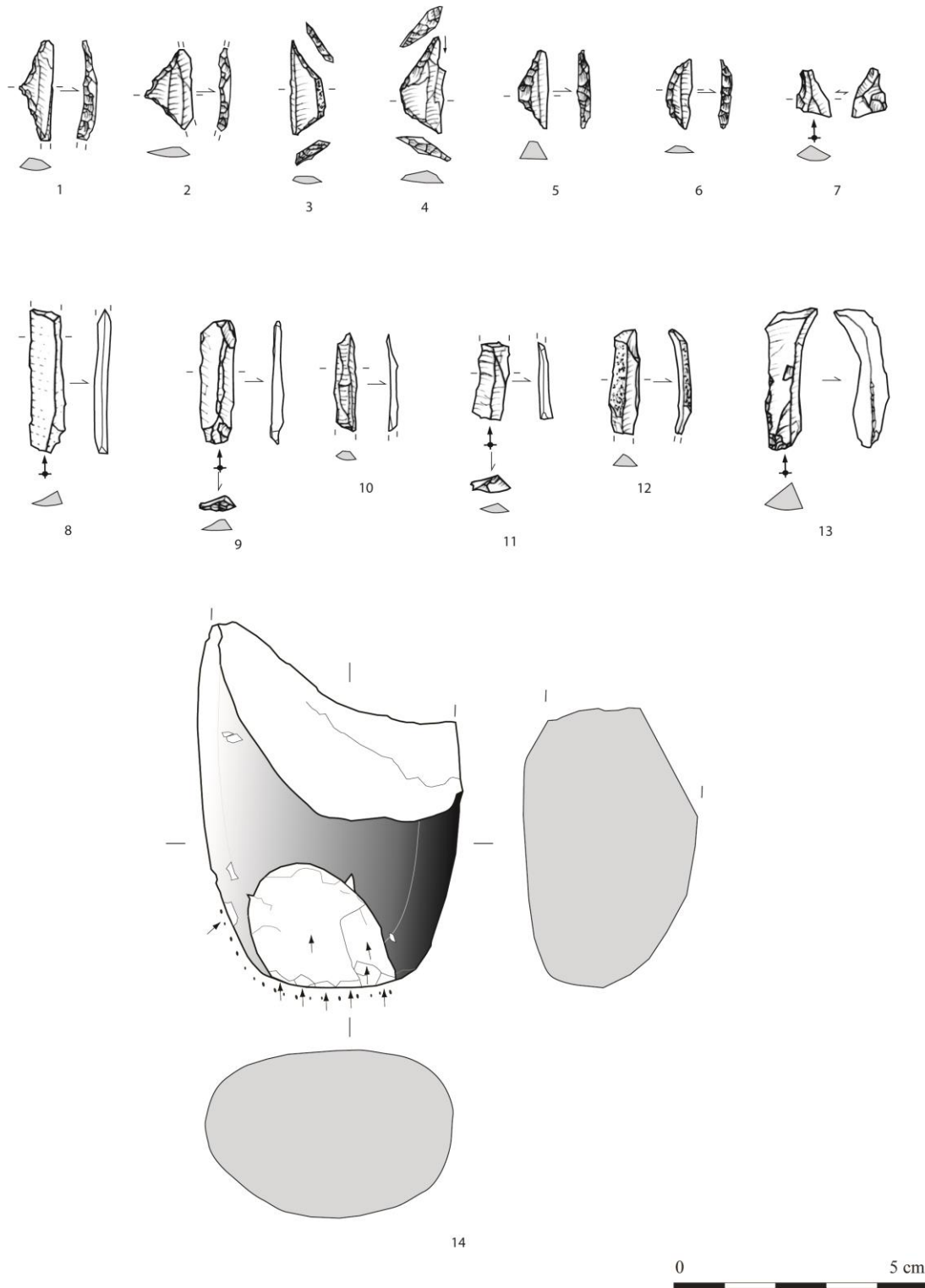


Figure B 12: Poças de São Bento, area S6 – geometric microliths (1–6), microburin (7), unretouched bladelets (8–12), retouched bladelet (13) and percussive tool (14) (drawings by author).

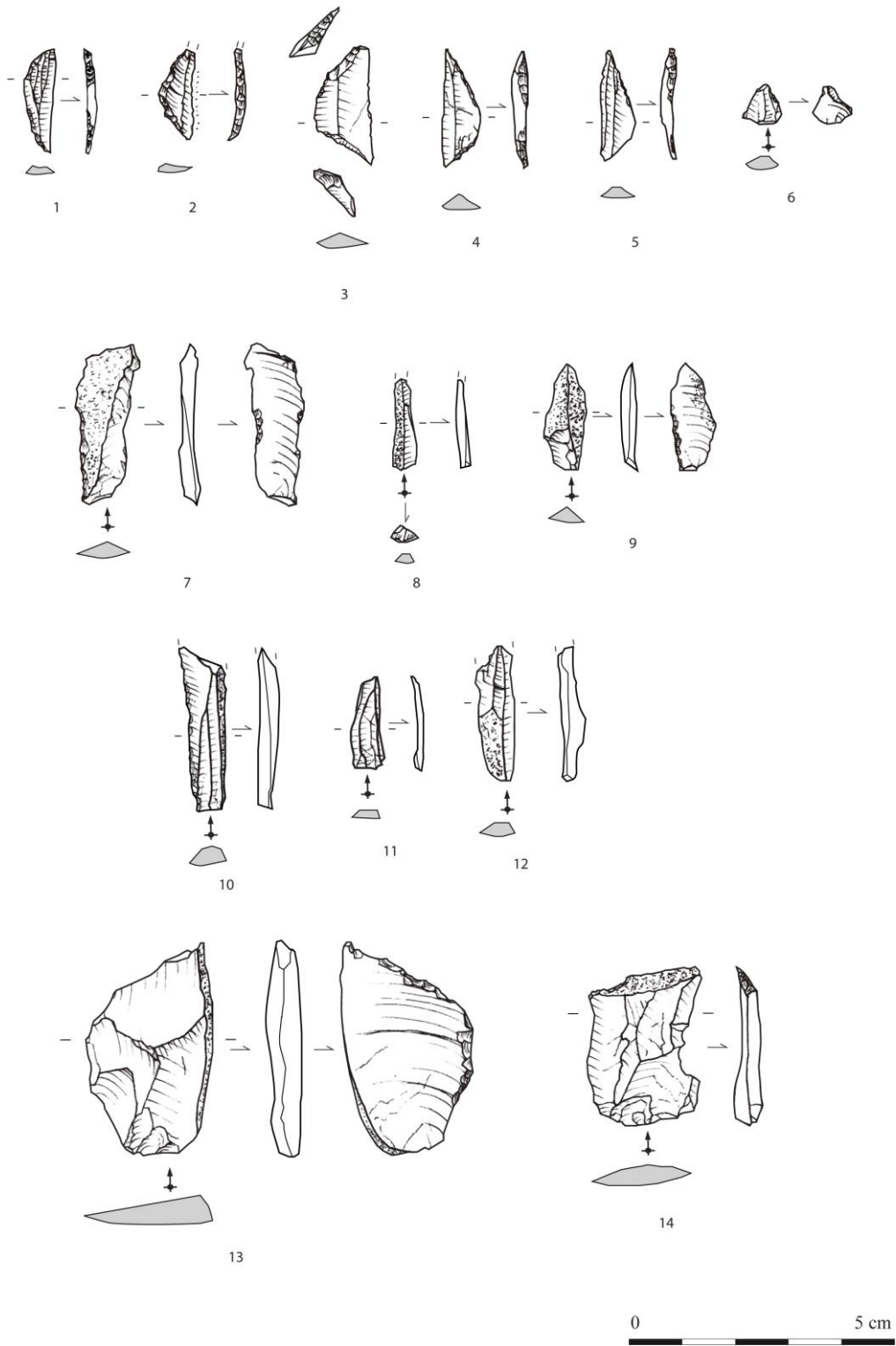


Figure B 13: Poças de São Bento, area S9 – geometric microliths (1–5), microburin (6), marginally retouched bladelets (7, 10), unretouched bladelets (8–9, 11–12) and marginally retouched flakes (13–14) (drawings by author).

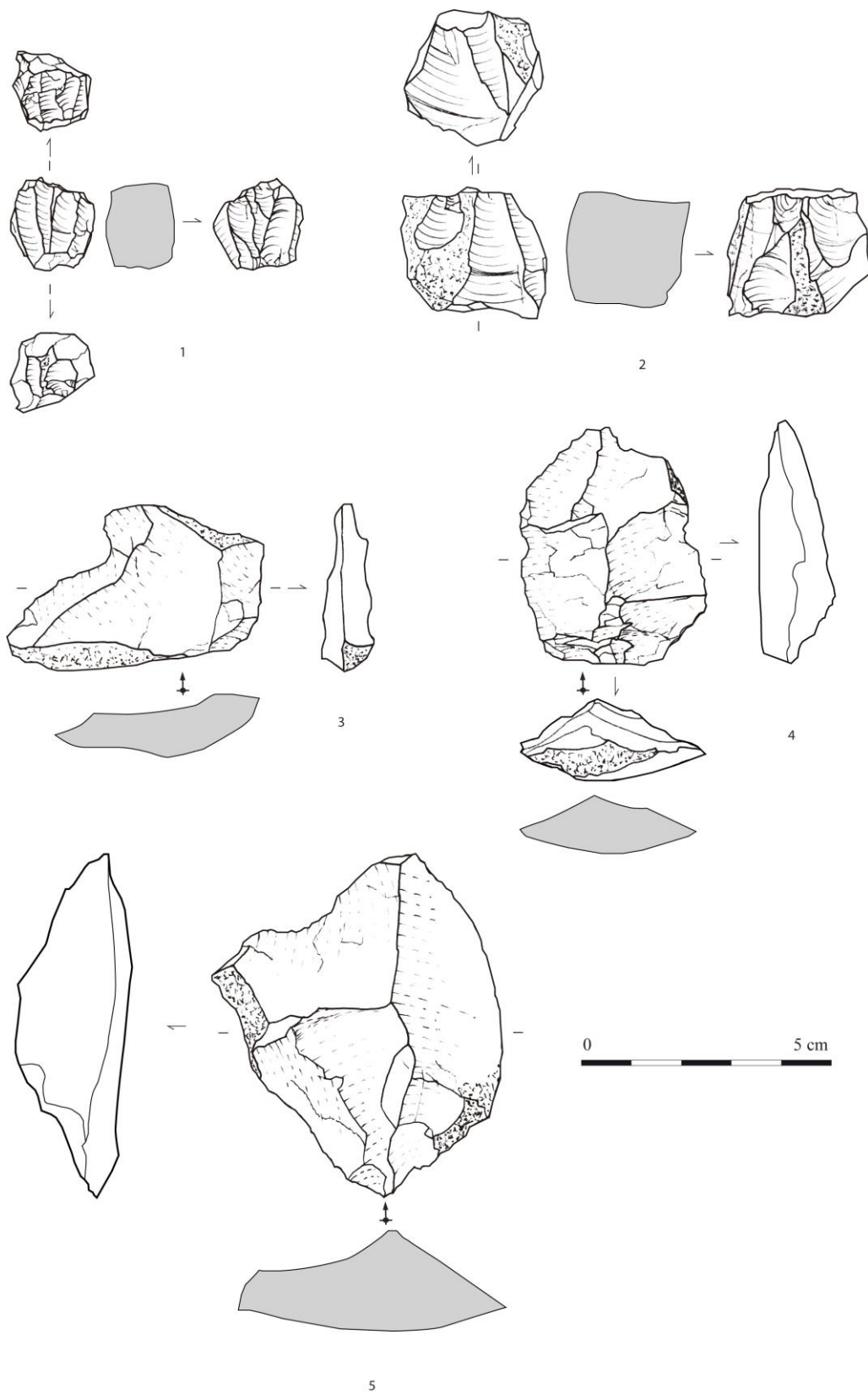


Figure B 14: Poças de São Bento, area S9 – prismatic cores (1–2) and unretouched flakes (3–5) (drawings by author).

Table B 1: Poças de São Bento, area S1 – total of lithic remains by stratigraphic unit.

SU	N	%
1	488	15.35%
2	1506	47.36%
3	114	3.58%
5	1	0.03%
7	291	9.15%
8	6	0.19%
9	6	0.19%
10	1	0.03%
11	1	0.03%
12	622	19.56%
14	3	0.09%
15	14	0.44%
16	3	0.09%
18	3	0.09%
22	8	0.25%
23	3	0.09%
25	110	3.46%
Total	3180	100.00%

Table B 2: Poças de São Bento, area S6 – total of lithic remains by stratigraphic unit.

SU	N	%
601	147	9.20%
602	663	41.49%
603	504	31.54%
604	57	3.57%
605	75	4.69%
606	51	3.19%
607	7	0.44%
608	2	0.13%
611	6	0.38%
612	45	2.82%
613	41	2.57%
Total	1598	100.00%

Table B 3: Poças de São Bento, area S9 – total of lithic remains by stratigraphic unit.

SU	N	%
901	253	6.17%
902	696	16.96%
903	821	20.01%
904	1311	31.95%
905	136	3.31%
906	11	0.27%
908	84	2.05%
910	1	0.02%
912	55	1.34%
913	2	0.05%
914	13	0.32%
915	23	0.56%
916	52	1.27%
917	1	0.02%
918	65	1.58%
919	3	0.07%
920	99	2.41%
921	447	10.89%
922	6	0.15%
925	3	0.07%
928	6	0.15%
930	2	0.05%
Undetermined	13	0.32%
Total	4103	100.00%

Table B 4: Poças de São Bento – total of lithic remains by area and type of stratigraphic unit.

Type of stratigraphic unit/Area	S1		S6		S9	
	N	%	N	%	N	%
Shell midden layers	412	12.96%	190	11.89%	228	5.56%
Other stratigraphic units	2768	87.04%	1408	88.11%	3875	94.44%
Total	3180	100.00%	1598	100.00%	4103	100.00%

Table B 5: Poças de São Bento, area S1 – lithic technological categories by stratigraphic unit.

SU	Core		Core preparation and maintenance		Debitage product		Retouched tool		Splintered piece		Debris		Fire-cracked rock (core)		Total N	Total %
	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
1	12	2.46%	2	0.41%	194	39.75%	33	6.76%	0	0.00%	245	50.20%	2	0.41%	488	100.00%
2	23	1.53%	12	0.80%	532	35.33%	53	3.52%	0	0.00%	884	58.70%	2	0.13%	1506	100.00%
3	0	0.00%	0	0.00%	38	33.33%	1	0.88%	0	0.00%	73	64.04%	2	1.75%	114	100.00%
5	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%	0	0.00%	1	100.00%
7	8	2.75%	6	2.06%	124	42.61%	16	5.50%	0	0.00%	137	47.08%	0	0.00%	291	100.00%
8	0	0.00%	0	0.00%	4	66.67%	0	0.00%	0	0.00%	2	33.33%	0	0.00%	6	100.00%
9	0	0.00%	0	0.00%	3	50.00%	0	0.00%	0	0.00%	3	50.00%	0	0.00%	6	100.00%
10	0	0.00%	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
11	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
12	30	4.82%	8	1.29%	250	40.19%	41	6.59%	1	0.16%	288	46.30%	4	0.64%	622	100.00%
14	0	0.00%	0	0.00%	2	66.67%	0	0.00%	0	0.00%	1	33.33%	0	0.00%	3	100.00%
15	0	0.00%	0	0.00%	5	35.71%	0	0.00%	0	0.00%	9	64.29%	0	0.00%	14	100.00%
16	0	0.00%	0	0.00%	1	33.33%	0	0.00%	0	0.00%	2	66.67%	0	0.00%	3	100.00%
18	0	0.00%	0	0.00%	3	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	3	100.00%
22	0	0.00%	0	0.00%	4	50.00%	0	0.00%	0	0.00%	4	50.00%	0	0.00%	8	100.00%
23	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	3	100.00%	0	0.00%	3	100.00%
25	3	2.73%	2	1.82%	30	27.27%	3	2.73%	0	0.00%	72	65.45%	0	0.00%	110	100.00%
Total	76	2.39%	30	0.94%	1191	37.45%	148	4.65%	1	0.03%	1724	54.21%	10	0.31%	3180	100.00%

Table B 6: Poças de São Bento, area S1 – technological categories of the lithic material associated with the pit (SU3/5).

Technological category	N	%
Debitage product	38	33.63%
Retouched tool	1	0.88%
Debris	72	63.72%
Fire-cracked rock (core)	2	1.77%
Total	113	100.00%

Table B 7: Poças de São Bento, area S9 – technological categories of the lithic material associated with the combustion feature (SU 916/928/930/931).

Technological category	N	%
Core	1	1.67%
Debitage product	31	51.67%
Retouched tool	5	8.33%
Debris	23	38.33%
Total	60	100.00%

Table B 8: Poças de São Bento – raw materials of the lithic industry by area.

Raw material/Area	S1		S6		S9		Total N	Total %
	N	%	N	%	N	%		
Siliceous rocks	2003	62.99%	882	55.19%	2642	64.39%	5527	62.23%
Siliceous slate	909	28.58%	182	11.39%	175	4.27%	1266	14.26%
Chert	1021	32.11%	677	42.37%	2291	55.84%	3989	44.92%
Jasper	59	1.86%	18	1.13%	100	2.44%	177	1.99%
Flint	5	0.16%	1	0.06%	0	0.00%	6	0.07%
Flint?	1	0.03%	0	0.00%	1	0.02%	2	0.02%
Siliceous rock	8	0.25%	4	0.25%	75	1.83%	87	0.98%
Quartz	484	15.22%	185	11.58%	308	7.51%	977	11.00%
Hyaline quartz	63	1.98%	20	1.25%	33	0.80%	116	1.31%
Coarse-grained rocks	454	14.28%	423	26.47%	969	23.62%	1846	20.79%
Quartz-diorite	0	0.00%	1	0.06%	2	0.05%	3	0.03%
Quartzite	140	4.40%	132	8.26%	236	5.75%	508	5.72%
Quartzite/Porphyr	7	0.22%	0	0.00%	0	0.00%	7	0.08%
Porphyr	304	9.56%	276	17.27%	696	16.96%	1276	14.37%
Igneous rock	0	0.00%	14	0.88%	34	0.83%	48	0.54%
Igneous rock (porphyritic)	1	0.03%	0	0.00%	0	0.00%	1	0.01%
Paleogenic calcareous rock	2	0.06%	0	0.00%	1	0.02%	3	0.03%
Schist	0	0.00%	1	0.06%	11	0.27%	12	0.14%
Undetermined	176	5.53%	87	5.44%	140	3.41%	403	4.54%
Total	3180	100.00%	1598	100.00%	4103	100.00%	8881	100.00%

Table B 9: Poças de São Bento – unretouched flakes by raw material type and area.

Raw material/Area	S1		S6		S9		Total N	Total %
	N	%	N	%	N	%		
Siliceous rocks	494	56.01%	182	52.30%	810	55.44%	1486	55.22%
Other materials	369	41.84%	162	46.55%	632	43.26%	1163	43.22%
Undetermined	19	2.15%	4	1.15%	19	1.30%	42	1.56%
Total	882	100.00%	348	100.00%	1461	100.00%	2691	100.00%

Table B 10: Poças de São Bento – types of cores by area.

Core type	S1		S6		S9		Total N	Total %
	N	%	N	%	N	%		
Prismatic	47	72.31%	10	62.50%	62	66.67%	119	68.39%
Prism. Unipolar (simple)	11	16.92%	1	6.25%	13	13.98%	25	14.37%
Prism. Unipolar (final phase)	14	21.54%	2	12.50%	13	13.98%	29	16.67%
Prism. Bipolar (different surfaces)	9	13.85%	1	6.25%	7	7.53%	17	9.77%
Prism. Bipolar (same surface)	3	4.62%	1	6.25%	1	1.08%	5	2.87%
Prism. Bipolar (orthogonal)	2	3.08%	1	6.25%	8	8.60%	11	6.32%
Prism. Multipolar	8	12.31%	4	25.00%	18	19.35%	30	17.24%
Core on flake (prismatic)	0	0.00%	0	0.00%	1	1.08%	1	0.57%
Prism. Undetermined	0	0.00%	0	0.00%	1	1.08%	1	0.57%
Polyhedral	10	15.38%	2	12.50%	5	5.38%	17	9.77%
Flaked block	6	9.23%	1	6.25%	7	7.53%	14	8.05%
Core on flake	2	3.08%	0	0.00%	4	4.30%	6	3.45%
Undetermined	0	0.00%	3	18.75%	15	16.13%	18	10.34%
Total	65	100.00%	16	100.00%	93	100.00%	174	100.00%

Table B 11: Poças de São Bento – types of debitage products by area.

Blank/Area	S1		S6		S9		Total N	Total %
	N	%	N	%	N	%		
Flake	882	74.06%	348	66.92%	1461	76.57%	2691	74.36%
Blade	12	1.01%	6	1.15%	15	0.79%	33	0.91%
Bladelet	295	24.77%	160	30.77%	415	21.75%	870	24.04%
Undefined	2	0.17%	6	1.15%	17	0.89%	25	0.69%
Total	1191	100.00%	520	100.00%	1908	100.00%	3619	100.00%

Table B 12: Poças de São Bento – dimensions of unretouched flakes (mm) by area (complete and nearly complete pieces).

Measurement/Area	S1	S6	S9	Total
Length (mm)				
Mean	22.94	23.08	21.35	22.13
SD	10.34	10.52	9.70	10.05
Width (mm)				
Mean	20.07	19.93	19.67	19.84
SD	9.49	9.66	9.94	9.74
Thickness (mm)				
Mean	6.21	6.51	5.49	5.87
SD	3.75	4.10	3.53	3.70
N	314	120	474	908

Table B 13: Poças de São Bento – dimensions of unretouched flakes (mm) by raw material type (complete and nearly complete pieces).

Measurement/Type of material	Siliceous rocks	Other raw materials	Undetermined	Total
Length (mm)				
Mean	19.80	25.10	21.19	22.13
SD	8.15	11.39	9.99	10.05
Width (mm)				
Mean	17.57	22.71	19.88	19.84
SD	7.97	10.95	10.09	9.74
Thickness (mm)				
Mean	5.10	6.83	6.65	5.87
SD	3.08	4.11	5.58	3.70
N	500	395	13	908

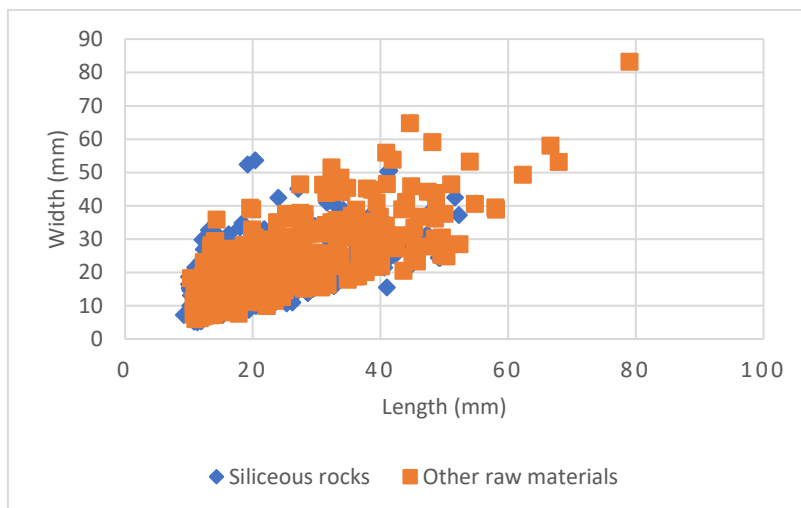


Figure B 15: Poças de São Bento – lengths and widths (mm) of unretouched flakes by raw material type (complete/nearly complete flakes with identified raw material, n=895).

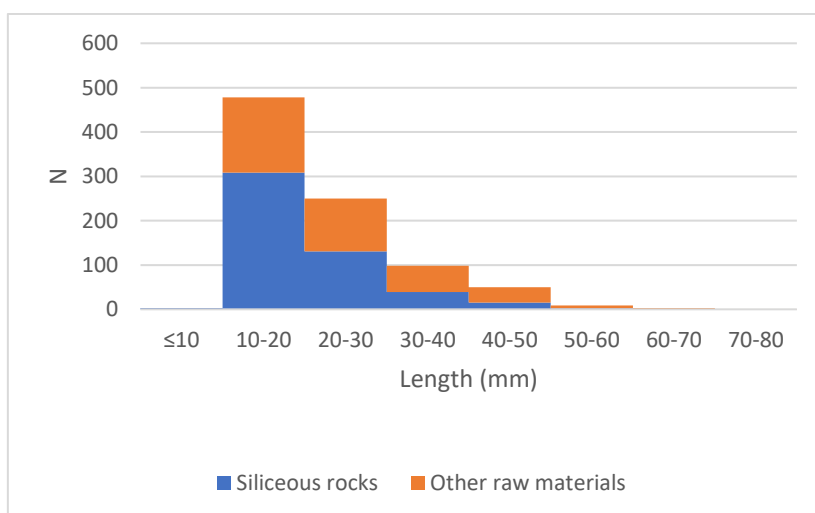


Figure B 16: Poças de São Bento – lengths (mm) of unretouched flakes by classes and raw material type (complete/nearly complete flakes with identified raw material, n=895).

Table B 14: Poças de São Bento – blanks of retouched tools by area and raw material type.

Blank/Area	S1		S6		S9		Total N	Total %
	N	%	N	%	N	%		
Flake	60	40.54%	8	25.00%	80	41.03%	148	39.47%
Siliceous rocks	47	78.33%	4	50.00%	61	76.25%	112	75.68%
Other raw materials	13	21.67%	4	50.00%	17	21.25%	34	22.97%
Undetermined	0	0.00%	0	0.00%	2	2.50%	2	1.35%
Bladelet	81	54.73%	23	71.88%	108	55.38%	212	56.53%
Siliceous rocks	78	96.30%	23	100.00%	108	100.00%	209	98.58%
Other raw materials	3	3.70%	0	0.00%	0	0.00%	3	1.42%
Blade	0	0.00%	0	0.00%	1	0.51%	1	0.27%
Core	4	2.70%	0	0.00%	1	0.51%	5	1.33%
Pebble	0	0.00%	1	3.13%	1	0.51%	2	0.53%
Other	3	2.03%	0	0.00%	4	2.05%	7	1.87%
Total	148	100.00%	32	100.00%	195	100.00%	375	100.00%

Table B 15: Poças de São Bento – geometric microlith types by area.

Geometric microlith / Area	S1		S6		S9		Total N	Total %
	N	%	N	%	N	%		
Trapeze	12	23.08%	3	30.00%	21	38.89%	36	31.03%
Asymmetrical trapeze (straight truncations)	3	25.00%	2	66.67%	11	52.38%	16	44.44%
Symmetrical trapeze (long-straight truncations)	1	8.33%	0	0.00%	3	14.29%	4	11.11%
Symmetrical trapeze (short-concave truncation)	0	0.00%	0	0.00%	1	4.76%	1	2.78%
Symmetrical trapeze (straight truncations)	3	25.00%	1	33.33%	5	23.81%	9	25.00%
Undet. trapeze	5	41.67%	0	0.00%	1	4.76%	6	16.67%
Triangle	13	25.00%	2	20.00%	11	20.37%	26	22.41%
Escalene triangle	5	38.46%	0	0.00%	4	36.36%	9	34.62%
Isometric triangle	7	53.85%	2	100.00%	5	45.45%	14	53.85%
Undet. triangle	1	7.69%	0	0.00%	2	18.18%	3	11.54%
Segment	17	32.69%	3	30.00%	15	27.78%	35	30.17%
Asymmetrical segment	1	5.88%	0	0.00%	1	6.67%	2	5.71%
Symmetrical segment	13	76.47%	2	66.67%	10	66.67%	25	71.43%
Undet. segment	3	17.65%	1	33.33%	4	26.67%	8	22.86%
Atypical form	0	0.00%	0	0.00%	2	3.70%	2	1.72%
Undetermined	10	19.23%	2	20.00%	5	9.26%	17	14.66%
Total	52	100.00%	10	100.00%	54	100.00%	116	100.00%

Table B 16: Poças de São Bento – fragmentation rates of the debitage products in areas S1, S6 and S9 by type of product and stratigraphic context.

Type of stratigraphic context/fragmentation rate	S1		S6		S9	
	Bladelets	Flakes	Bladelets	Flakes	Bladelets	Flakes
Shell midden layers	90.24%	68.55%	80.00%	46.81%	69.23%	66.30%
Other stratigraphic units	83.73%	63.53%	92.41%	68.44%	87.06%	69.35%

Table B 17: Poças de São Bento, area S1 – fragmentation rates of the debitage products in the pit (SU 3/5) and area S1 (all contexts).

Debitage products	Pit (SU 3/5)	S1 (all contexts)
Bladelets	92.86%	84.64%
Flakes	75.00%	64.24%

Table B 18: Poças de São Bento, area S9 – fragmentation rates of the debitage products in the combustion feature (SU 916, 928, 930, 931) and area S9 (all contexts).

Debitage products	Combustion feature (SU916,928,930,931)	S9 (all contexts)
Bladelets	100.00%	86.51%
Flakes	76.00%	69.13%

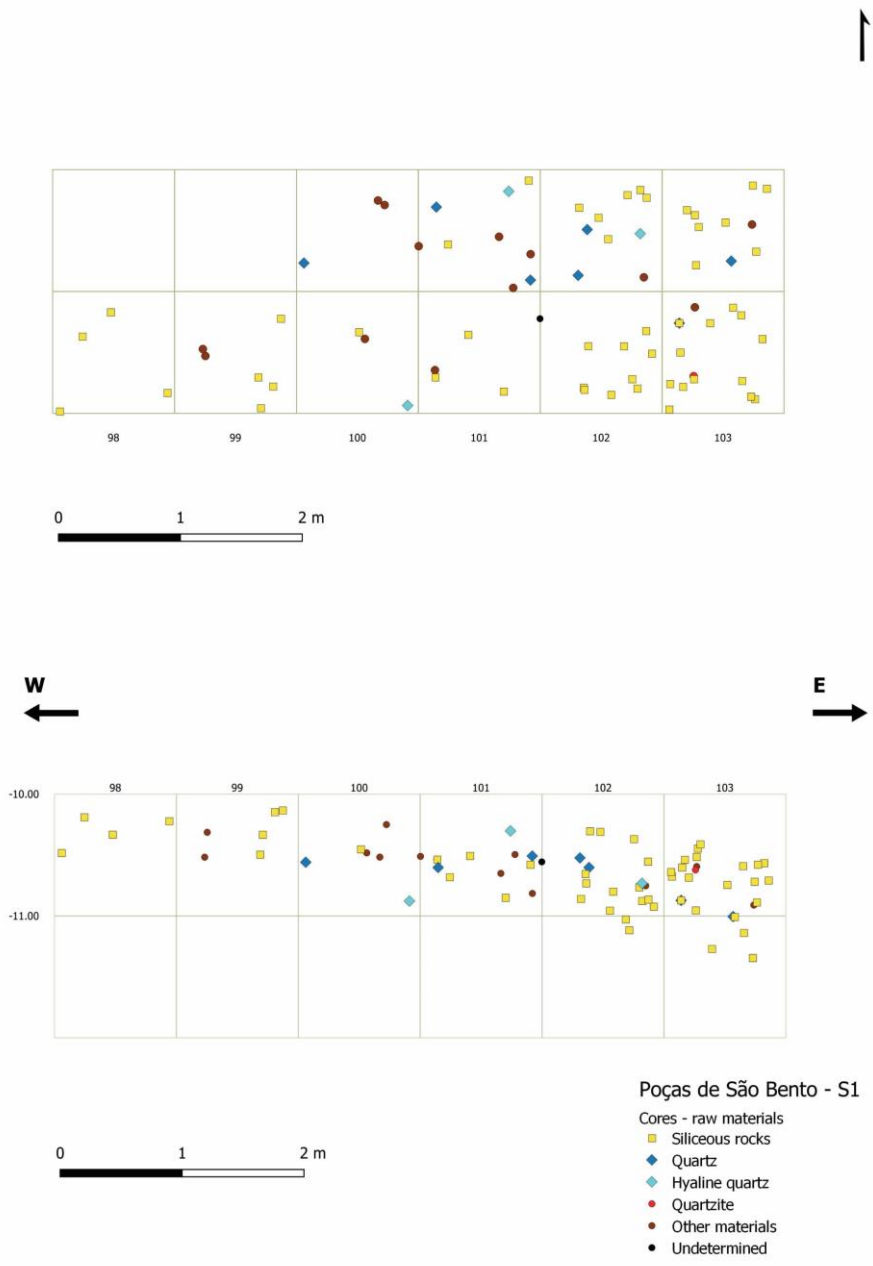


Figure B 17: Poças de São Bento, area S1 – horizontal and vertical distribution of cores by raw material type (image by author).

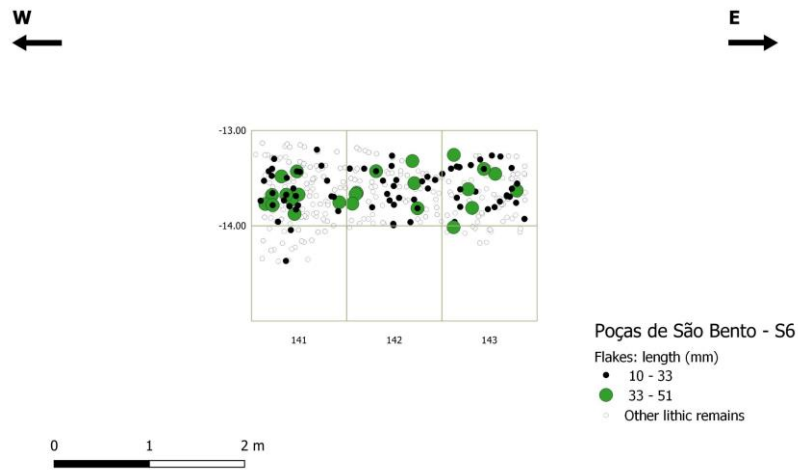


Figure B 20: Poças de São Bento, area S6 – vertical distribution of unretouched flakes by size (length, mm) (image by author).

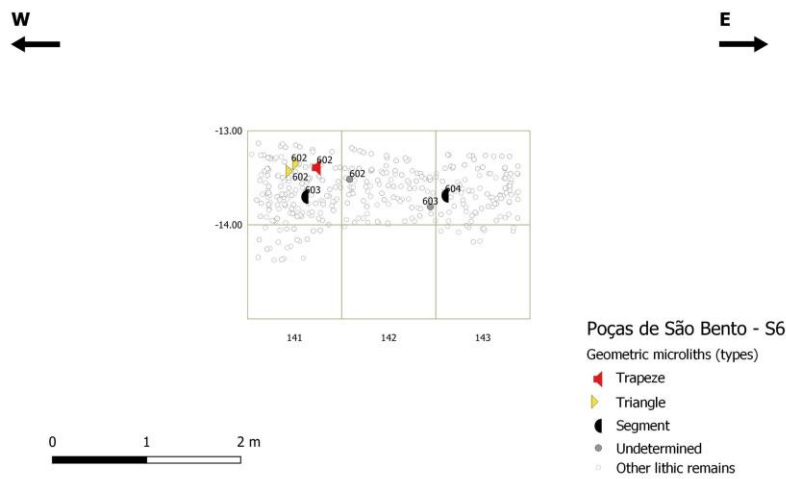


Figure B 21: Poças de São Bento, area S6 – vertical distribution of geometric microliths by type and stratigraphic unit (image by author).

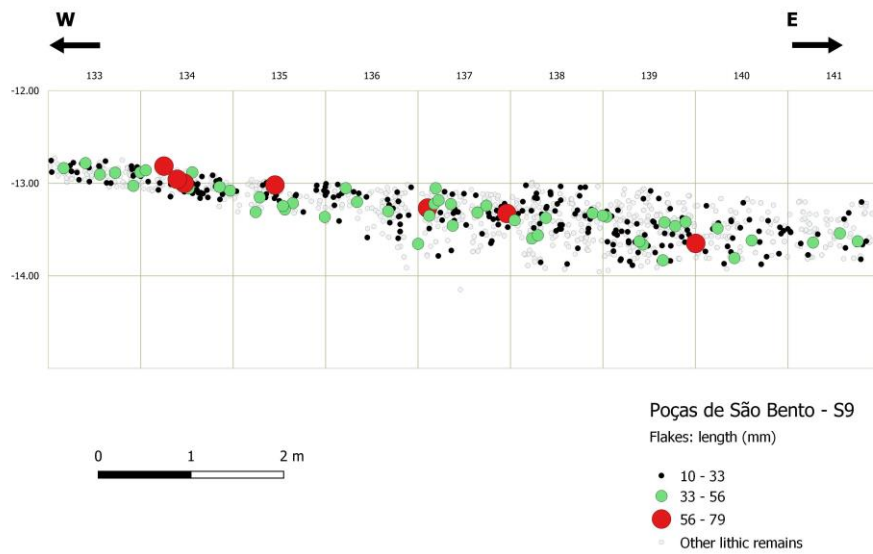


Figure B 22: Poças de São Bento, area S9 – vertical distribution of unretouched flakes by size (length, mm) (image by author).

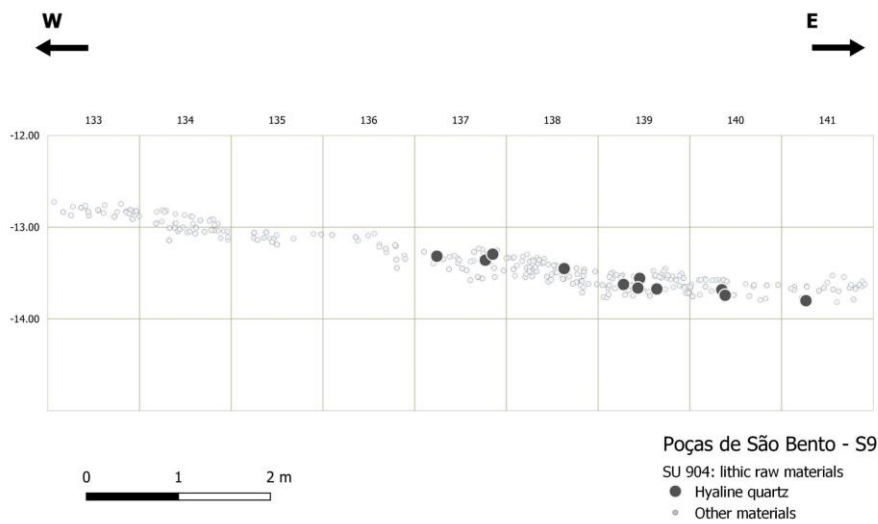


Figure B 23: Poças de São Bento, area S9 – vertical distribution of the lithic materials from SU 904, highlighting the location of the materials on hyaline quartz (image by author).

B2. Cabeço do Pez

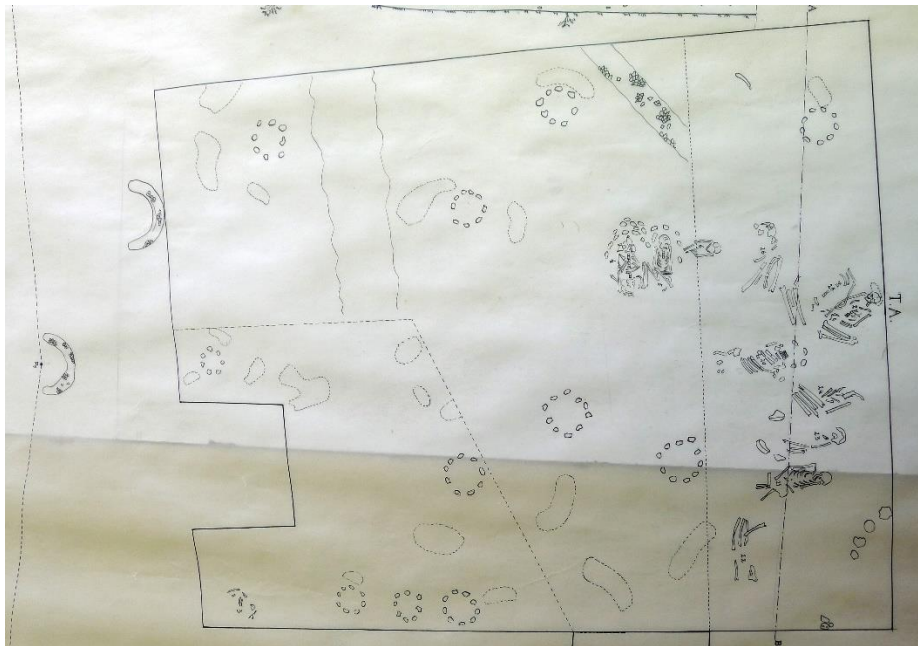


Figure B 25: Cabeço do Pez – extract of a schematic site plan by A. Paiva that can be dated to 1956 representing the area A (National Museum of Archaeology, Portugal – MNA, Tube 4).

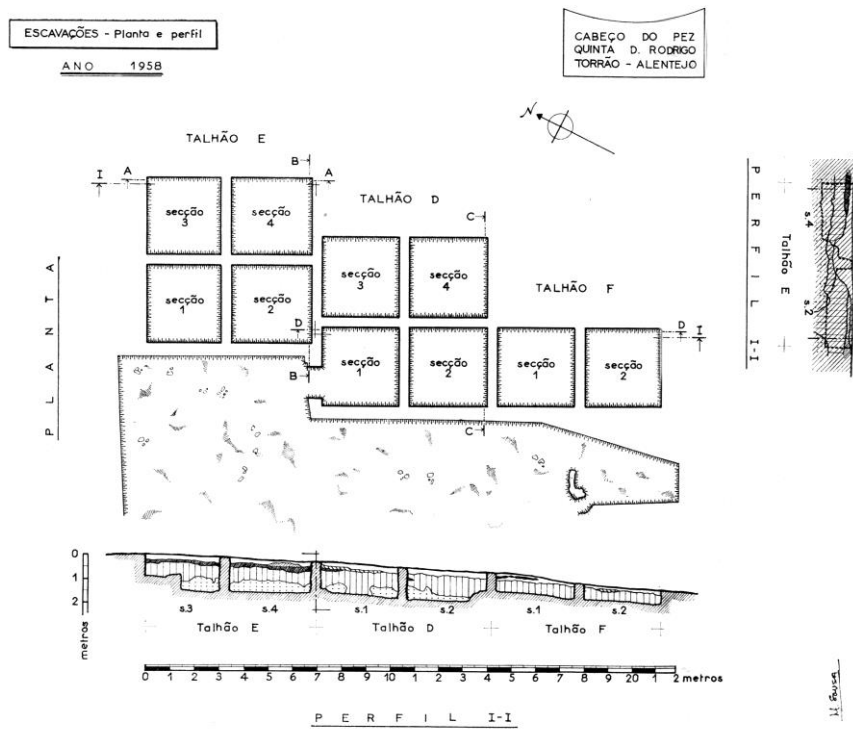


Figure B 26: Cabeço do Pez – site plan of the excavations in 1958 (adapted from Santos et al., 1974, fig. 3).



Figure B 27: Cabeço do Pez – concentration of shells found during the excavations in 1958 of a feature described as a 'lar' (hearth) in Area E, Section 3 (hearth) (Personal Archive of Manuel Heleno/National Museum of Archaeology - APMH/2/11/8-6/154).



Figure B 28: Cabeço do Pez – concentration of shells and an antler found during the excavations in the 1950s in Area C, Section 4, which was described as a 'lar' (hearth) (Personal Archive of Manuel Heleno/National Museum of Archaeology - APMH/2/11/17-126/187).

B3. Vale de Romeiras

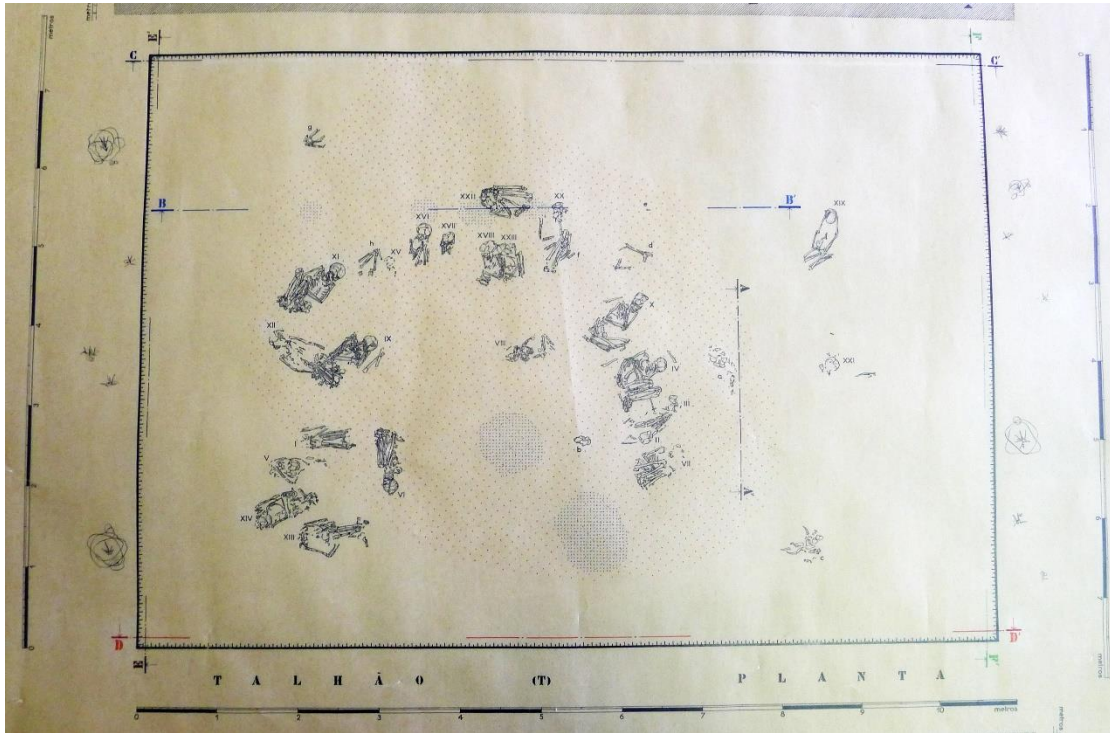


Figure B 29: Vale de Romeiras – extract of the site plan of 1959 (National Museum of Archaeology, Portugal – MNA, Archive A, A120).

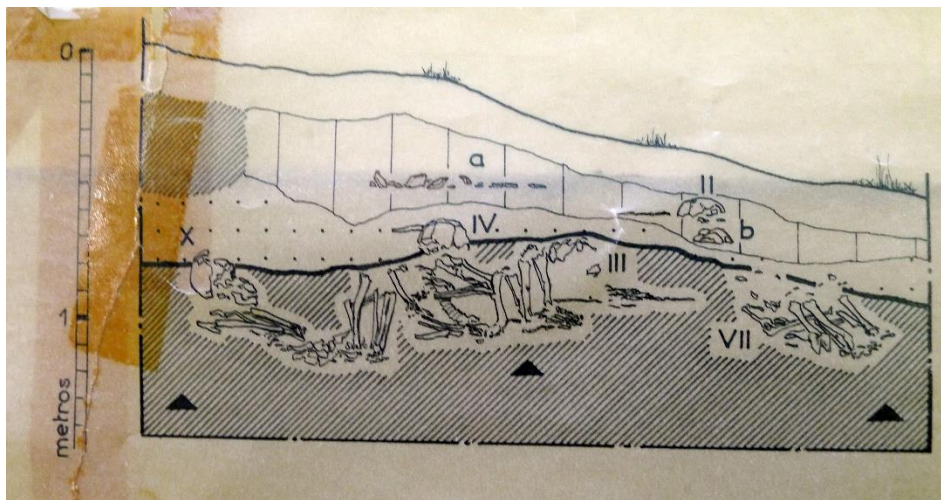


Figure B 30: Vale de Romeiras – detail of a stratigraphic section from the site plan of 1959 (National Museum of Archaeology, Portugal – MNA, Archive A, A120).

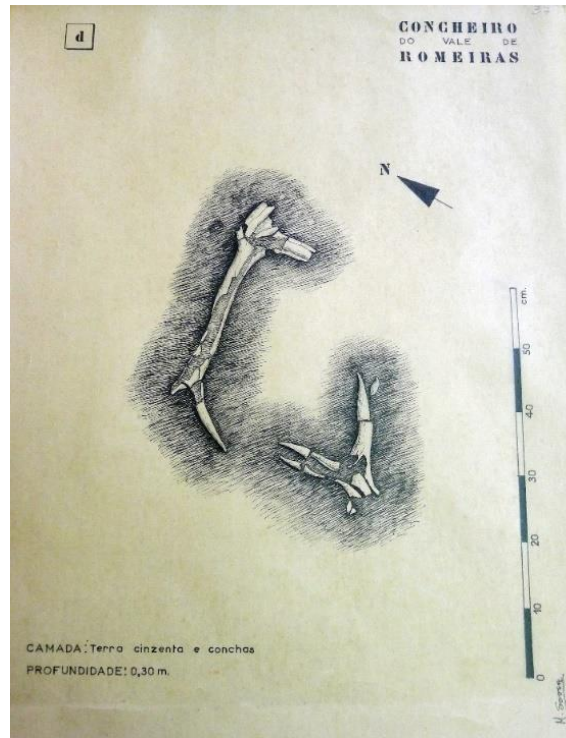


Figure B 31: Vale de Romeiras – individual drawing of a concentration of faunal remains called ‘d’ (National Museum of Archaeology, Portugal – MNA, Archive B, B37).

B4. Arapouco

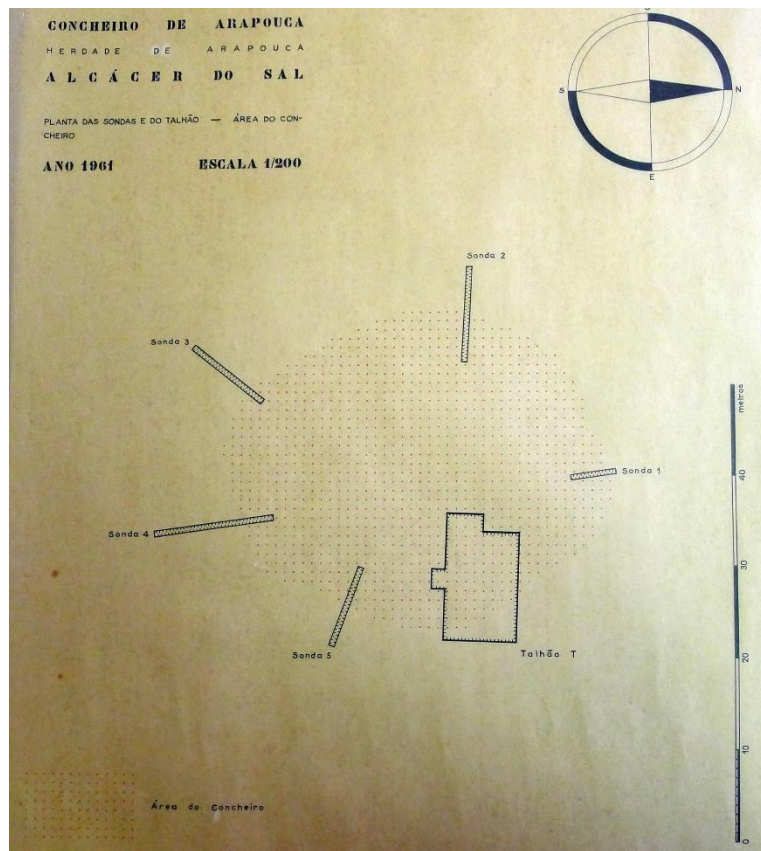


Figure B 32: Arapouco – site plan with the location of the excavated areas in 1961 (National Museum of Archaeology, Portugal – MNA, Archive A, A120(a)).

B5. Beg-er-Vil



Figure B 33: Beg-er-Vil – view of the stratigraphy in the cliff (photo by author)



Figure B 34: Beg-er-Vil, excavations of 2014 – general view (photo by Grégor Marchand)

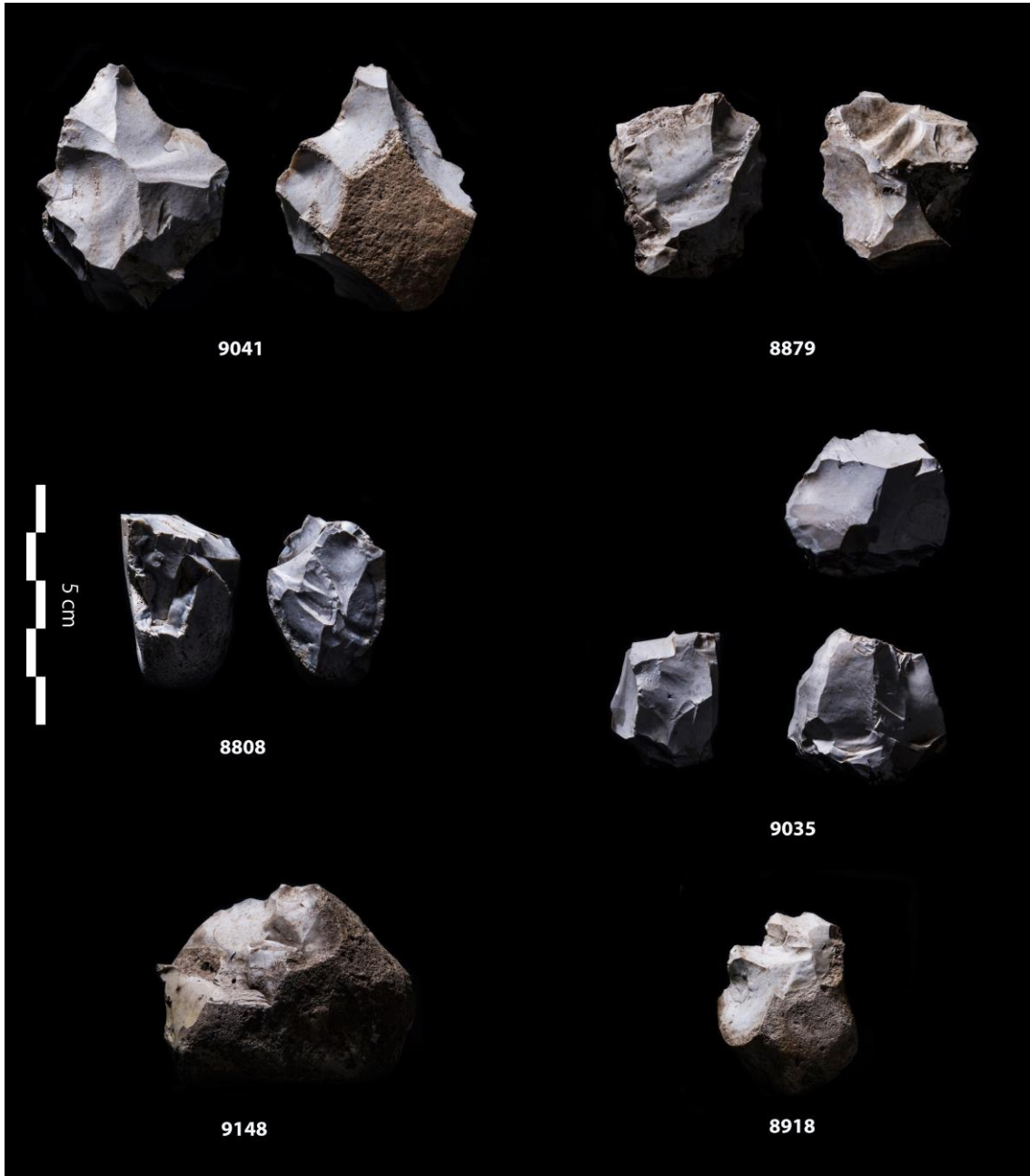


Figure B 35: Beg-er-Vil, excavations of 2015 – cores (adapted from original photos by François Eluard).

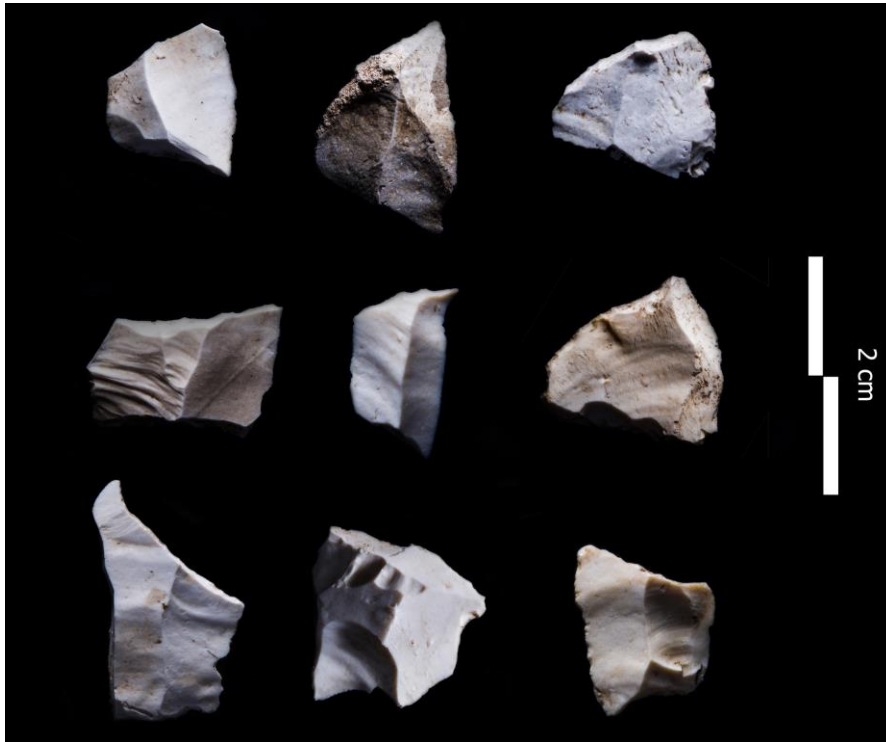
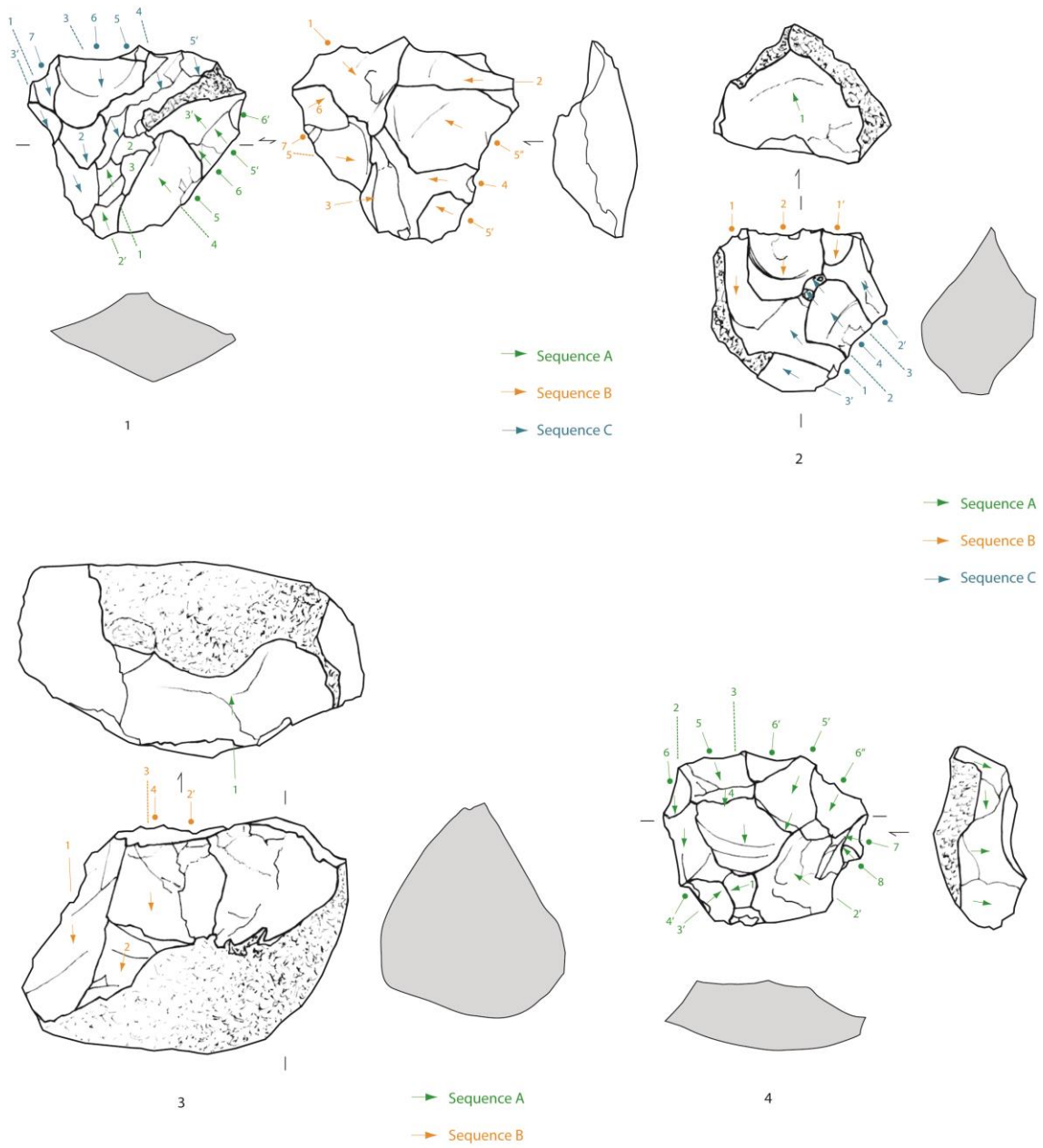


Figure B 36: Beg-er-Vil, excavations of 2015 – geometric microliths (trapezes) (adapted from original photos by François Eluard).



0 5 cm

Figure B 37: Beg-er-Vil, excavations of 2015 – multipolar core (1), bipolar core (2), unipolar core (3) and centripetal core (4) (drawings by author).

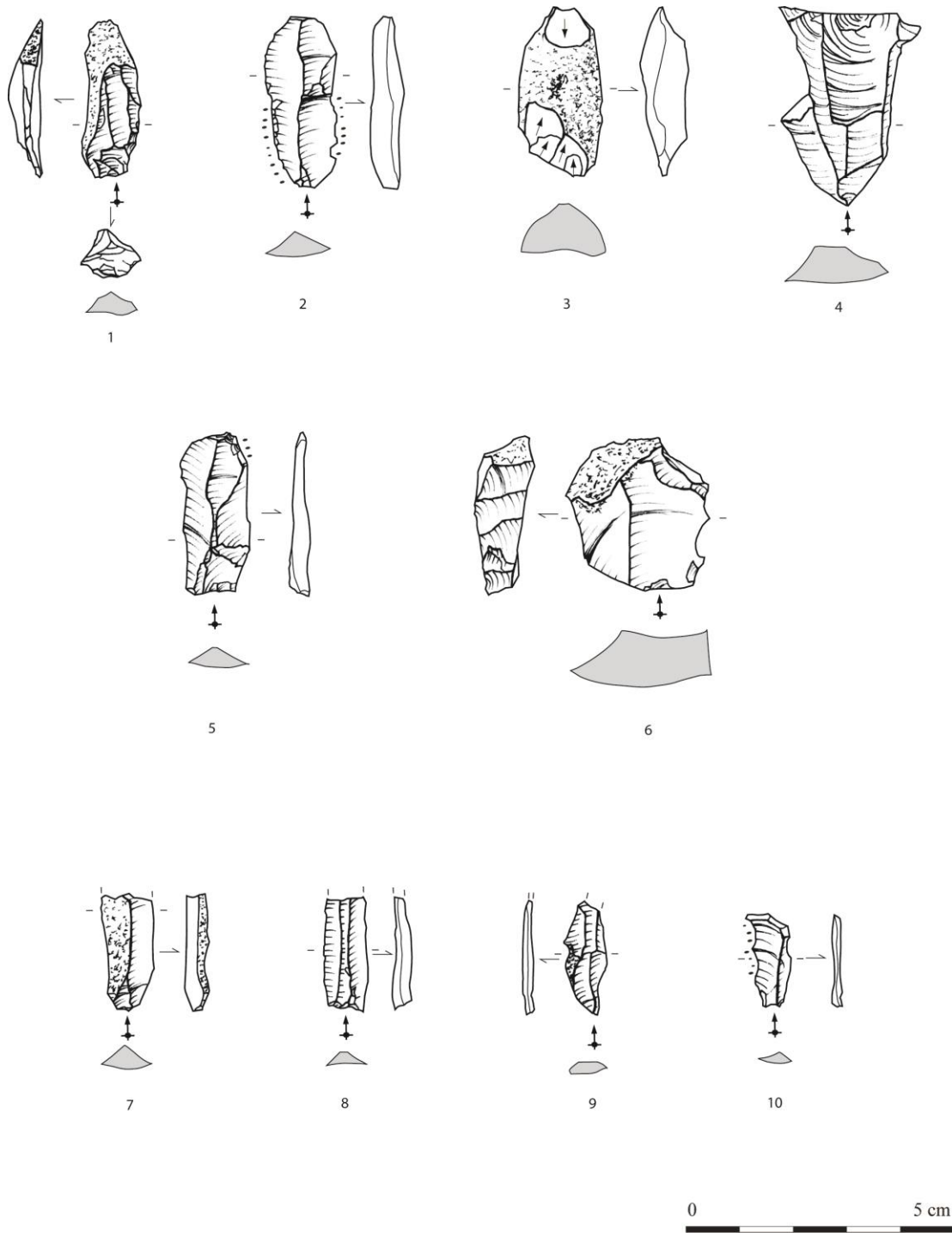


Figure B 38: Beg-er-Vil, excavations of 2015 – retouched bladelet (1), blades (2, 5), flake (3), bladelet (7–10), core maintenance flake (4) and core tablet (6) (drawings by author).

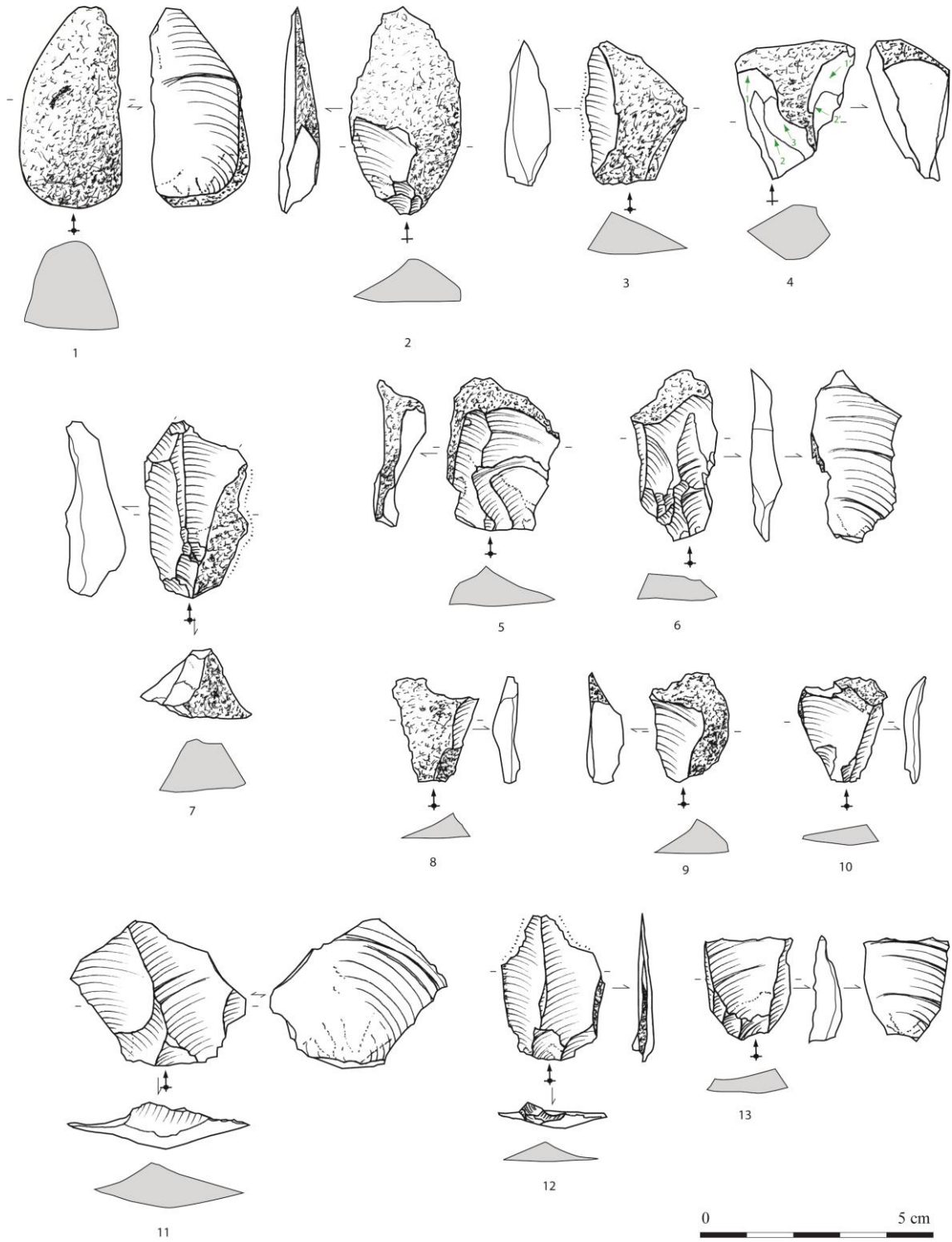


Figure B 39: Beg-er-Vil, excavations of 2013 – flakes (drawings by author).

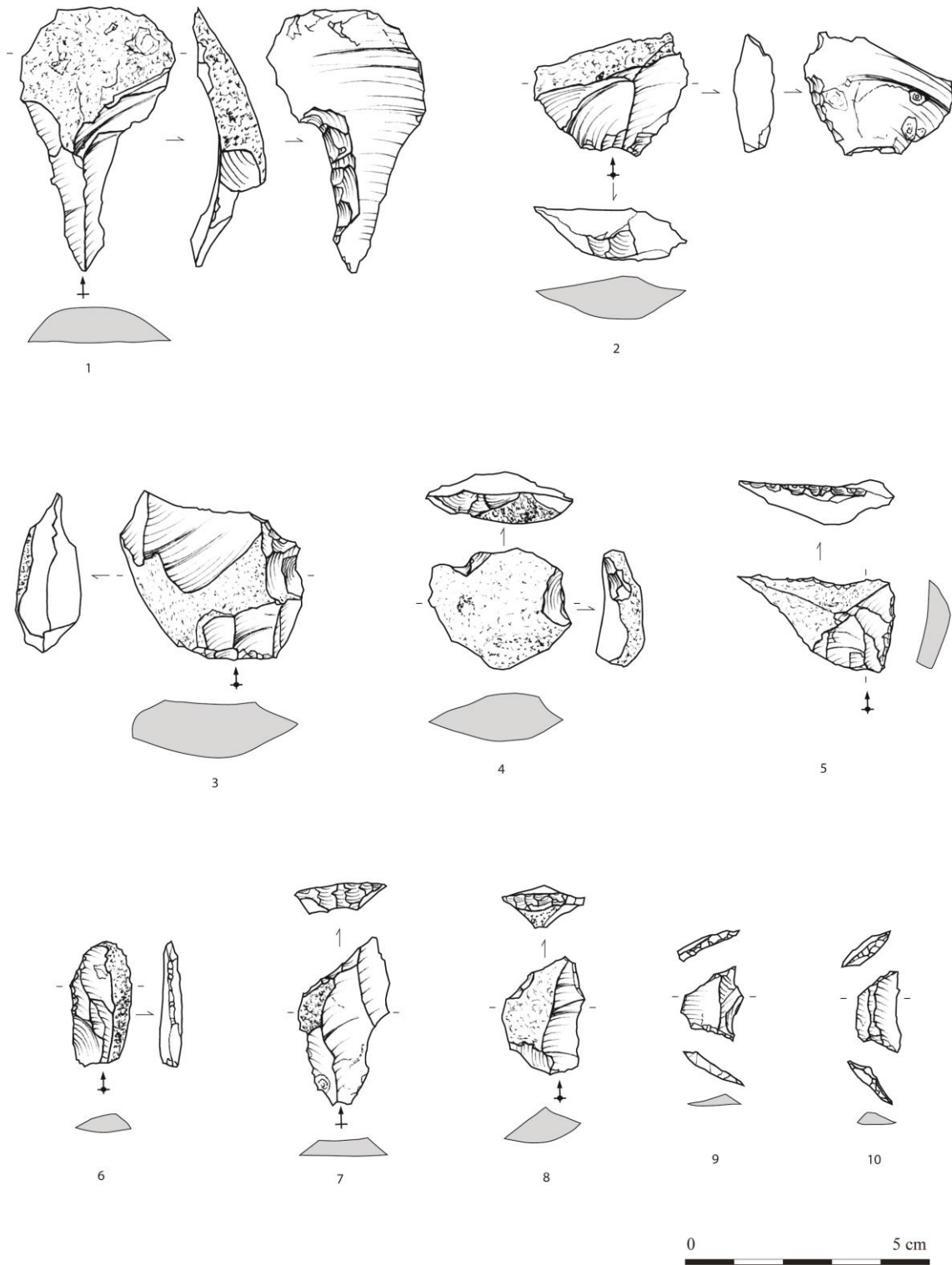


Figure B 40: Beg-er-Vil, excavations of 2015 – retouched tools. Notch (1), retouched flakes (2, 6), denticulates (3–4), truncated pieces (5, 7–8) and trapezes (9–10) (drawings by author).

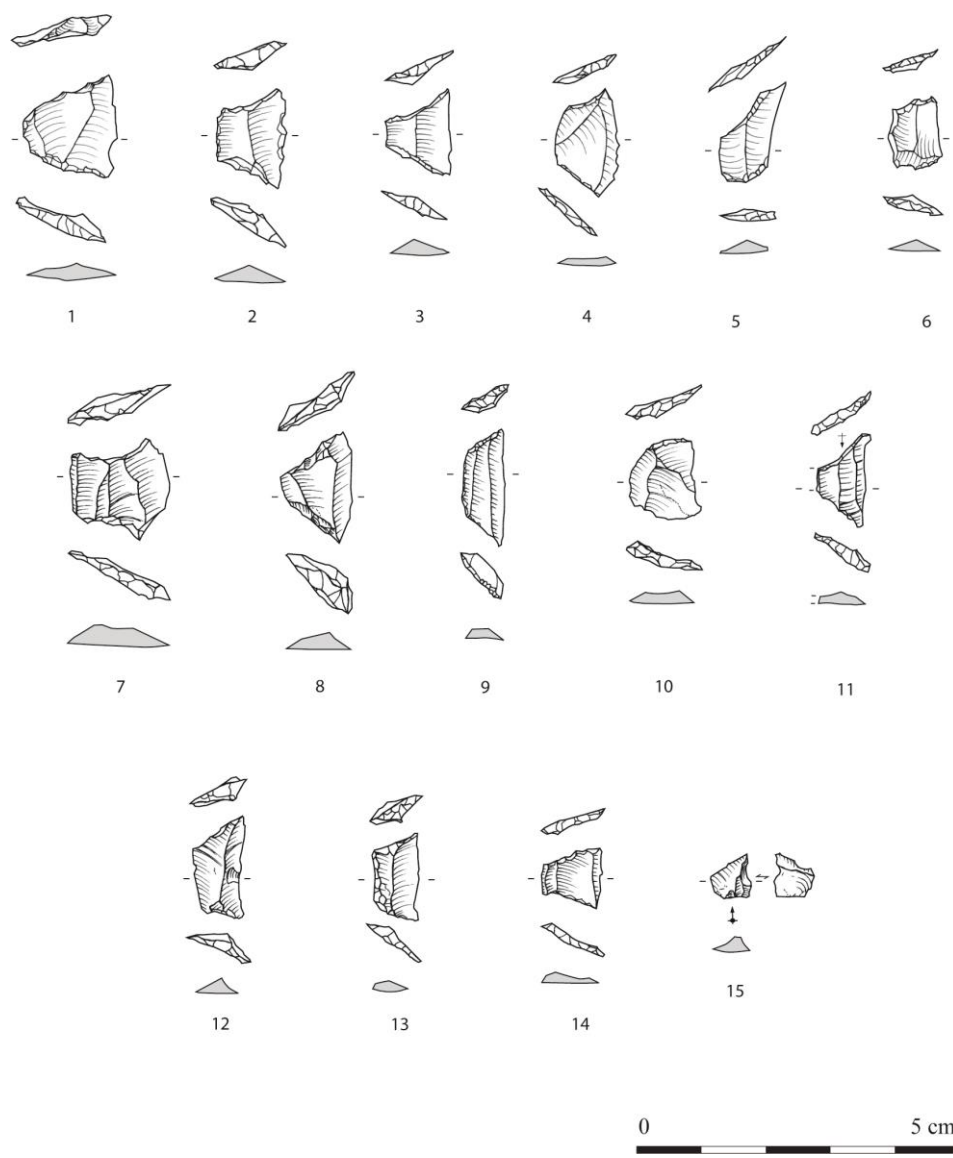


Figure B 41: Beg-er-Vil, excavations of 2013 – geometric microliths (1–14) and a microburin (15) (drawings by author).

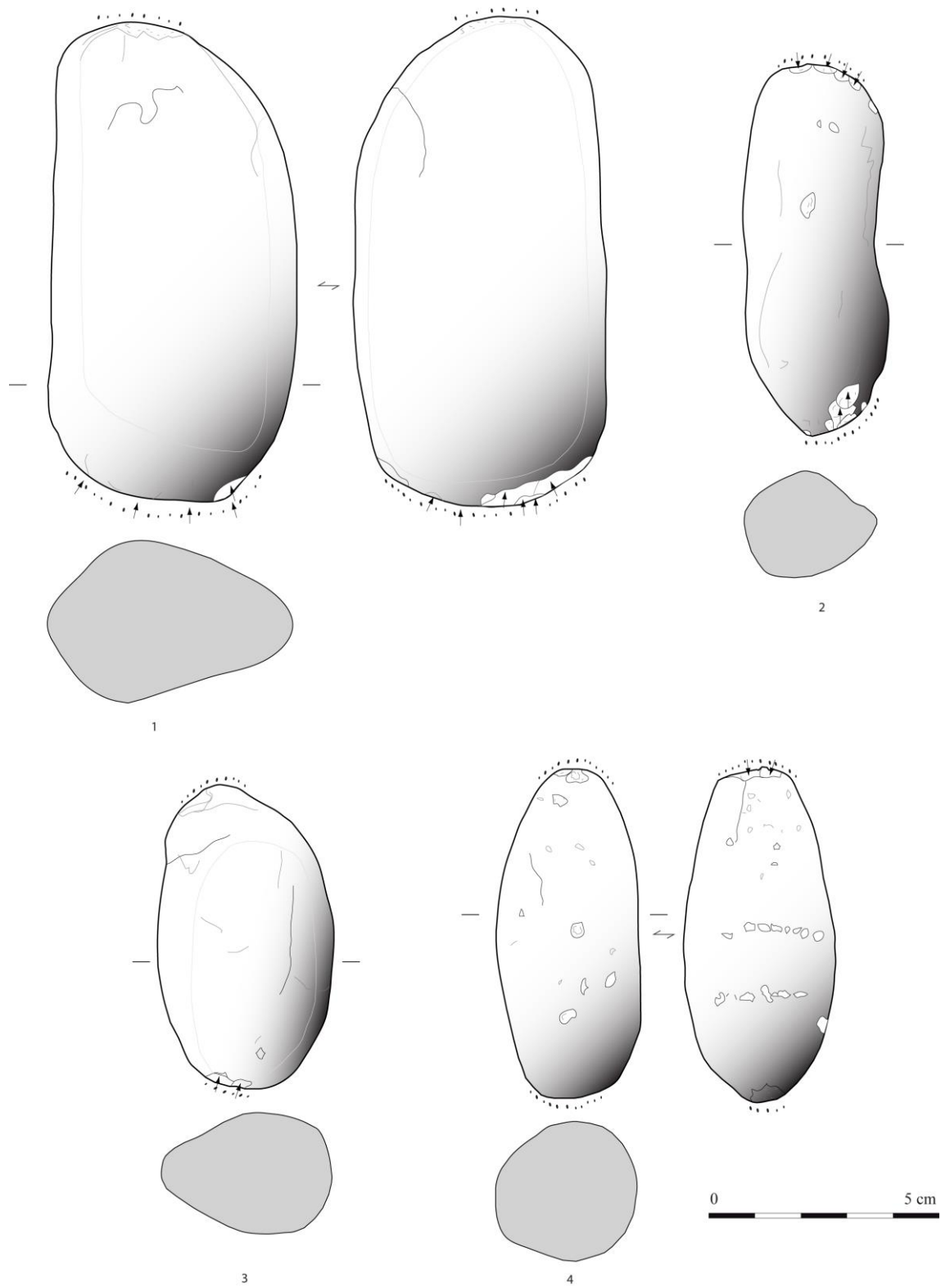


Figure B 42: Beg-er-Vil, excavations of 2015 – percussive tools (drawings by author).

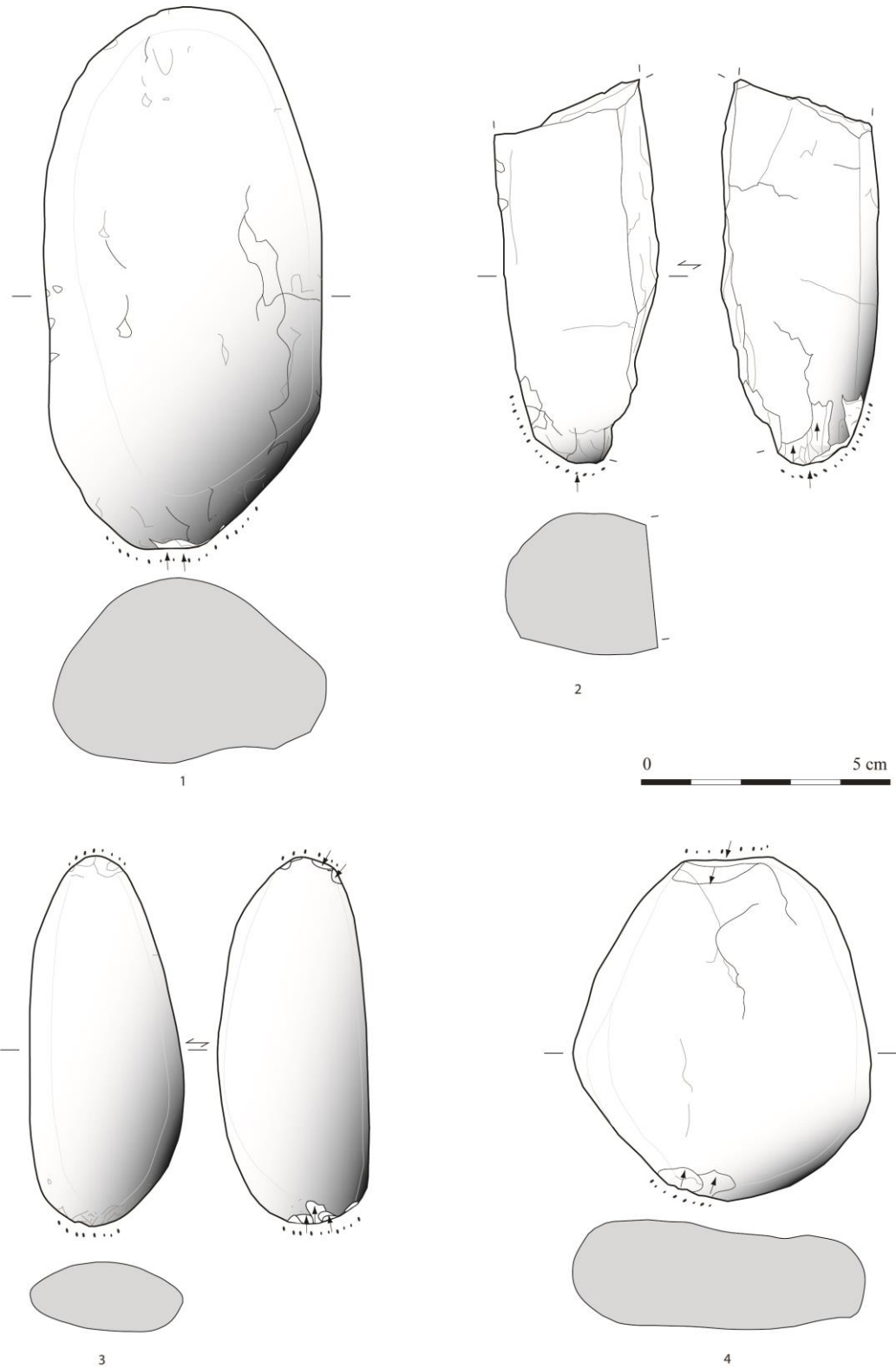


Figure B 43: Beg-er-Vil, excavations of 2015 – percussive tools (drawings by author).

Table B 19: Beg-er-Vil – individually plotted chipped lithic remains by stratigraphic unit (2012–2017 excavations).

SU	N	%
4	1447	16.35%
4	1046	11.82%
4.1	373	4.22%
4.2	28	0.32%
5	4826	54.54%
5.1	945	10.68%
5.2	1282	14.49%
5.3	1330	15.03%
5.4	626	7.07%
5.5	407	4.60%
5.6	218	2.46%
5.7	18	0.20%
6	31	0.35%
7	6	0.07%
10.1	7	0.08%
10.2	11	0.12%
13	1	0.01%
16.2	1	0.01%
20	65	0.73%
20.2	49	0.55%
21	6	0.07%
30	101	1.14%
32	17	0.19%
33	13	0.15%
38	7	0.08%
39	57	0.64%
39.2	47	0.53%
40	1	0.01%
41	1	0.01%
42	19	0.21%
44	1	0.01%
45	3	0.03%
46	16	0.18%
47	6	0.07%
48	11	0.12%
49	2	0.02%
100	8	0.09%
101	1439	16.26%
102	12	0.14%
107	42	0.47%
108	13	0.15%
109	11	0.12%
110	14	0.16%
111	2	0.02%
112	3	0.03%
120	190	2.15%
121	202	2.28%
123	35	0.40%
124	36	0.41%
125	16	0.18%
126	3	0.03%
128	2	0.02%
129	2	0.02%
131	1	0.01%
132	17	0.19%
South section	6	0.07%
Unknown	43	0.49%
Total	8849	100.00%

Table B 20: Beg-er-Vil – individually plotted chipped lithic remains by type of stratigraphic unit (2012–2017 excavations).

Stratigraphic unit type	N	%
Shell midden layers	5023	56.76%
Other stratigraphic units	3783	42.75%
Undefined	43	0.49%
Total	8849	100.00%

Table B 21: Beg-er-Vil – lithic categories by stratigraphic unit (individually plotted lithics from 2012–2017 excavations).

SU/ Category	Core		Core preparation and maintenance		Debitage product		Debris		Retouched tool		Splintered piece		Total N	Total %
	N	%	N	%	N	%	N	%	N	%	N	%		
4	73	5.04%	29	2.00%	937	64.75%	327	22.60%	79	5.46%	2	0.14%	1447	100.00%
5	465	9.64%	178	3.69%	3004	62.25%	933	19.33%	246	5.10%	0	0.00%	4826	100.00%
6	6	19.35%	2	6.45%	20	64.52%	3	9.68%	0	0.00%	0	0.00%	31	100.00%
7	0	0.00%	0	0.00%	5	83.33%	1	16.67%	0	0.00%	0	0.00%	6	100.00%
13	0	0.00%	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%	1	100.00%
20	2	3.08%	1	1.54%	37	56.92%	21	32.31%	4	6.15%	0	0.00%	65	100.00%
21	2	33.33%	1	16.67%	2	33.33%	1	16.67%	0	0.00%	0	0.00%	6	100.00%
30	22	21.78%	4	3.96%	49	48.51%	21	20.79%	5	4.95%	0	0.00%	101	100.00%
32	0	0.00%	1	5.88%	15	88.24%	1	5.88%	0	0.00%	0	0.00%	17	100.00%
33	2	15.38%	1	7.69%	8	61.54%	2	15.38%	0	0.00%	0	0.00%	13	100.00%
38	1	14.29%	0	0.00%	6	85.71%	0	0.00%	0	0.00%	0	0.00%	7	100.00%
39	8	14.04%	1	1.75%	36	63.16%	8	14.04%	4	7.02%	0	0.00%	57	100.00%
40	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
41	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
42	1	5.26%	4	21.05%	10	52.63%	4	21.05%	0	0.00%	0	0.00%	19	100.00%
44	1	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
45	1	33.33%	0	0.00%	1	33.33%	1	33.33%	0	0.00%	0	0.00%	3	100.00%
46	2	12.50%	2	12.50%	8	50.00%	3	18.75%	1	6.25%	0	0.00%	16	100.00%
47	2	33.33%	0	0.00%	3	50.00%	0	0.00%	1	16.67%	0	0.00%	6	100.00%
48	3	27.27%	0	0.00%	4	36.36%	3	27.27%	1	9.09%	0	0.00%	11	100.00%
49	0	0.00%	0	0.00%	2	100.00%	0	0.00%	0	0.00%	0	0.00%	2	100.00%
100	4	50.00%	0	0.00%	2	25.00%	2	25.00%	0	0.00%	0	0.00%	8	100.00%
101	123	8.55%	39	2.71%	918	63.79%	261	18.14%	96	6.67%	2	0.14%	1439	100.00%
102	3	25.00%	0	0.00%	8	66.67%	1	8.33%	0	0.00%	0	0.00%	12	100.00%
107	3	7.14%	0	0.00%	26	61.90%	9	21.43%	3	7.14%	1	2.38%	42	100.00%
108	4	30.77%	0	0.00%	6	46.15%	3	23.08%	0	0.00%	0	0.00%	13	100.00%

109	0	0.00%	0	0.00%	10	90.91%	1	9.09%	0	0.00%	0	0.00%	11	100.00%
110	4	28.57%	1	7.14%	9	64.29%	0	0.00%	0	0.00%	0	0.00%	14	100.00%
111	0	0.00%	0	0.00%	2	100.00%	0	0.00%	0	0.00%	0	0.00%	2	100.00%
112	0	0.00%	0	0.00%	2	66.67%	0	0.00%	1	33.33%	0	0.00%	3	100.00%
120	24	12.63%	2	1.05%	115	60.53%	35	18.42%	14	7.37%	0	0.00%	190	100.00%
121	12	5.94%	4	1.98%	117	57.92%	55	27.23%	14	6.93%	0	0.00%	202	100.00%
123	5	14.29%	0	0.00%	20	57.14%	6	17.14%	4	11.43%	0	0.00%	35	100.00%
124	3	8.33%	1	2.78%	18	50.00%	11	30.56%	3	8.33%	0	0.00%	36	100.00%
125	0	0.00%	0	0.00%	7	43.75%	7	43.75%	2	12.50%	0	0.00%	16	100.00%
126	0	0.00%	0	0.00%	3	100.00%	0	0.00%	0	0.00%	0	0.00%	3	100.00%
128	1	50.00%	0	0.00%	0	0.00%	1	50.00%	0	0.00%	0	0.00%	2	100.00%
129	1	50.00%	0	0.00%	1	50.00%	0	0.00%	0	0.00%	0	0.00%	2	100.00%
131	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%	0	0.00%	1	100.00%
132	0	0.00%	1	5.88%	11	64.71%	4	23.53%	1	5.88%	0	0.00%	17	100.00%
10.1	0	0.00%	0	0.00%	4	57.14%	2	28.57%	0	0.00%	1	14.29%	7	100.00%
10.2	0	0.00%	0	0.00%	6	54.55%	4	36.36%	1	9.09%	0	0.00%	11	100.00%
16.2	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
20.2	1	2.04%	2	4.08%	29	59.18%	14	28.57%	3	6.12%	0	0.00%	49	100.00%
39.2	2	4.26%	4	8.51%	30	63.83%	9	19.15%	2	4.26%	0	0.00%	47	100.00%
South Section	0	0.00%	0	0.00%	3	50.00%	0	0.00%	3	50.00%	0	0.00%	6	100.00%
Unknown	3	6.98%	3	6.98%	24	55.81%	10	23.26%	3	6.98%	0	0.00%	43	100.00%
Total	784	8.86%	281	3.18%	5521	62.39%	1765	19.95%	492	5.56%	6	0.07%	8849	100.00%

Table B 22: Beg-er-Vil – lithic categories represented in some of the structures (individually plotted lithics from 2012–2017 excavations).

Structure/ Category	Core		Core preparation and maintenance		Debitage product		Debris		Retouched tool		Splintered piece		Total N	Total %
	N	%	N	%	N	%	N	%	N	%	N	%		
D	7	12.73%	4	7.27%	35	63.64%	7	12.73%	2	3.64%	0	0.00%	55	100.00%
L	11	12.50%	1	1.14%	58	65.91%	13	14.77%	4	4.55%	1	1.14%	88	100.00%
V	8	9.20%	1	1.15%	45	51.72%	24	27.59%	9	10.34%	0	0.00%	87	100.00%
E	2	7.69%	4	15.38%	16	61.54%	4	15.38%	0	0.00%	0	0.00%	26	100.00%

Table B 23: Beg-er-Vil – percussive tools by stratigraphic unit (2012–2017 excavations).

SU	N	%
4	1	1.59%
20	1	1.59%
30	4	6.35%
39	1	1.59%
101	6	9.52%
102	1	1.59%
107	1	1.59%
110	1	1.59%
120	4	6.35%
39.2	1	1.59%
5.1	3	4.76%
5.2	7	11.11%
5.3	12	19.05%
5.4	6	9.52%
5.5	13	20.63%
Unknown	1	1.59%
Total	63	100.00%

Table B 24: Beg-er-Vil – raw materials of the lithic tools (individually plotted lithics from 2012–2017 excavations).

Raw material	N	%
Flint	8305	93.19%
Flint?	1	0.01%
Quartz	380	4.26%
Hyaline quartz	1	0.01%
Quartzite	148	1.66%
Sandstone	23	0.26%
Sandstone/Quartzite	19	0.21%
Gneiss	3	0.03%
Granite	7	0.08%
Mica schist	4	0.04%
Schist	3	0.03%
Others	4	0.04%
Unknown	14	0.16%
Total	8912	100.00%

Table B 25: Beg-er-Vil – raw materials of the percussive tools (2012–2017 excavations).

Raw material	N	%
Quartz	24	38.10%
Quartzite	15	23.81%
Sandstone	7	11.11%
Flint	5	7.94%
Granite	4	6.35%
Gneiss	1	1.59%
Schist	2	3.17%
Mica schist	1	1.59%
Others	1	1.59%
Unknown	3	4.76%
Total	63	100.00%

Table B 26: Beg-er-Vil – types of cores (2012–2017 excavations).

Type of core	N	%
Unipolar	127	16.20%
Bipolar	103	13.14%
Multipolar	51	6.51%
Centripetal	11	1.40%
Core on flake	29	3.70%
Core on flake?	1	0.13%
Flaked block / pebble	157	20.03%
Chopper	6	0.77%
Unknown	299	38.14%
Total	784	100.00%

Table B 27: Beg-er-Vil – geometric microliths (2012–2017 excavations).

Year (campaign)	Individually plotted		Sieving		Total N
	N	%	N	%	
2012	8	21.62%	29	49.15	37
2013	6	8.11%	68	82.93	74
2014	1	3.57%	27	84.38	28
2015	14	31.11%	31	40.79	45
2016	4	44.44%	5	9.43	9
2017	38	-	NA	NA	38
Total	71	30.74%	160	69.26%	231

NA: not-analysed

Table B 28: Beg-er-Vil – geometric microliths by stratigraphic unit and type (2012–2017 excavations).

SU/type	Trapeze		Triangle		Undefined		Total N	Total %
	N	%	N	%	N	%		
4	26	11.26%	0	0.00%	2	0.87%	28	12.12%
4	19	8.23%	0	0.00%	1	0.43%	20	8.66%
4.1	7	3.03%	0	0.00%	0	0.00%	7	3.03%
4.2	0	0.00%	0	0.00%	1	0.43%	1	0.43%
5	124	53.68%	6	2.60%	20	8.66%	150	64.94%
5.1	26	11.26%	2	0.87%	0	0.00%	28	12.12%
5.2	38	16.45%	2	0.87%	8	3.46%	48	20.78%
5.2-5.3	1	0.43%	0	0.00%	0	0.00%	1	0.43%
5.3	37	16.02%	1	0.43%	11	4.76%	49	21.21%
5.4	18	7.79%	1	0.43%	1	0.43%	20	8.66%
5.5	2	0.87%	0	0.00%	0	0.00%	2	0.87%
5.6	2	0.87%	0	0.00%	0	0.00%	2	0.87%
6	1	0.43%	0	0.00%	0	0.00%	1	0.43%
20	2	0.87%	0	0.00%	2	0.87%	4	1.73%
20.2	2	0.87%	0	0.00%	0	0.00%	2	0.87%
30	6	2.60%	0	0.00%	0	0.00%	6	2.60%
33	1	0.43%	0	0.00%	0	0.00%	1	0.43%
39.2	1	0.43%	0	0.00%	0	0.00%	1	0.43%
39	1	0.43%	0	0.00%	0	0.00%	1	0.43%
101	19	8.23%	0	0.00%	3	1.30%	22	9.52%
120	5	2.16%	0	0.00%	0	0.00%	5	2.16%
121	5	2.16%	0	0.00%	0	0.00%	5	2.16%
123	1	0.43%	0	0.00%	0	0.00%	1	0.43%
South Section	2	0.87%	0	0.00%	0	0.00%	2	0.87%
Section	1	0.43%	0	0.00%	0	0.00%	1	0.43%
Unknown	1	0.43%	0	0.00%	0	0.00%	1	0.43%
Total	198	85.71%	6	2.60%	27	11.69%	231	100.00%

Table B 29: Beg-er-Vil – form of the trapezes (2012–2017 excavations).

Form	N	%
Elongated	8	4.04%
Short	128	64.65%
Unknown	62	31.31%
Total	198	100.00%

Table B 30: Beg-er-Vil – measurements of complete flakes (2012–2017 excavations).

Measurement	
Length (mm)	
Mean	24.63
SD	12.23
Width (mm)	
Mean	19.68
SD	8.31
Thickness (mm)	
Mean	6.61
SD	3.94
n	2361

Table B 31: Beg-er-Vil – measurements of complete blades (2012–2017 excavations).

Measurement	
Length (mm)	
Mean	33.74
SD	6.73
Width (mm)	
Mean	15.00
SD	3.41
Thickness (mm)	
Mean	5.87
SD	2.57
n	132



Figure B 44: Beg-er-Vil, excavations of 2012–2017 – horizontal distribution of cores (top) and retouched tools (bottom) (image by author).

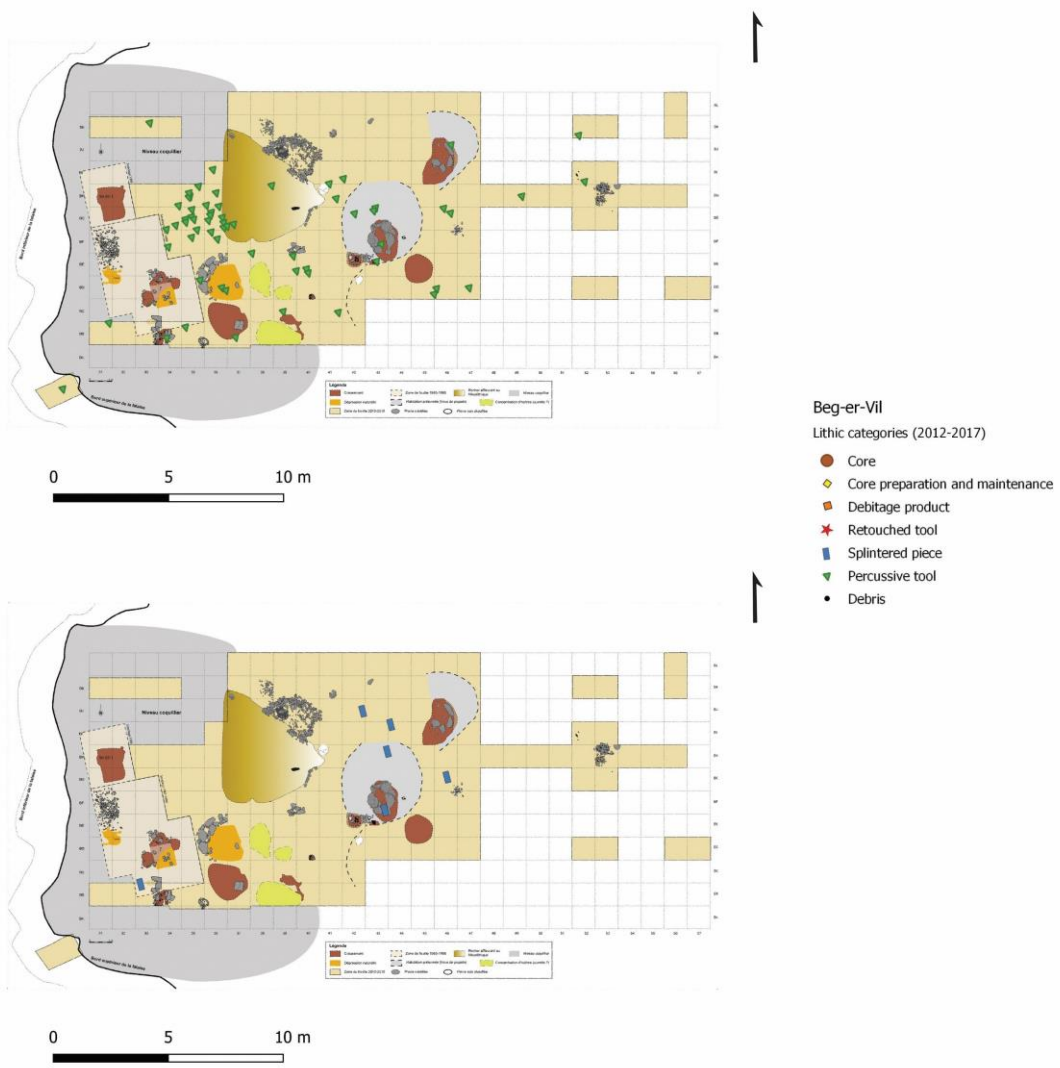


Figure B 45: Beg-er-Vil, excavations of 2012–2017 – horizontal distribution of percussive tools (top) and splintered pieces (bottom) (image by author).

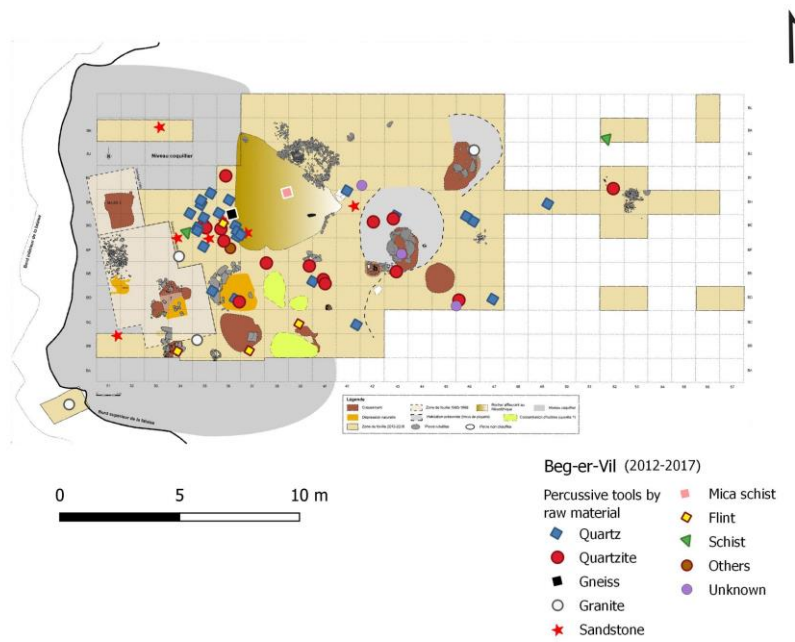


Figure B 46: Beg-er-Vil, excavations of 2012–2017 – horizontal distribution of percussive tools (top) by raw material type (image by author).



Figure B 47: Beg-er-Vil, excavations of 2012–2017 – horizontal distribution of drills (image by author).

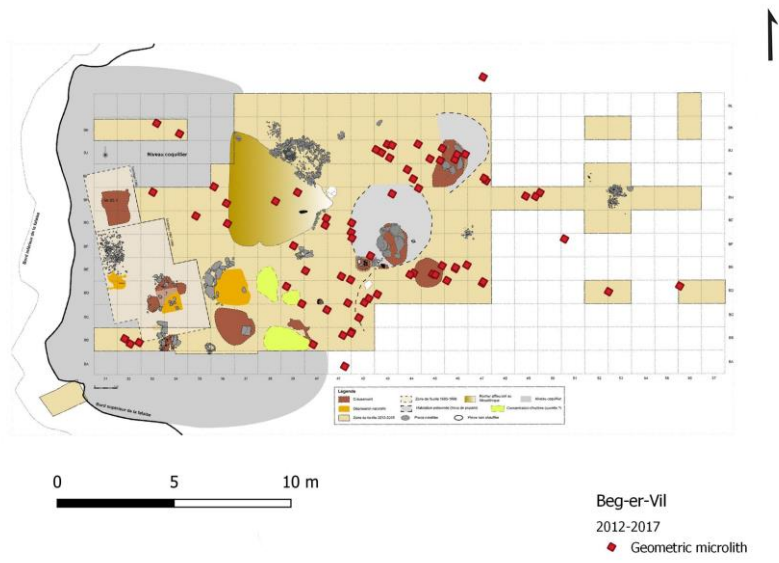


Figure B 48: Beg-er-Vil, excavations of 2012–2017 – horizontal distribution of individually plotted geometric microliths (image by author).

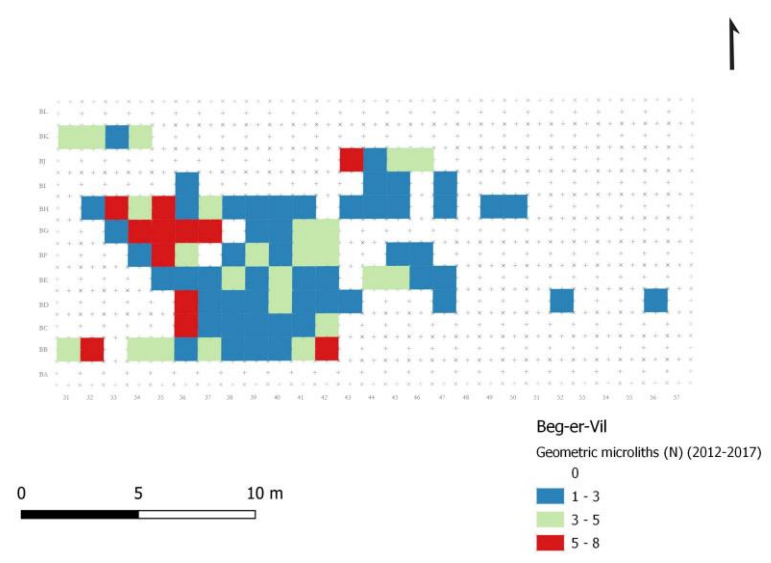


Figure B 49: Beg-er-Vil, excavations of 2012–2017 – horizontal distribution of geometric microliths by square (individually plotted tools in 2012–2017 and those recovered from sieved sediments in 2012–2016) (image by author).

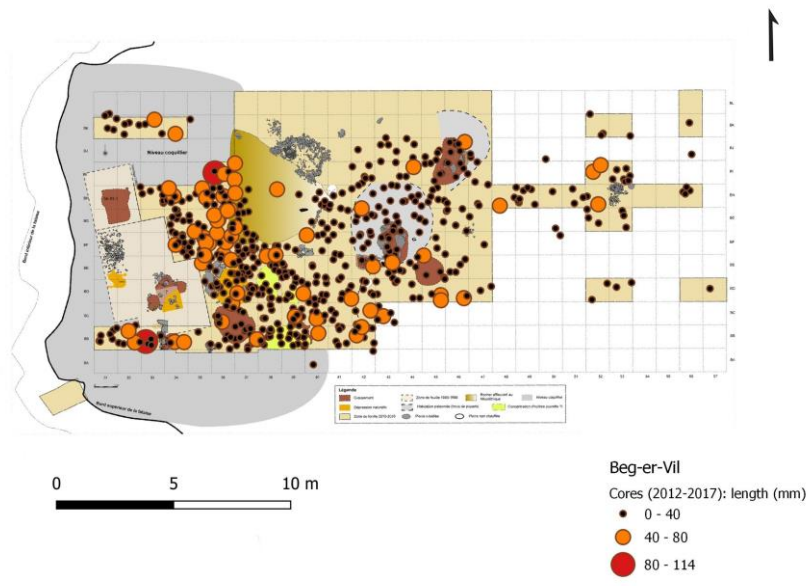


Figure B 50: Beg-er-Vil, excavations of 2012–2017 – horizontal distribution of cores by length (mm) (image by author).

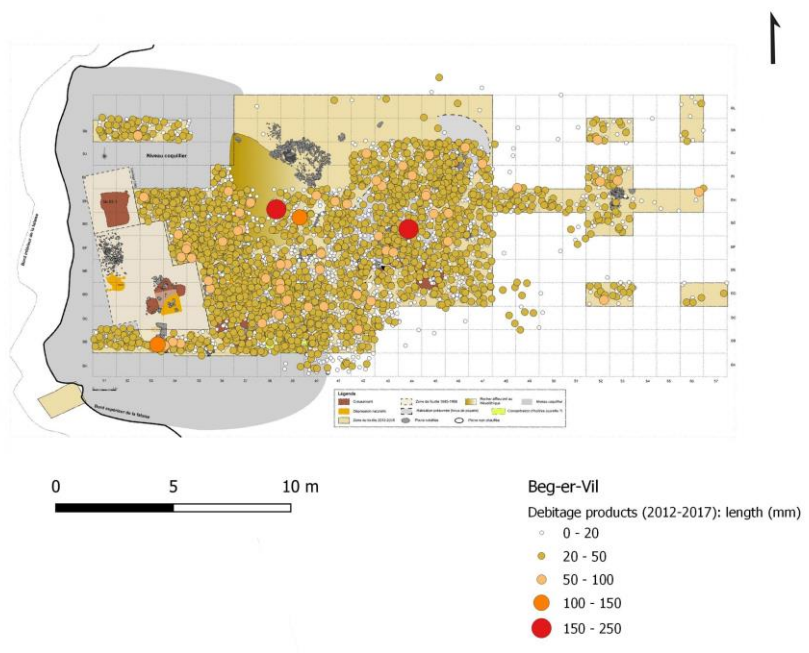


Figure B 51: Beg-er-Vil, excavations of 2012–2017 – horizontal distribution of debitage products by length (mm) (image by author).

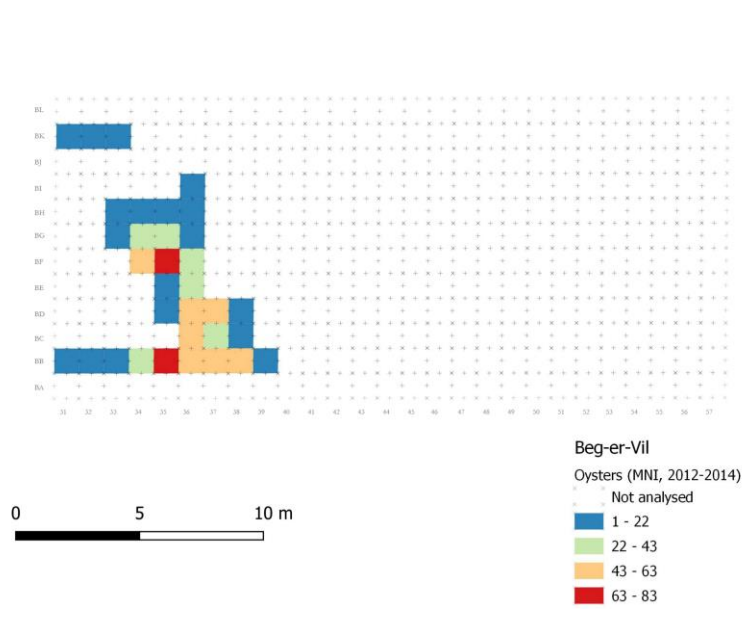


Figure B 52: Beg-er-Vil – horizontal distribution of oysters (MNI) by square (individually plotted shells and those recovered from sieved sediments from the excavations of 2012–2014) (image by author).

B6. Beg-an-Dorchenn

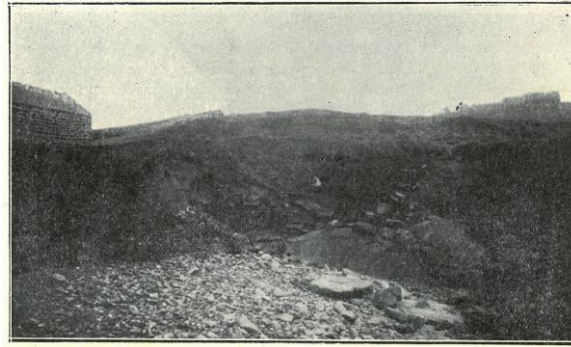


Figure B 53: Beg-an-Dorchenn – general view of the site in the 1920s (reproduced from Bénard Le Pontois, 1929, fig. 22).



Figure B 54: Beg-an-Dorchenn – supposed dwelling-floor identified in the excavations of 1920 and 1926 (reproduced from Bénard Le Pontois, 1929, fig. 23). The detail is not visible.

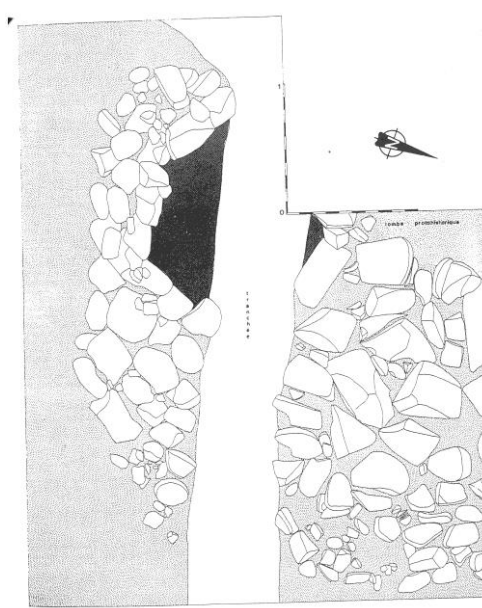


Figure B 55: Beg-an-Dorchenn – stone concentration and hearth interpreted as a dwelling-floor, which was found in the 1980s (reproduced from Kayser, 1986).

Table B 32: Beg-an-Dorchenn – distribution of lithic artefacts by zone of excavation (calculations based on the frequency counts by square from Rault, 1992)

Zone	Lithics (total)	%	Cores	%	Split pebbles/splintered pieces	%	Armatures	%	Bladelets*	%
1	1504	10.80%	8	16.33%	8	17.02%	31	10.95%	31	15.12%
2	4051	29.08%	12	24.49%	12	25.53%	56	19.79%	59	28.78%
3	4343	31.18%	10	20.41%	11	23.40%	73	25.80%	52	25.37%
4	712	5.11%	6	12.24%	2	4.26%	38	13.43%	12	5.85%
5	2946	21.15%	10	20.41%	11	23.40%	73	25.80%	50	24.39%
NA	373	2.68%	3	6.12%	3	6.38%	12	4.24%	1	0.49%
Total	13929	100.00%	49	100.00%	47	100.00%	283	100.00%	205	100.00%

*Only complete bladelets were included.

B7. Hikozaiki



Figure B 56: Hikozaiki, excavations of 2003–2004 – features found at trench 14 (photo courtesy of Okayama City Board of Education).



Figure B 57: Hikozaiki, excavations of 2003–2004 – shell layers at trench 9 (photo courtesy of Okayama City Board of Education).

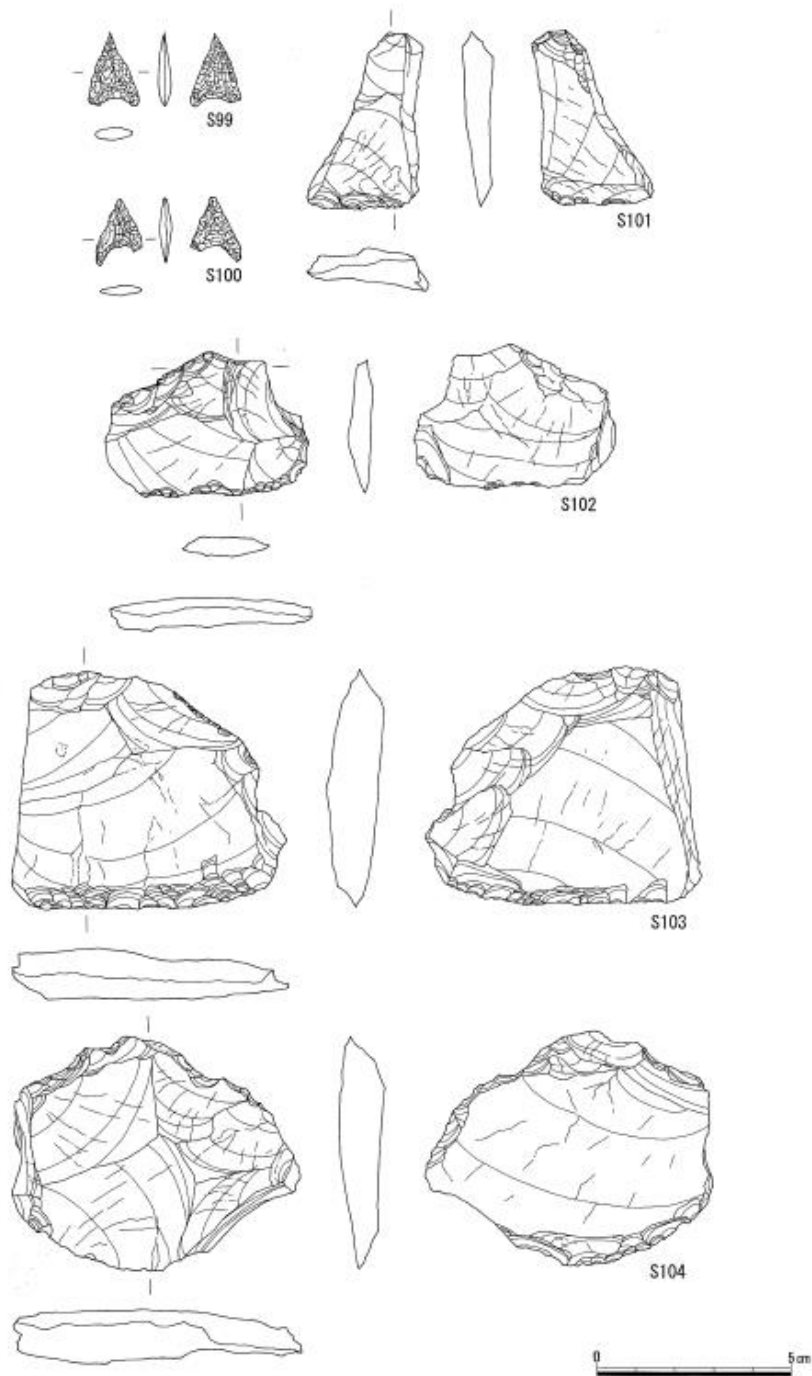


Figure B 58: Hikozaiki – sample of lithic materials found in trench T14, Areas A–C. Arrowheads (S99, S100), splintered piece (S101), tanged scrapers (S102, S103) and side scraper (S104) (reproduced from Tajima et al., 2006, fig. 93).

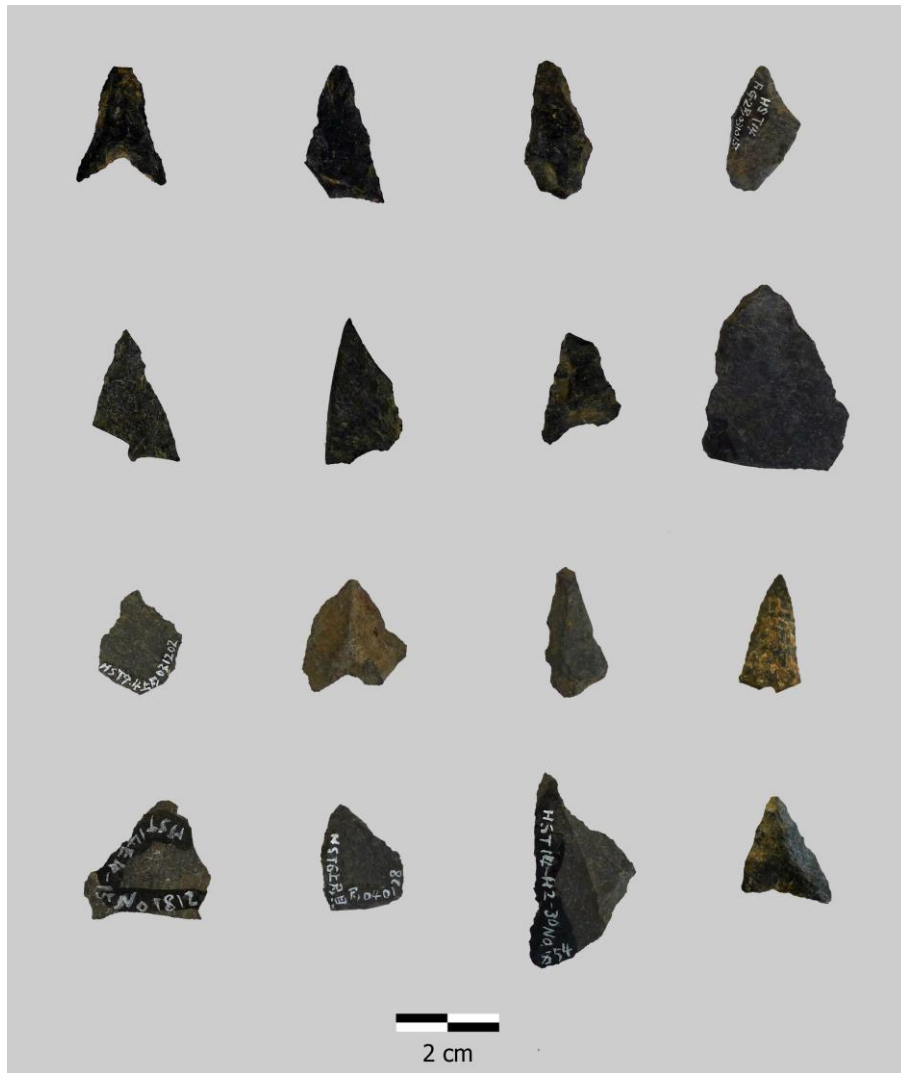


Figure B 59: Hikozaiki – arrowheads in different stages of production (material deposited at the Centre for Archaeological Operations of Okayama City) (photos by author).



Figure B 60: Hikozaiki – details of a flake (u17) (material deposited at the Centre for Archaeological Operations of Okayama City) (photos by author).



Figure B 61: Hikozaiki – chipped stone axe (S188) (material deposited at the Centre for Archaeological Operations of Okayama City) (photos by author).

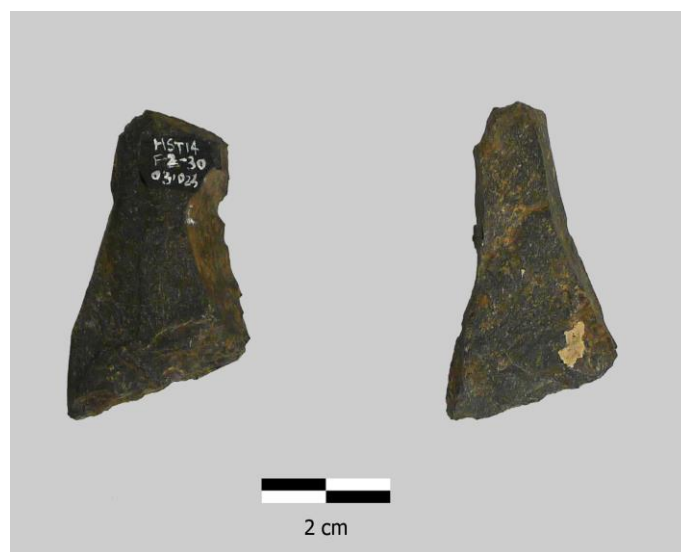


Figure B 62: Hikozaiki – splintered pieces (S146 and S101) (material deposited at the Centre for Archaeological Operations of Okayama City) (photos by author).

Table B 33: Hikozaki – lithic technological categories by trench (T11, T14, T15, T23, T27, T6, T8, T9).

Category/Trench	T11		T14		T15		T23		T27		T6		T8		T9		Total N	Total %
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Core	0	0.00%	10	1.11%	0	0.00%	0	0.00%	0	0.00%	1	3.57%	0	0.00%	2	1.71%	13	1.12%
Core preparation and maintenance	0	0.00%	3	0.33%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	3	0.26%
Debitage product	7	38.89%	408	45.33%	5	71.43%	20	54.05%	13	56.52%	13	46.43%	25	71.43%	45	38.46%	536	46.01%
Retouched tool	10	55.56%	293	32.56%	2	28.57%	13	35.14%	6	26.09%	12	42.86%	8	22.86%	44	37.61%	388	33.30%
Splintered piece	0	0.00%	16	1.78%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	2.86%	1	0.85%	18	1.55%
Debris	1	5.56%	170	18.89%	0	0.00%	4	10.81%	4	17.39%	2	7.14%	1	2.86%	25	21.37%	207	17.77%
Total	18	100.00%	900	100.00%	7	100.00%	37	100.00%	23	100.00%	28	100.00%	35	100.00%	117	100.00%	1165	100.00%

Table B 34: Hikozaki – chronological period of the analysed lithic remains (total).

Subperiod	N	%
Early Jomon	339	29.10%
Middle Jomon	117	10.04%
Late Jomon	584	50.13%
Final Jomon	111	9.53%
Unknown	14	1.20%
Total	1165	100.00%

Table B 35: Hikozaki – chronological period of the analysed lithic remains (trench T14).

Subperiod	N	%
Early Jomon	119	13.22%
Middle Jomon	117	13.00%
Late Jomon	555	61.67%
Final Jomon	96	10.67%
Unknown	13	1.44%
Total	900	100.00%

Table B 36: Hikozaiki – stratigraphic provenance of the analysed lithic remains from trench T14.

Stratigraphic unit/feature	N	%
1	2	0.22%
2	71	7.89%
3	324	36.00%
4	65	7.22%
5	14	1.56%
6	31	3.44%
8	6	0.67%
9	3	0.33%
10	63	7.00%
14	2	0.22%
16	3	0.33%
13/14	1	0.11%
3/4	58	6.44%
3-6	8	0.89%
4?	1	0.11%
5/6	11	1.22%
5/6/8/9	2	0.22%
8/9	15	1.67%
8/9/10	7	0.78%
Deposit faunal remains 3	5	0.56%
Deposit faunal remains 4	3	0.33%
Infills	96	10.67%
Kyu Todai infills	26	2.89%
Pit 2	31	3.44%
Pit 3	10	1.11%
Pit 4	3	0.33%
Pit 6	2	0.22%
Pit 8	1	0.11%
Post-hole 17	2	0.22%
Sieving	1	0.11%
Skeleton 3/4	2	0.22%
Top	28	3.11%
Unknown	3	0.33%
Total	900	100.00%

Table B 37: Hikozaiki – lithic technological categories from the pits found in trench T14.

Pit/technological category	Core	Core preparation and maintenance	Debitage product	Retouched tool	Splintered piece	Debris	Total
Pit 2							
N	2	0	16	10	0	3	31
%	6.45%	0.00%	51.61%	32.26%	0.00%	9.68%	100.00%
Pit 3							
N	1	0	6	3	0	0	10
%	10.00%	0.00%	60.00%	30.00%	0.00%	0.00%	100.00%
Pit 4							
N	0	0	2	1	0	0	3
%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	100.00%
Pit 6							
N	0	0		1	0	1	2
%	0.00%	0.00%	0.00%	50.00%	0.00%	50.00%	100.00%
Pit 8							
N	0	0	1	0	0	0	1
%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%

Table B 38: Hikozaki – edges of unretouched flakes (complete and nearly complete pieces).

Edges	N	%
Parallel	2	2.70%
Convergent	9	12.16%
Divergent	20	27.03%
Biconvex	2	2.70%
Irregular	41	55.41%
Total	74	100.00%

Table B 39: Hikozaki – dimensions of unretouched flakes (mm) by subperiod (complete and nearly complete pieces).

Measurement / subperiod	Early Jomon	Middle Jomon	Late Jomon	Final Jomon	Total
Length (mm)					
Mean	30.70	29.52	31.39	26.49	30.48
SD	13.94	7.05	13.66	12.71	13.22
Width (mm)					
Mean	35.67	39.70	30.70	19.48	32.07
SD	21.75	25.26	15.93	2.23	18.78
Thickness (mm)					
Mean	5.99	6.42	6.44	3.40	5.94
SD	3.32	3.44	4.08	1.78	3.62
n	30	5	33	8	76

Table B 40: Hikozaki – butts of unretouched flakes.

Butt	N	%
Cortical	49	17.82%
Dihedral	7	2.55%
Facetted	21	7.64%
Flat	69	25.09%
Linear	94	34.18%
Pecked	1	0.36%
Punctiform	11	4.00%
Absent	23	8.36%
Total	275	100.00%

Table B 41: Hikozaki – bulbs of unretouched flakes.

Bulb	N	%
Diffuse	106	49.53%
Absent	95	44.39%
Pronounced	13	6.07%
Total	214	100.00%

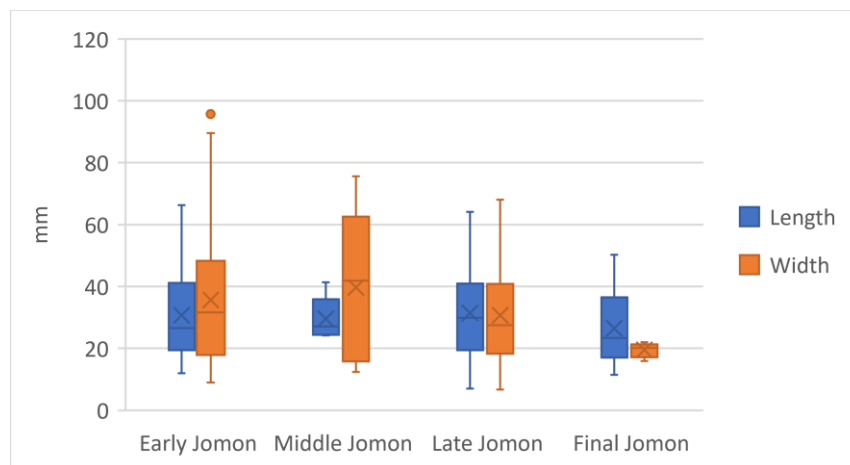


Figure B 63: Hikozaki – lengths and widths of unretouched flakes by subperiod (complete/nearly complete flakes, n=76).

Table B 42: Hikozaki – retouched tools by trench.

Retouched tool type / trench	T11		T14		T15		T23		T27		T6		T8		T9		Total N	Total %
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Arrowhead	2	20.00%	58	19.80%	0	0.00%	2	15.38%	0	0.00%	5	41.67%	2	25.00%	6	13.64%	75	19.33%
Scraper tool	2	20.00%	42	14.33%	1	50.00%	2	15.38%	0	0.00%	1	8.33%	1	12.50%	10	22.73%	59	15.21%
Retouched flake	0	0.00%	30	10.24%	0	0.00%	1	7.69%	1	16.67%	1	8.33%	1	12.50%	8	18.18%	42	10.82%
Notch/Denticulate	1	10.00%	13	4.44%	0	0.00%	1	7.69%	0	0.00%	0	0.00%	0	0.00%	2	4.55%	17	4.38%
Chipped stone axe	0	0.00%	4	1.37%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	4	1.03%
Spearhead	0	0.00%	1	0.34%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.26%
Irregular tool	0	0.00%	1	0.34%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.26%
Diverse	5	50.00%	144	49.15%	1	50.00%	7	53.85%	5	83.33%	5	41.67%	4	50.00%	18	40.91%	189	48.71%
Total	10	100.00%	293	100.00%	2	100.00%	13	100.00%	6	100.00%	12	100.00%	8	100.00%	44	100.00%	388	100.00%

Table B 43: Hikozaki – base of the arrowheads by subperiod (complete pieces at the final production stage).

Base / subperiod	Early Jomon		Middle Jomon		Late Jomon		Total N	Total %
	N	%	N	%	N	%		
Concave	9	32.14%	4	14.29%	7	25.00%	20	71.43%
Convex	1	3.57%	1	3.57%	0	0.00%	2	7.14%
Straight	1	3.57%	2	7.14%	3	10.71%	6	21.43%
Total	11	39.29%	7	25.00%	10	35.71%	28	100.00%

Table B 44: Hikozaki – retouch extension of arrowheads by subperiod (complete pieces at the final production stage).

Retouch extension / subperiod	Early Jomon		Middle Jomon		Late Jomon		Total N	Total %
	N	%	N	%	N	%		
Short	0	0.00%	1	4.00%	0	0.00%	1	4.00%
Long	4	16.00%	2	8.00%	2	8.00%	8	32.00%
Invasive	7	28.00%	4	16.00%	5	20.00%	16	64.00%
Total	11	44.00%	7	28.00%	7	28.00%	25	100.00%

Table B 45: Hikozaki – measurements of arrowheads (mm) by subperiod (complete / nearly complete pieces at the final production stage).

Measurement / subperiod	Early Jomon	Middle Jomon	Late Jomon	Total
Length (mm)				
Mean	22.56	23.10	21.07	22.30
SD	7.45	3.66	3.90	5.56
Width (mm)				
Mean	13.56	15.90	15.84	14.86
SD	3.32	3.08	3.29	3.32
Thickness (mm)				
Mean	3.52	3.49	4.06	3.66
SD	0.73	1.16	0.93	0.91
n	11	7	7	25

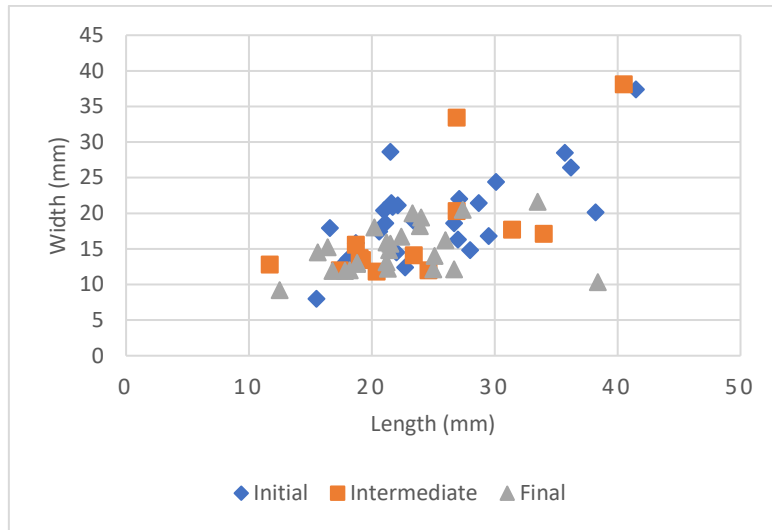


Figure B 64: Hikozaki – lengths and widths (mm) of the complete arrowheads by production stage.

Table B 46: Hikozaki – measurements of scraper tools (mm) by subperiod (complete / nearly complete pieces).

Measurement / subperiod	Early Jomon	Middle Jomon	Late Jomon	Final Jomon	Unknown	Total
Length (mm)						
Mean	51.37	51.80	61.55	52.73	79.50	57.31
SD	17.30	25.57	28.82	8.35	-	22.58
Width (mm)						
Mean	57.11	60.43	66.78	50.00	80.90	61.55
SD	14.51	22.07	14.38	22.58	-	17.18
Thickness (mm)						
Mean	11.31	10.10	13.12	11.28	23.30	12.45
SD	3.53	5.43	2.69	2.65	-	3.96
n	5	3	10	4	1	23

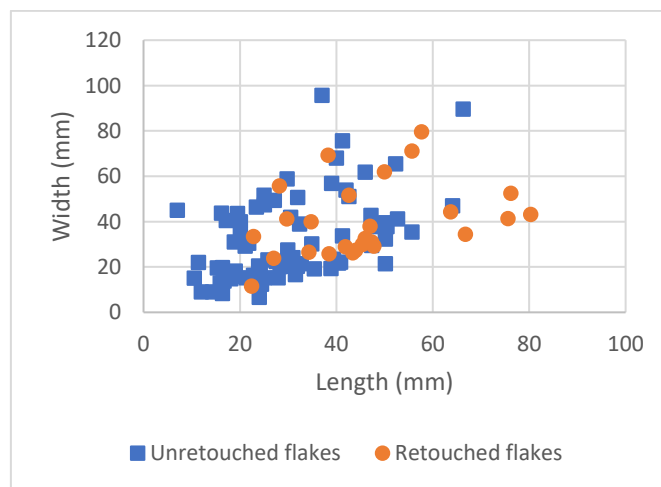


Figure B 65: Hikozaki – lengths and widths of unretouched and retouched flakes (complete / nearly complete pieces).

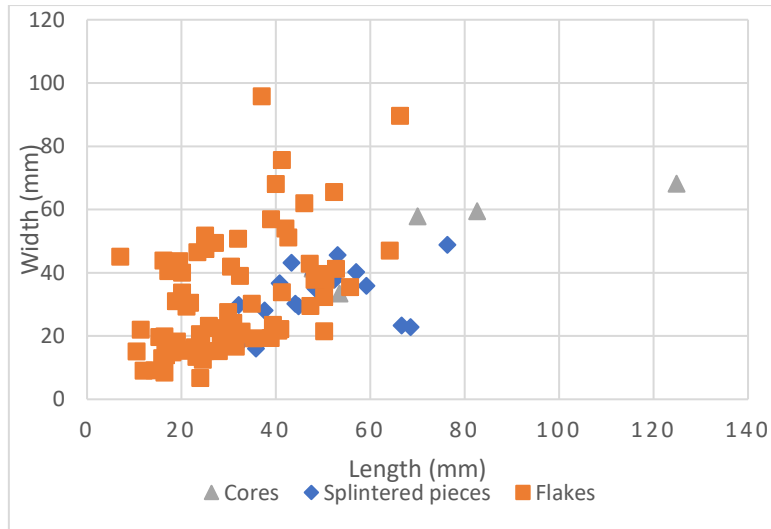


Figure B 66: Hikozaiki – lengths and widths of cores, splintered pieces and unretouched flakes (complete/nearly complete pieces).

Table B 47: Hikozaiki – thickness of cores, splintered pieces and debitage products (mm).

Measurement / category	Core	Splintered piece	Debitage product
Thickness (mm)			
Mean	16.04	12.44	5.00
DP	8.36	4.32	3.00
Max	35.50	21.10	24.40
Min	7.20	5.50	0.70
n	13	18	536

B8. Tsukumo



Figure B 67: Tsukumo, excavations of 1919–1920 – skeleton no. 34 wearing numerous shell bracelets (reproduced from Kyoto Teikoku Bungakubu Kokogaku Kenkyu Hokoku, 1920, fig. Plate 11, no. 34).



Figure B 68: Tsukumo, excavations of 1919–1920 – skeleton no. 1 and 2 with a large stone block between them (reproduced from Kyoto Teikoku Bungakubu Kokogaku Kenkyu Hokoku, 1920, p. Plate 4, nos. 1 and 2).

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