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CREMATION BURIALS OF STONE AGE HUNTER-GATHERERS ON THE EUROPEAN PLAIN

ABSTRACT

Cremation burials of Stone Age hunter-gatherers were found at 21 sites across the European Plain (including southern Scandinavia). In total, there are 54 graves and deposits containing bones of at least 89 individuals. Sites with Mesolithic cremations are unevenly spread over the European Plain and there are some regions where this type of burial was more common, such as the Seine Valley and the Low Countries, southern Scandinavia or north-eastern Poland. In all of these regions, the oldest burials are dated to the Early Mesolithic, which indicates a parallel and independent origin of this custom. Moreover, each region or even cemetery has its own features of the cremation rite. In both the Western European Plain and southern Scandinavia, most burials are dated to the Middle Mesolithic and there are only a few exam-

ples linked to the Late Mesolithic. North-eastern Poland, including the Dudka cemetery, is probably the only region where cremation was practised on a wider scale in the Late Mesolithic and para-Neolithic. The share of cremations among all burial types differs between regions and cemeteries. It was probably a dominant practice in the Middle Mesolithic in the Netherlands. In other cases, cremation probably involved a large part of the local hunter-gatherer society, for instance at the Dudka cemetery in Masuria or in the Middle Mesolithic of Vedbæk Fiord (Zealand), whereas at the cemeteries in Skateholm it amounted to only a few percent, suggesting that it was practised in the case of the deceased of particular status or in unusual circumstances only.

Keywords: Mesolithic, para-Neolithic, cremation, burial rite, European Plain

Introduction

Cremation has long been perceived as an unusual burial custom for the Stone Age, especially for the hunter-gatherer societies. The Mesolithic dating of such discoveries has sometimes been disputed.¹ In other cases, burned human bones from Mesolithic settlements used to be interpreted as a result of cannibalism rather than burial rite, even if bones were found in a formal grave and bore no cut marks.² Untypical burial types, other than primary inhumation, or unusual contexts in which bones were found (in settlement structures) were in most cases taken as 'evidence' for cannibalism.³ Over time, however, more undeniable Mesolithic cremation burials appeared, altering the general view on the nature of burned bones at Stone Age hunter-gatherer sites. Recent studies and new discoveries have shown that burial practices at the

time were more complex than previously believed and cremation was one of the many possibilities of dealing with the dead used since the Early Mesolithic.⁴

Cremation burials of Stone Age hunter-gatherers were found at 21 sites across the European Plain, including southern Scandinavia (Fig. 1). Additionally, at least several other sites yielded loose burned human bones. Their distribution is uneven and there are regions where cremation seems to have been more frequent. One of these is the Western European Plain, from north-eastern France (Seine Valley) to the Netherlands, where 11 graves with burned human remains were uncovered at eight sites (Fig. 1). The next region is southern Scandinavia, with eight sites and 14 graves. Only single cases of cremation come from Germany (Coswig) and western Poland (Pomorsko), whereas in north-eastern Poland such practices were more frequent (Fig. 1).

¹ Larsson 1982; Verlinde 1974.

² Kobusiewicz, Kabaciński 1991; Piasecki, Kapla 2003; Verlinde 1974; Wiercińska, Szlachetko 1977.

³ Kobusiewicz, Kabaciński 1991; Verlinde 1974.

⁴ Bugajska 2014; Bugajska, Gumiński 2016; Eriksen, Andersen 2016; Küßner, Schunke 2016; Niekus *et al.* 2016.



Fig. 1. Sites with Mesolithic and para-Neolithic cremation burials: a – cremation burials only; b – contemporary cremation and inhumation burials; c – noncontemporary cremation and inhumation burials; d – sites with loose burned human bones mentioned in the text; e – Early Mesolithic cremation burials (compiled by K. Bugajska).

Taking into account the uneven distribution of cremation burials, each region will be discussed separately in order to study the local character of the ritual. According to the original publications, the graves are linked to the Early, Middle or Late Mesolithic, based mostly on radiocarbon dates or, alternatively, on grave goods. It should be noted, however, that there are differences in the chronological periodisation of the Mesolithic in particular regions. In the Western European Plain (Low Countries, north-eastern France), the Early Mesolithic corresponds to the Pre-Boreal period (10 000–9000 BP conv.), the Middle Mesolithic – to the Boreal period and the beginning of the early Atlantic period (9000–7500 BP), while the Late Mesolithic starts in the Early Atlantic period (7500 BP).⁵ In southern Scandinavia, the Early Mesolithic (Maglemose culture) corresponds to the Pre-Boreal and Boreal periods (10 000–8000 BP), the Middle Mesolithic (Kongemose culture) to the first half of the Atlantic period (8000–6500 BP), and the Late Mesolithic (Ertebølle culture) to the second half of the Atlantic period (6500–5200 BP).⁶ Some cremations or loose burned human bones are linked to the para-Neolithic, i.e. to pottery-producing hunter-gatherer societies, which appeared in the discussed regions between 6000 and 5600 BP conv.⁷

The para-Neolithic societies in particular regions were descendants of former Mesolithic societies with regard to the economy, settlement system, burial rites and manufacturing. It should be added that such hunter-

gatherer societies are named differently in particular regions. For example, the Swifterbant culture is classified as Neolithic in the Low Countries, whereas the whole period of the Ertebølle culture is linked to the Late Mesolithic in Scandinavia.

Seine Valley (north-eastern France) and the Low Countries – the Western European Plain

Chronology of cremation burials and their relation to inhumations

The oldest cremation dated to the Early Mesolithic, 9090 ± 140 BP, comes from a rock shelter – Abri des Autours in Belgium (Table 1). In turn, the youngest burial comes from Concevreux in France and is directly dated to 6440 ± 30 BP, i.e. to the Late Mesolithic (Table 1). All other graves are considered Middle Mesolithic based on the grave goods or radiocarbon dates which range from 8465 ± 45 to 7760 ± 130 BP (Table 1). This indicates that on the Western European Plain, cremation was more commonly practised in the Middle Mesolithic.

In most cases, cremation is the only burial type found at a given site (Table 2). An exceptional case comes from an Early Mesolithic collective grave in a rock shelter, Abri des Autours in Belgium, where burned bones were deposited in one pit with inhumation burials (Table 2).

⁵ Louwe Kooijmans 2007; Meiklejohn *et al.* 2010; 2015.

⁶ Larsson 2017; Sørensen 2017.
















⁷ Larsson 2017; Louwe Kooijmans 2007.

Table 1. Radiocarbon dates of cremation burials from the European Plain.
Calibrated BC dates (95% confidence intervals) are based on: OxCal 4.3.2, IntCal 13 curve (Bronk Ramsey 2009).

Site	Country	No. of grave/pit	BP	Lab. No.	cal. BC (2σ)	Material	References
Abri des Autours	Belgium	burial AA2	9090 ± 140	OxA-5838	8700-7830	unburned bone	Poler, Cauwe 2002
Rotterdam	Netherlands	pit 60	8465 ± 45	GrA-43444	7587-7480	cremated bone	Niekus <i>et al.</i> 2016
La Chaussée-Tirancourt	France	pit 1	8460 ± 70	Gif-9329	7597-7356	hazelnut	Meiklejohn <i>et al.</i> 2010
La Chaussée-Tirancourt	France	pit 1	8360 ± 90	Gif-95471	7580-7179	animal bone	Meiklejohn <i>et al.</i> 2010
Rotterdam	Netherlands	pit 58	8435 ± 40	GrA-43393	7581-7381	cremated bone	Niekus <i>et al.</i> 2016
Olischoot V, 21	Netherlands	grave	8320 ± 40	GrA-13390	7515-7196	cremated bone	Meiklejohn <i>et al.</i> 2015
Rotterdam	Netherlands	pit 59	8135 ± 45	GrA-43443	7303-7047	cremated bone	Niekus <i>et al.</i> 2016
Loschbour	Luxembourg	pit?	7960 ± 40	Beta-132067	7041-6700	burned bone	Toussaint <i>et al.</i> 2009
Rotterdam	Netherlands	pit 59	7850 ± 35	GrN-33089	6806-6600	charcoal	Niekus <i>et al.</i> 2016
Rotterdam	Netherlands	pit 70	7830 ± 40	GrA-33087	6812-6574	charcoal	Niekus <i>et al.</i> 2016
Dalfsen	Netherlands	pit 4	7760 ± 130	GrN-7283B	7036-6416	charcoal	Meiklejohn <i>et al.</i> 2015
Rotterdam	Netherlands	pit 70	6770 ± 40	GrA-49738	5726-5626	cremated bone	Niekus <i>et al.</i> 2016
Concevreux	France	pit 3	6440 ± 30	GrA-37623	5479-5345	human bone	Bosset, Valentin 2013
Hammelev	Denmark	-	8980 ± 80	AAR-8195	8317-7837	cremated bone	Eriksen, Andersen 2016
Hammelev	Denmark	-	8800 ± 46	AAR-8196	8199-7685	cremated bone	Eriksen, Andersen 2016
Hammelev	Denmark	-	8870 ± 37	AAR-8783	8223-7838	cremated bone	Eriksen, Andersen 2016
Hammelev	Denmark	-	8760 ± 60	AAR-8197	8175-7601	cremated bone	Eriksen, Andersen 2016
Dammen	Sweden	-	8340 ± 40	GrA-14295	7521-7312	cremated bone?	Sjögren, Ahlström 2016
Nivå 10	Denmark	A128	7035 ± 35	AAR-14936	5995-5845	cremated bone	Jensen 2016
Motala-Strandvägen	Sweden	grave 7	6739 ± 62	Ua-44394	5737-5542	bone	Gumesson, Molin 2016
Motala-Strandvägen	Sweden	grave 1	6677 ± 40	Ua-30872	5664-5527	hazelnut	Gumesson, Molin 2016
Vedbek Gøngehusvej	Denmark	grave N	6530 ± 60	K-6857	5616-5371	charcoal	Brinch Petersen, Meiklejohn 2003
Skateholm I	Sweden	grave 11	6290 ± 90	Lu-1835	5471-5046	charcoal	Larsson 1989
Nivå 10	Denmark	grave A144	6154 ± 45	AAR-12711	5221-4964	cremated bone	Jensen 2016
Coswig	Germany	-	7900 ± 50	GrA-22365	7029-6644	cremated bone	Küßner, Schunke 2016
Coswig	Germany	-	7920 ± 45	OxA-13472	7030-6657	cremated bone	Küßner, Schunke 2016
Mzano	Poland	grave 1	8890 ± 180	Gd-6432	8455-7589	bark	Marciniak 2001
Mzano	Poland	grave 1	8680 ± 130	Gd-6436	8207-7532	bark	Marciniak 2001
Mzano	Poland	grave 3	8650 ± 140	Lod 504	8208-7491	charcoal	Marciniak 2001
Mzano	Poland	grave 5	8100 ± 70	Gd-7932	7322-6822	charcoal	Marciniak 2001
Pomorsko	Poland	hearth pit	7740 ± 100	Gd-2704	7021-6412	charcoal	Kobusiewicz, Kabaciński 1991
Pomorsko	Poland	hearth pit	7330 ± 100	Gd-2700	6400-6020	charcoal	Kobusiewicz, Kabaciński 1991
Dudka	Poland	grave VI-8	5690 ± 25	KIA-19171	4584-4458	dog bone	Gumiński, Bugajska 2016
Dudka*	Poland	grave VI-17	6645 ± 30	Poz-3913	5629-5523	primary burial	Gumiński, Bugajska 2016

*grave without burned human bones, stratigraphically on the same level as grave VI-16

Table 2. Catalogue of Mesolithic and para-Neolithic cremation burials from the European Plain.

	Site	Region, country	Grave / pit / burial (individual)	Shape of pit/structure	Diameter (or length-width) / depth	Context	Other burials <i>in the grave</i> (at the site)	Number of burned individuals	Kind of cremation burial	Age and sex	Skeleton completeness
1	La Chaussée-Tirancourt	Seine Valley, France	pit 1		150 x 100 / 30	S, C?	(+ )	3	S	adult; S (>45) I1 (3)	?
2	Concevreux	Seine Valley, France	pit 3		70 (-40) / 25	S	-	2	S	M; adult	?
3	Rueil-Malmaison	Seine Valley, France	burial 2	-	-	S, C?	(+P)	1	S?	adult	?
4	Abri des Autours	Belgium	collective burial AA2		100 / ?	RS, S	2 PD, (11 - PD, )	I	S	young adult	3 (skull, feet)
5	Abri des Autours	Belgium	phalanxes deposit	-	-	RS, S	2 	I	S	adult	hand phalanx
6	Dalfsen	Netherlands	pit 4		40 x 70	S, C?	-	1-2	S	M?, ♀? +child?	2 (upper part)
7	Oirschot 5, site 21	Netherlands	hearth (?) pit		50 / 45	S, E?	-	1	S	I2 (10-13)	2?
8	Rotterdam	Netherlands	pit 58		90 / 24	S, C	-	1	S	adult? 10-40	2
9	Rotterdam	Netherlands	pit 59		110 / 40	S, C	-	1	S	adult? ♀? 12-40	4
10	Rotterdam	Netherlands	pit 60		85 / 10	S, C	-	1	S	adult? 10-34	2
11	Loschbour	Luxembourg	burial 2	-	-	RS	(+P)	1	S	M, ♀	3
12	Hammelev	Jutland, Denmark	grave 1		15 x 27 / 5-6	sG	-	1	S	adult	3/4?
12	Nivå 10	Zealand, Denmark	grave A144		25 / 8	S, C	(P, )	1	S	♂, >30-35	4?
14	Nivå 10	Zealand, Denmark	grave A127		20 / 5	S, C	(P, )	1	S	-	1?
15	Nivå 10	Zealand, Denmark	grave A128		60 / 14	S, C	(P, )	1	S	adult	3/4?















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	Amount of cremated bones (weight / number of fragments)	Colour of bones – way of burning	Deposition	Presence of container / wooden or stone structure	Burned grave goods *slight signs of burning	Unburned grave goods	Ochre	Charcoals (rests of pyre)	Period / culture	References
1	1500 g	?	**		(including backed blades, points), 			✓	l.M	Ducrocq <i>et al.</i> 1991; Ducrocq, Ketterer, 1995; Meiklejohn <i>et al.</i> 2010
					hazelnuts?					
2	-	?	●	⊗	- fox, pine and stone marten (caudal vertebra, lower extremities); vertebra of 2 pikes	50 , 6 wild boar tusks (one worked), 50 red deer canines		-	mM	Bosset, Valentin 2013; Meiklejohn <i>et al.</i> 2010; Naze, Robert 2006
3	215 g	w-g+UB (feet)	** 40 m ²	stones 12 m ²		?		?	mM	Meiklejohn <i>et al.</i> 2010; Valentin <i>et al.</i> 2008
4		w	**					-	eM	Cauwe 2001; Polet, Cauwe 2002
5			●					-	eM	Cauwe 2001;
6			**		?			✓	mM	Meiklejohn <i>et al.</i> 2015; Verlinde 1974;
7	87 g / 199	w-g	● 	wood? (Ps.)	288 (3 points, 2 backed blades, 3 retouched blades, 2 endscrapers)			✓	mM; RMS	Arts, Hoogland 1987; Niekus <i>et al.</i> 2016; Toussaint <i>et al.</i> 2009
8	82 g	w	**		2g (skull); 8 (backed blade; point)	5		-	mM; RMS	Niekus <i>et al.</i> 2016
9	2001 g	w	**		808 (backed blade, 2 points); stone macehead*; polishing stone*	5 (1 backed blade), 2 stones		✓	mM; RMS	Niekus <i>et al.</i> 2016
10	151 g	w	**		4g (wild boar?), 7 (2 points)	1		-	mM; RMS	Niekus <i>et al.</i> 2016
11	390.4 g / 99	w-g	?		, *			?	mM	Toussaint <i>et al.</i> 2009
12		w	●	⊗	ulna, radius - wild cat, bone pin	flint axe, 14 - flakes	✓	-	eM; MC	Eriksen, Andersen 2016
12		w	●	⊗		1 - flake		-	mM, KC	Jensen 2016
14		-	●	-			✓	-	-	Jensen 2016
15		w	**/●					✓	mM, KC	Jensen 2016

	Site	Region, country	Grave / pit / burial (individual)	Shape of pit/structure	Diameter (or length-width) / depth	Context	Other burials <i>in the grave</i> (at the site)	Number of burned individuals	Kind of cremation burial	Age and sex	Skeleton completeness
16	Vedbæk Boldbaner	Zealand, Denmark	grave 2	●	10 x 15 / 8	S, C?	(+P)	1	S	♀? adult	2 (upper part)
17	Vedbæk Gøngehusvej	Zealand, Denmark	grave Æ	●	40 – 50 / 70	S, C	(+P)	1	S	♀? A	2 (upper part)
18	Vedbæk Gøngehusvej	Zealand, Denmark	grave N	●	40 / 15	S, C	(+P)	5	S	♂A ♀A I2, I1, I1	4 ind. - 4? I1 – 2/4?
19	Dammen	Bohuslän, Sweden	destroyed grave?	-	-	S	-	1	S	-	
20	Skateholm I	Scania, Sweden	grave 11	÷	6 m ²	S, C	(P, ♀)	1	S	♂ M	3?
21	Skateholm I	Scania, Sweden	grave 20	●	-	S, C	(P, ♀)	1	S	-	2
22	Skateholm II	Scania, Sweden	grave XVIII	■	60	S, C	(P)	1	S?	♂S	3/4?
23	Strandvägen - Motala	Östergötland, Sweden	grave 1 / A42461	-	-	S, C	IP , (+P, ♀)	I	S	-	1/2?
24	Strandvägen - Motala	Östergötland, Sweden	grave 7 / A49247	-	-	S, C	IP , (+P, ♀)	I	S	-	1/2?
25	Strandvägen - Motala	Östergötland, Sweden	grave 17 / A58207	-	-	S, C	IP , (+P, ♀)	I	S	-	?
26	Coswig	Saxony, Germany	grave 1 / pit 156A	●	35 – 40 / 15	sG , S?	-	1	S	adult (ca. 29)	2
27	Pomorsko	Lubusz Land, Poland	hearth pit	-	-	S, E	-	1	S	child	?
28	Mszano	Dobrzyń Land, Poland	grave 1	●	90 x 200 / 120	S, C	?	2	P	♀A, I1	4?
29	Mszano	Dobrzyń Land, Poland	grave 3	●	200 x 90 / 140	S, C	?	1	P	I1	4?
30	Mszano	Dobrzyń Land, Poland	grave 5	●	250 x 150 / 160	S, C	?	1	P	-	4?
31	Wieliszew	Mazovia, Poland	skull	-	-	S	-	1	S	♂A	1 (skull)



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	Amount of cremated bones (weight / number of fragments)	Colour of bones – way of burning	Deposition	Presence of container / wooden or stone structure	Burned grave goods *slight signs of burning	Unburned grave goods	Ochre	Charcoals (rests of pyre)	Period / culture	References
16		w	●					✓	mM; KC	Vang Petersen 1977; Brinch Petersen, Meiklejohn 2003
17		w	●	◎	1 𐀀 - blade	roe deer fawn (on ♀), 1 𐀀 - blade (on ◎)		-	mM; KC	Brinch Petersen, Meiklejohn 2003
18		b-w	●		5 𐀀 - red deer, 5 ▲ C/V, 𐀀, 𐀀, 1 amber, 3 𐀀 - blades		✓	✓	mM; KC	Brinch Petersen, Meiklejohn 2003
19			** few m ²					?	eM; MC	Sjögren, Ahlström 2016
20			** 10 m ²		𐀀 (mixed with human): seal, wild boar, 𐀀, 𐀀, phalanges – C/V			✓	I.M; EC	Larsson 1980; 1989; Niemi 2001; Nilson-Stutz 2003;
21								-	I.M; EC	Larsson 1982; Nilson-Stutz 2003
22	1097 g	uneven	●	⊗ stones	flint axe?			-	I.M; EC	Larsson 1983; Nilson-Stutz 2003; Persson, Persson 1988
23			**↑PI					?	mM	Gummesson, Molin 2016
24			**PI					?	mM	Gummesson, Molin 2016
25			**?					?	-	Gummesson, Molin 2016
26	30 g	w	**					✓	mM	Küßner, Schunke 2016
27		?	●/*			𐀀?		?	mM	Kobusiewicz, Kabaciński 1991
28		partial burning		☞		16 frag. 𐀀 wild boar ▲ frag., 1 amber	✓	✓	eM	Marciniak 2001
29		partial burning		≡☞		>100 frag. ▲ (elk, red deer, aurochs) chalk stone with hole			eM	Marciniak 2001
30		partial burning		≡☞		2 𐀀 - microliths, ▲ frag., 2 amber	✓		eM	Marciniak 2001
31		yW	**			𐀀?		-	I.M	Tomczyk <i>et al.</i> 2019; Wiercińska, Szlachetko 1977

	Site	Region, country	Grave / pit / burial (individual)	Shape of pit/structure	Diameter (or length-width) / depth	Context	Other burials <i>in the grave</i> (at the site)	Number of burned individuals	Kind of cremation burial	Age and sex	Skeleton completeness
32	Dudka	Masuria, Poland	grave VI-1 (ind. D-E)	-	-	S, C	3 	2	S	D - child E - adult	D - 1?, E - 2
33	Dudka	Masuria, Poland	grave VI-2 (ind. F)	-	-	S, C	3P , 3 	1	S	I2 / J	2
34	Dudka	Masuria, Poland	grave VI-4 (ind. A-I)		80 x 100 / 30	S, C	2 	9+ 	S	♂M, ♂ 2♀, ♀M I1, I2, 2 adults	3 ind. - 4 2 ind. - 3 1 ind. - 2 3 ind. - 1
35	Dudka	Masuria, Poland	grave VI-6 (ind. B-C)	-	-	S, C	1P	2	S	B - child C - adult	B - 2 C - 1
36	Dudka	Masuria, Poland	grave VI-7 (ind. D-E)	-	-	S, C	1P , 2 	2	S	2 adults	D - 2, E - 1
37	Dudka	Masuria, Poland	grave VI-8 (ind. A-B)	-	-	S, C	≡	2	S	A - adult, B - child	A - 2 B - 1
38	Dudka	Masuria, Poland	grave VI-9? (ind. C-7)	-	-	S, C	3 	1	S	adult	2?
39	Dudka	Masuria, Poland	grave VI-10 (ind. B-C)	-	-	S, C	1 	2+ 	S	adult, I2 / Juv.	B - 2 C - 1
40	Dudka	Masuria, Poland	grave VI-11 (ind. B-D)	-	-	S, C	1P	3	S	I1, 2 adults	B-D - 4?
41	Dudka	Masuria, Poland	grave VI-13 (ind. G-H)	-	-	S, C	2P , 4 	2	S	G - child H - adult	1; 2
42	Dudka	Masuria, Poland	grave VI-14 (ind. D-E)	-	-	S, C	1P , 2 	2	S	adult, Juvenis?	4; ?
43	Dudka	Masuria, Poland	grave VI-15 (ind. A)	-	-	S, C	1 	1	S	♂A	4
44	Dudka	Masuria, Poland	grave VI-16 (ind. C-J)		170 - 140 / 35	S, C	3 	8	S	2♂A, ♀A, ♀M, I2, J, S, adult	1 ind. - 4 4 ind. - 3 2 ind. - 2 1 ind. - 1




























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











	Amount of cremated bones (weight / number of fragments)	Colour of bones – way of burning	Deposition	Presence of container / wooden or stone structure	Burned grave goods *slight signs of burning	Unburned grave goods	Ochre	Charcoals (rests of pyre)	Period / culture	References
32	86 g / 104	w-g	● ↓					-	-	Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
33	91 g / 282	w	● ↓					-	-	Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
34	8253.5 g / 10700	3 w 3 w-g 2 b-g-br 1 br-cz	**		2 1 belemnite	2 wild boar tusks 1 ; 9 , 2 ; 1 1 ; 1 , sandstones	●	-	-	Bugajska, Gumiński 2016; Gumiński 2014; Gumiński, Bugajska 2016
35	187 g / 445	w br-g	● ↓		3			-	-	Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
36	150 g / 151	w br-g	● ↓		3 , belemnite			-	-	Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
37	152 g / 323	w (+l.g)	● ↓					-	l.M?	Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
38	90.5 g / 50	d.g.-bl	●		2 ?			-	-	Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
39	229 g / 767	w (+l.g) black	● ↓					-	-	Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
40	1383 g / 2844	w	● ● ● ↓		3 belemnite; 3 ▲ red deer; 1 ,			-	-	Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
41	537 g / 1216	G - w-g H - d.g	● ↓		2			-	-	Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
42	1017 g / 2111	w (+l.g)	● ↓		2			-	-	Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
43	1632 g / 1257	w	●	⊗	(wild boar)	hedgehog - skull; 1	●	-	-	Bugajska 2015; Bugajska, Gumiński 2016; Gumiński, Bugajska 2016
44	82505 g / 82505	2 w-l.g 4 w-b-g 2 br- black	**		belemnite, bone dagger 3 bone points (?)	5 ▲ (roe deer, elk); 3 , 35 , 2 ; , 2 ; 1	●	-	-	Bugajska, Gumiński 2016; Gumiński 2014; Gumiński, Bugajska 2016

	Site	Region, country	Grave / pit / burial (individual)	Shape of pit/structure	Diameter (or length-width) / depth	Context	Other burials <i>in the grave</i> (at the site)	Number of burned individuals	Kind of cremation burial	Age and sex	Skeleton completeness
45	Dudka	Masuria, Poland	grave VI-n-1 (ind. A)		45 x 55 / 10	S, C	-	1	S	adult	2?
46	Dudka	Masuria, Poland	grave VI-n-2 (ind. A)		40 x 55 / 10	S, C	-	1	S	adult	2?
47	Dudka	Masuria, Poland	grave VI-e-1 (ind. B)	-	180 / 20	S, C	1☠	1	S	adult	2
48	Dudka	Masuria, Poland	pit VI-e-3 (ind. B)	-	170 / 20	S, C	1P/☠?	1	S	-	1
49	Dudka	Masuria, Poland	grave VI-e-4 (ind. B)	-	70 / 25	S, C	1P?	1	S	adult	2
50	Dudka	Masuria, Poland	grave VI-g-1, (ind. A)	-	1180 - 1100 / 30	S, C	?	1	S	adult	2?
51	Dudka	Masuria, Poland	ind. C-1	-	-	S, C	☠?	1	S	adult	2
52	Dudka	Masuria, Poland	ind. C-2	-	-	S, C	-	1	S	adult	2?
53	Dudka	Masuria, Poland	ind. C-3	-	-	S, C	☠?	1	S	adult	1?
54	Dudka	Masuria, Poland	ind. C-4	-	-	S, C	-	1	S	adult	2
55	Dudka	Masuria, Poland	ind. C-5	-	-	S, C	-	1	S	adult	2
56	Dudka	Masuria, Poland	ind. C-6	-	-	S, C	-	1	S	infans?	1
57	Dudka	Masuria, Poland	ind. C-8	-	-	S, C	-	1	S	adult	2?

Context: **sG** – single grave without settlement context, S – settlement site, RS – rock shelter, C – cemetery (presence of at least 2 graves), **Ξ** – cremation bones in/near dwelling/hearth pit. Other burials: (at the site); **in the grave**; P – primary inhumation, PD – intentionally disturbed primary burial; ☠ – secondary inhumation. ☠ – dog; kind of cremation burial: S – secondary deposit; P – primary, burning inside the grave. Deposition: ** – bones scattered on the ground; * – loose in the pit; ● – small, compact concentration; ● – possible concentration; ☠ – bones around the pit; ☠ – burned bones above grave/pit/other burial. Age: I1 – Infans 1 (0-6 years); I2 – Infans 2 (6-15 years); J – Juvenis (15-20 years); A – Adultus (20-35 years); M – Maturus (35-55 years); S – Senilis (>55 years). Completeness of skeleton: 4 – complete; 3 – most bones, different parts of skeleton; 2 – only part of skeleton; 1 – single bones. Colour: w – white; g – grey; br – brown;

CREMATION BURIALS OF STONE AGE HUNTER-GATHERERSON THE EUROPEAN PLAIN

	Amount of cremated bones (weight / number of fragments)	Colour of bones – way of burning	Deposition	Presence of container / wooden or stone structure	Burned grave goods *slight signs of burning	Unburned grave goods	Ochre	Charcoals (rests of pyre)	Period / culture	References
45	83.5 g / 15	black			roe deer antler 1 	7  30  1  1  1  4 belemnites		-	-	Bugajska, Gumiński 2016; Gumiński 2014; Gumiński, Bugajska 2016
46	36.5 g / 18	w	**		49 	3  (red deer, otter); 33  34  2  belemnite		-	-	Bugajska, Gumiński 2016; Gumiński 2014; Gumiński, Bugajska 2016
47	91 g / 87	w-l.g	 ?  ?		?	?		-	-	-
48	6 g / 1	g	**					-	-	-
49	43.5 g / 18	d.g-b	 ?  ?		?	?		-	-	-
50	71.5 g / 49	w-l.g	**?			10  1  43  belemnite		-	-	-
51	27.5 g / 17	w-y						-	-	-
52	67.5 g / 31	br-d.g						-	-	-
53	17 g / 11	d.g-b						-	-	-
54	26.5 g / 14	w-l.g	**					-	-	-
55	65.5 g / 54	w						-	-	-
56	0.5 g / 2	w	**					-	-	-
57	99 g / 33	black-g-b						-	-	-

b – blue; yw – yellowish-white; y – light yellow; l – light; d – dark; UB – unburned. Fragmentation: + – highly fragmented bones, – – large fragments of bones; ⊗ – probable container? (bones highly packed in a pit), ⊙ – wood plate; ≡ – horizontal wooden beams at the pit walls; || – wooden structure;  – bark wrapping. Grave goods:  – animal bone;  – bird bones;  – fish bones;  – turtle carapace (fragment),  – hedgehog jaw;  – animal teeth;  – animal tooth pendant;  – flint (*+ quartzite),  – fossil pendant,  – fossil bead,  – perforated shell, C/V – *Canis/Vulpes*; * – ochre pebble. Period / culture: eM – Early Mesolithic, mM – Middle Mesolithic, l.M – Late Mesolithic, RMS – Rhine-Meuse-Scheldt Mesolithic; MC – Maglemose culture, KC – Kongemose culture, EC – Ertebølle culture, frag. – fragments.

At three other sites, cremations were not contemporary with primary or secondary inhumations. At Loschbour (Luxemburg), burned bones were older than the primary burial, whereas at Chaussée-Tirancourt and at Reuil-Malmaison (France), cremations were younger than secondary or primary inhumations.⁸

On a more local scale, cremation may have been the dominant funerary practice, for instance in the Middle Mesolithic in the Netherlands, when only cremation burials occurred. The burial rite probably changed there in the Late Mesolithic and cremation was replaced by inhumation, mostly by primary burials. Such tendencies also continued in the Swifterbant culture and the Hazendonk group. Additionally, loose human bones were also found, which indicates a more complex burial rite in these periods and, potentially, hints to the exposition of the dead on platforms.⁹ The only evidence of cremation practices at the time are burned loose human bones of at least two individuals found at Hoge Vaart in an early Swifterbant layer.¹⁰ Therefore, cremation was still practised but probably to a limited extent.

The relation between cremation and inhumation is different in the Seine Valley (northern France), where both kinds of burials occurred in parallel throughout the Middle and Late Mesolithic.¹¹ There are four Middle Mesolithic cremation burials which make up 33% of 12 individuals dated to that period (Table 3).¹² Unfortunately, Late Mesolithic burials are very rare and only three inhumations (Auneau, Villeneuve-la-Guyard) and one grave with two burned individuals (Concevreux) were uncovered.¹³ The total number of burials from the Seine Valley is admittedly small: 17 individuals (Table 3). It should be noted, however, that every third burial uncovered in this region is cremated and this cannot be a matter of chance. Therefore, it seems plausible that cremation concerned a considerable part of the local society in the Middle, and probably Late, Mesolithic.

General features of the cremation burial rite in the Western European Plain

The Early Mesolithic burials in Abri des Autours differ from other cremations in the region in the way that bones were deposited (Table 2). One cremation burial was placed in a pit together with two unburned incomplete skeletons (Fig. 2), most probably disturbed primary

inhumations from which particular bones were intentionally taken out in the Mesolithic.¹⁴ Some bones from the cremated skeleton are also missing, i.e. the skull and feet bones, but these could have been taken out earlier, when the remains were collected from the pyre.¹⁵ The second cremation is represented by hand phalanges only. These were deposited near a cave wall together with the unburned feet and hand phalanges of at least two individuals (Fig. 2).¹⁶ In both cases, the burned bones were placed in the cave as a secondary deposit, i.e. the incineration of the body was conducted in another place and only afterwards the bones were collected and brought to the destination grave. It is worth noting that burned remains at Abri des Autours were generally treated in the same way as unburned skeletons. In both cases, it was a multi-step ritual in which the bones of the deceased were intentionally selected, divided into parts, removed and deposited in secondary places.¹⁷

The Middle and Late Mesolithic cremation burials in the Western European Plain were usually secondary deposits (Table 2), similarly to those from Abri des Autours. An exception of this rule could be the case for Reuil-Malmaison, for which it is difficult to determine whether the burial was a secondary or primary one. Burned human bones of a single individual were scattered across 40 sq. metres and appeared among predominantly burned stones which formed a large stone pavement (?). Moreover, burned bones were presumably associated with a layer of ashes.¹⁸ Therefore, the whole 'structure' from Reuil-Malmaison could be the remains of a funeral pyre. On the other hand, bones from different parts of the skeleton were mixed together and no anatomical relations were observed. Moreover, unburned or, rarely, singed animal bones were present among the stones as well. Hence, it cannot be excluded that the burning of the dead took place elsewhere and the stones were exposed to fire in other circumstances.¹⁹

Possible combustion of the body *in situ* was also suggested for the burial at Oirschot,²⁰ although the human remains there were found in a distinct concentration located just above the hearth pit and there can be no doubt that the bones were purposely collected after cremation and placed together as a secondary deposit. The partial scatter of the bones was interpreted as potential evidence for burning at the site.²¹

⁸ Meiklejohn *et al.* 2010; Toussaint *et al.* 2009.

⁹ Louwe Kooijmans 2007.

¹⁰ Meiklejohn *et al.* 2015, 28–29.

¹¹ Meiklejohn *et al.* 2010.

¹² Meiklejohn *et al.* 2010.

¹³ Meiklejohn *et al.* 2010.

¹⁴ Cauwe 2001, 157; Polet, Cauwe 2002.

¹⁵ Cauwe 2001, 157.

¹⁶ Cauwe 2001, 157.

¹⁷ Cauwe 2001, 153–158.

¹⁸ Valentin *et al.* 2008, 24–25.

¹⁹ Valentin *et al.* 2008, 24–25.

²⁰ Arts, Hoogland 1987, 179; Louwe Kooijmans 2007, 558.

²¹ Arts, Hoogland 1987, 179.



Fig. 2. Abri des Autours, a collective burial in a rock shelter: 1 – human adult bones; 2 – burned human bones; 3 – child bones; 4 – deposit of burned and unburned human phalanges (after Cauwe 2001, fig. 11).

Except for Oirschot and Rueil-Malmaison, burned remains were usually buried in circular or oval pits which were sometimes quite large, with diameters reaching ca. 1 to 1.5 metres. Generally, bones were loosely spread inside the pit without any traces of containers or grave structures (Table 2). The possible presence of a perishable container is reported only for the burial at Concevreux, where bones formed a distinct concentration inside the pit.²²

In most cases, bones were evenly burned until they turned white or white-grey and became heavily fragmented (Table 2). Burned skeletons were generally more or less incomplete. At Dalfsen, for example, only the upper part of a skeleton was represented. Fragments of

a skull and shafts of long bones were deposited in pits 58 and 60 at Rotterdam, and the amount of bones was very scarce in both cases (82 g and 151 g, respectively). At Oirschot, Rueil-Malmaison and Loschbour, all parts of the skeleton were represented, but the weight of the remains was too small for a whole individual, so these burials contained only a part of the remains of the deceased (Table 2). A large amount of bones (1.5 kg) was found at La Chaussée-Tirancourt, but there were at least three individuals and it is unclear how many bones belonged to each of them.²³ An undoubtedly complete skeleton was reported only for pit 59 at Rotterdam (Table 2). All in all, the incompleteness of most skeletons suggests that the selection and division of burned remains was a common practice in the Mesolithic of the Western European Plain.

Charcoals that presumably come from a funeral pyre (Table 2) appeared in four graves (36% of cases). This indicates that it was not a rule, and in some cases bones were taken together with ashes, while in others they were most probably carefully collected and cleaned before being buried in the final grave.

Ochre was not present in any except one grave (Table 2): the burial at Chaussée-Tirancourt, where lumps of ochre were found.²⁴

In contrast to the Early Mesolithic burial from Abri des Autours, the Middle and Late Mesolithic cremations usually contained grave goods, at least part of which were burned (Table 2). There are two possible exceptions: the presence of animal bones in the grave at Dalfsen is unsure,²⁵ as well as the connection between burned human and unburned animal bones at Rueil-Malmaison.²⁶

Flint or quartzite artefacts, found in six graves (Table 2), comprise the most frequent category of grave goods. In five cases, the assemblages included burned and unburned pieces, whereas in Concevreux, all flints were unburned (Table 2). The number of lithic elements varies greatly, from several to hundreds, though retouched pieces were always very scarce (Table 2).

Unburned six wild boar tusks and 50 pendants made of red deer canines appeared only in the Late Mesolithic grave at Concevreux (Table 2). Adornments were also found at Loschbour and Chaussée-Tirancourt, but these were perforated shells (Table 2). In turn, stone artefacts, including one burned stone mace-head, were found only in pit 59 at Rotterdam.²⁷

Animal bones were found in at least five graves and they were usually burned (Table 2). A small number of

²² Naze, Robert 2006.

²³ Durocq, Ketterer 1995; Meiklejohn *et al.* 2010.

²⁴ Durocq *et al.* 1991, 275; Durocq, Ketterer 1995, 253.

²⁵ Verlinde 1974, 116.

²⁶ Valentin *et al.* 2008.

²⁷ Niekus *et al.* 2016, 580, figs 5, 9.

burned animal bones was mixed with human remains in two graves at Rotterdam and Loschbour (Table 2). The same was probably the case in Chaussée-Tirancourt, however the exact number of animal bones is not given.²⁸ A more diversified assemblage of burned animal bones was found only at Concevreux and included the vertebrae of two pikes and the lower extremities of a pine marten, a stone marten and a fox (Table 2).

Southern Scandinavia

Regional distribution, chronology and relation to inhumations

In southern Scandinavia, as many as 14 graves with burned human bones of at least 18 individuals were uncovered, which comprise about 8% of Mesolithic burials.²⁹ Cremation was generally rare but geographically widespread. It appeared in several regions of Scandinavia, such as north-eastern Zealand (three sites with six graves), southern Jutland (Hammelev), Scania (three graves at Skateholm), Östergötland (three graves at Motala) and Bohuslän (Dammen) (Fig. 1, Table 2).

The oldest cremation burial in Scandinavia comes from Hammelev, for which four radiocarbon dates were obtained, ranging from 8980 ± 80 BP to 8760 ± 60 BP (Table 1). The next Early Mesolithic cremation was uncovered at Dammen (south-western Sweden), and it is dated to 8340 ± 40 BP (Table 1). Burned human bones were also found at the Early site at Melsted on Bornholm, but they were scattered outside a grave context.³⁰ In general, cremation was practised since the Early Mesolithic and it appeared in remote regions of southern Scandinavia. It should be emphasised that Early Mesolithic burials are generally rare in Scandinavia but show significant variety. Apart from cremations, there were primary burials in different positions, disturbed burials, secondary inhumations, as well as presumably sunken burials.³¹ This indicates that there were no general rules regarding burial rites and many different ways of dealing with the dead were practised, depending on local customs.

It is worth mentioning that the cremation burial from Hammelev is the only Mesolithic grave found in southern Jutland. All other graves and cemeteries from Jutland were uncovered in its north-eastern region. Moreover, these were exclusively primary burials dated to the Late Mesolithic.³² It is difficult to ascertain whether

this is a matter of regional differences in burial customs or a change from cremation in the Early Mesolithic to primary inhumation in the Ertebølle culture.

The majority of cremation burials from Scandinavia are linked to the Kongemose culture, i.e. the Middle Mesolithic (Table 1). This is true for almost all burials from Zealand (Tables 1–2). The Middle Mesolithic dating was also confirmed for two graves (nos. 1 and 7) with burned remains at Motala in south-central Sweden (Table 1). However, the dates were not obtained directly for burned bones but for inhumations from the same graves.³³ Cremation was still practised in the Late Mesolithic (Ertebølle culture). The youngest graves come from the cemeteries at Skateholm in southern Sweden, of which only one (grave 11) was directly dated to 6290 ± 90 BP (Tables 1–2). A Late Mesolithic date of 6154 ± 45 BP was also obtained for grave A 144 at Nivå on Zealand (Table 1).

Cremations comprise about 7% of Middle and Late Mesolithic burials (Table 3). It is difficult to indicate the share of cremation burials for these periods separately because many cemeteries were continuously used throughout a long time.³⁴ Middle and Late Mesolithic cremation burials always appeared in cemeteries where inhumations were contemporaneously present. Therefore, the relation between inhumation and cremation rites should rather be considered on a local scale, and even for particular cemeteries.

An interesting region is Vedbæk Fiord, which yielded four sites with Mesolithic graves: Boldbaner, Bøgebakken, Gøngehusvej and Vægnet Nord. There were 39 burials (individuals), of which cremations comprised 18% (Table 3). It is important, however, that cremation did not appear at all in the biggest cemetery at Bøgebakken, whereas at Gøngehusvej and Boldbaner, it amounted to 46% of all the individuals (Table 3). Perhaps this reflects a chronological change in burial rites since almost all graves from Boldbaner and Gøngehusvej, except one, are linked to the Kongemose culture, whereas the cemetery at Bøgebakken – to Ertebølle.³⁵ Cremation was still practised in Vedbæk Fiord in the Ertebølle period, but this is indicated only by loose burned human bones at Maglemosegaard.³⁶ Hence, it seems that burial customs in the region became more unified in the Late Mesolithic (primary burials in a supine position), and the role of cremation decreased. It is interesting, however, that at Nivå, which is located very close to Vedbæk, cremation was practised continuously throughout the

²⁸ Ducrocq, Ketterer 1995.

²⁹ Bugajska 2014.

³⁰ Becker 1952, 100.

³¹ Bugajska 2014.

³² Bugajska 2014, fig. 1, table 9.

³³ Gummesson, Molin 2016.

³⁴ Bugajska 2014.

³⁵ Bugajska 2014.

³⁶ Brinch Petersen, Meiklejohn 2003, 491.

Table 3. Percentage share of cremation burials in different regions and cemeteries.

Region / Cemetery	Total number of burials	Cremation burials
Seine Valley (France) – Middle Mesolithic ¹	12	4 (33%)
Seine Valley (France) – Late Mesolithic ¹	5	2
Netherlands – Middle Mesolithic ²	5	5 (100%)
Scandinavia, Early Mesolithic ^{3,4}	11	2 (18%)
Scandinavia, Middle-Late Mesolithic ³	219	16 (7%)
Vedbæk Boldbaner and Gøngehusvej ³	15	7 (47%)
Vedbæk Bøgebakken ³	23	-
Vedbæk Fjord ³	39	7 (18%)
Nivå ³	15	3 (20%)
Motala-Strandvägen ⁴	24	3 (12.5%)
Skateholm I ³	62	2 (3%)
Skateholm II ³	22	1 (4.5%)
Skateholm I-III ³	85	3 (3.5%)
Germany ³	25	1 (4%)
Poland (excluding Dudka) ³	24	min. 5 (21%)
Dudka	114	50 (44%)

¹ number of burials according to: Meiklejohn *et al.* 2010.

² number of burials according to: Meiklejohn *et al.* 2015.

³ number of graves according to: Bugajska 2014 and Gummesson, Molin 2016.

⁴ number of graves according to: Gummesson, Molin 2016.

Kongemose and Ertebølle periods and comprised 20% of all individuals (Table 3).³⁷

Cremation played a less prominent role at cemeteries in Sweden. It was observed in ca. 12.5% of 24 burials at Motala-Strandvägen and only 3.5% of burials in both cemeteries at Skateholm (Table 3). It seems that at Skateholm, incineration may have been practised only in the case of particular individuals or unusual circumstances. It is important to note that cemeteries at Skateholm are dated to the Late Mesolithic, similarly to Vedbæk

Bøgebakken,³⁸ so the small percentage of cremations could have resulted from the increasing role of primary inhumation at the time.

General features of cremation rites in Scandinavia

All cremation burials in Scandinavia, including the early Mesolithic ones, were secondary deposits (Table 2). Burned remains were usually placed in separate graves, except for at least two graves at Motala where a small amount of burned remains was added just above the primary burials.³⁹

Burned bones were usually put in small rounded pits whose diameter ranged from 15 to 40 centimetres (Table 2). A larger rounded pit (diameter of ca. 60 cm) was reported for grave A128 at Nivå (Fig. 3), and an exceptional, rectangular pit for grave XVIII at Skateholm II (Table 2). Grave 11 at Skateholm I is the only grave in Scandinavia where the burned bones of one individual were scattered over an area of 11 sq. metres. Instead of a pit, there was probably a wooden construction above the burial, as indicated by the presence of very small rounded pits, interpreted as postholes.⁴⁰

In some cases, the cremated remains were probably deposited in containers. That may be the case for the burial at Hammelev and grave A144 at Nivå, where the bones remained in a very compact concentration (Table 2; Fig. 4). In turn, the burned bones in grave Æ from Vedbæk Gøngehusvej were deposited on a wooden plate, as indicated by a black lens-shaped stain just below the human remains (Table 2).⁴¹

Almost all graves contained the bones of a single cremated individual. An exception to this rule is grave N at Gøngehusvej, where the remains of at least five individuals were identified: two adults (female and male) and three children (Table 2; Fig. 5). The bones of all individuals were mixed and were similarly burned to a white-blue colour, so it is possible that the deceased were burned together on a pyre and then buried in one grave.

The completeness of the skeletons is diversified. At least eight individuals were represented by most or even all bones (Table 2). In turn, in two cases only the upper parts of the skeleton were present (Boldbaner, grave Æ at Gøngehusvej), whereas at least five graves contained only a small amount of burned remains (Table 2).

Grave goods appeared in six graves (43%). In three cases, all of them were burned, another two burials contained mixed assemblages, and in one grave only a single unburned flint flake was found (Table 2). It

³⁷ Jensen 2016.

³⁸ Bugajska 2014.

³⁹ Gummesson, Molin 2016, 150.

⁴⁰ Larsson 1980; 1989, 372.

⁴¹ Brinch Petersen, Meiklejohn 2003, 489.

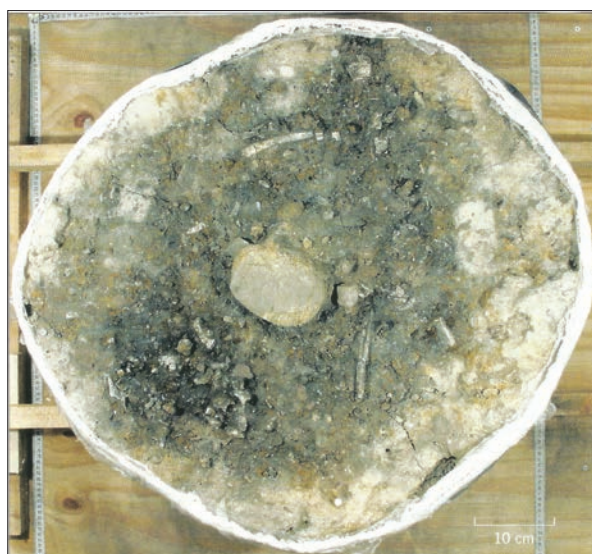


Fig. 3. Nivå, grave A128, a small amount of burned human remains deposited in a large rounded pit with a diameter of ca. 60 cm (after Jensen 2016, fig. 5).

should be noted that the unburned offerings were almost exclusively flint artefacts, while the burned ones were more diversified and included animal remains, tooth pendants, amber, a bone pin and flints (Table 2).

Flints constituted the most frequent category of grave goods and were found in five graves (Table 2). In most cases, it was a single flake, a blade or an axe. As an exception, the Early Mesolithic burial at Hammelev contained a larger set of unburned flints comprising 14 flakes and an axe (Table 2; Fig. 4A). Tooth pendants,

a bone pin and amber beads appeared only in grave N at Gøngehusvej. A single bone pin was also found at Hammelev (Table 2).

Animal bones were present in four graves; in three cases they were burned and mixed with human remains. The burial from Hammelev contained two bones of a wild cat, the ulna and radius (Table 2). Larger assemblages of animal remains appeared in two graves: no. 11 at Skateholm I and N at Gøngehusvej. In both cases, these were fish and bird bones, as well as the remains of *Canis/Vulpes* (teeth or phalanges). The grave from Skateholm additionally contained seal and wild boar bones (Table 2). Uniquely, a whole unburned skeleton of a roe deer fawn was deposited just above grave Æ at Gøngehusvej (Table 2). It should be added that it is the only grave with a special arrangement of the grave offerings where, apart from the fawn on the top, a single unburned flint blade was placed just below the human remains, in the middle of a presumed wooden plate.⁴²

Eastern Germany – western Poland

Cremation burials are very rare in the Central European Plain, i.e. in eastern Germany and western Poland, where only two burials were uncovered, one at Coswig in eastern Saxony and another at Pomorsko in western Wielkopolska (Fig. 1). However, Mesolithic graves are generally rare in these areas and have mostly been found beyond Mesolithic settlement contexts (Table 3).⁴³

It is worth noting that both burials are similarly dated to the Middle Mesolithic. The bones from Coswig



Fig. 4. Burned human bones deposited in containers: A – Hammelev (Jutland), an Early Mesolithic burial with unburned flints as grave offerings (after Eriksen, Andersen 2016, fig. 2); B – Nivå (Zealand), grave A144, Late Mesolithic (after Jensen 2016, fig. 9).

⁴² Brinch Petersen, Meiklejohn 2003.

⁴³ Bugajska 2014.

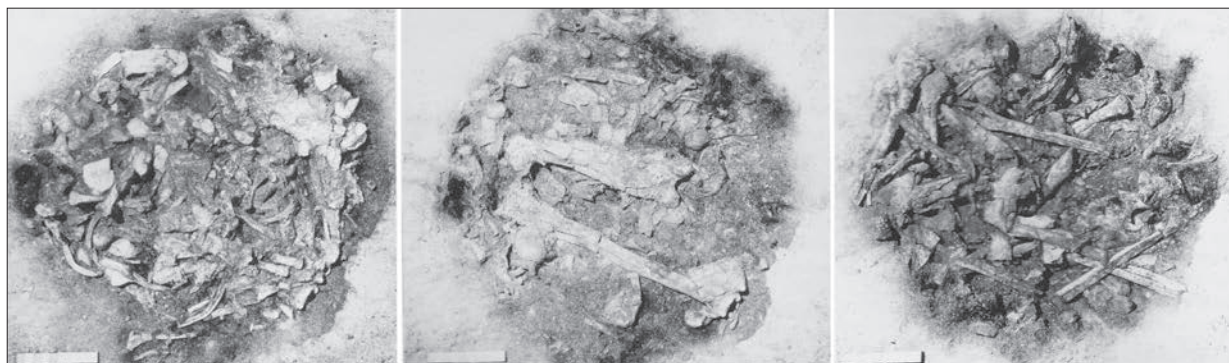


Fig. 5. Vedbæk Gøngehusvej, grave N with burned remains of at least five individuals: two adults and three children (after Brinch Petersen, Meiklejohn 2003, figs 61.4–61.6).

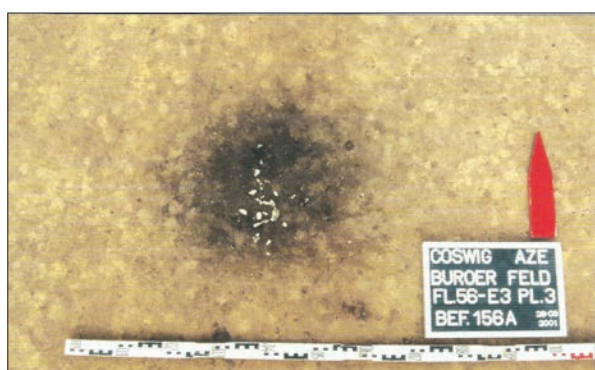


Fig. 6. Cremation burial at Coswig in Saxony (after Küßner, Schunke 2016, fig. 10).

were directly dated to 7900 ± 50 BP and 7920 ± 45 BP, whereas the charcoals from the settlement structure at Pomorsko yielded dates of 7740 ± 100 BP and 7330 ± 100 BP (Table 1).⁴⁴

The burials from Coswig and Pomorsko are completely different in the way the bones were deposited. Human remains in Coswig were scarce and spread within a small pit (Fig. 6), whereas at Pomorsko, the burned bones of a child were mixed (?) with animal remains and placed in a hearth pit. The exact location of the human bones is not given⁴⁵ so it is impossible to ascertain whether they were scattered across the whole structure or rather deposited in a single concentration. The second option seems to be more likely, because some clusters of bones were marked on the figure of the hearth pit.⁴⁶ Some flint artefacts could have been associated with the burial at Pomorsko, whereas at Coswig no grave goods were found whatsoever (Table 2).

North-eastern Poland: region of ‘unusual’ cremation burials

Cremated human remains were found at five sites in north-eastern Poland, including two sites with loose burned human bones (Fig. 1).

The oldest burials in the region were found in Mszano and are dated to the Early Mesolithic (Table 1). At least five graves were found at the cemetery, but human bones were preserved only in three of them and were in a poor condition.⁴⁷ The burials from Mszano are unique due to the primary character of cremation, i.e. burning of the body directly within the grave pit (Table 2). It was possible to determine the position of the bodies, as well as to ascertain that the skeletons were only partially burned.⁴⁸ There were also the remains of a bark wrapping around the bodies and a wooden construction which consisted of horizontal beams placed one by one at the walls of the pit (Table 2). Fragments of animal tooth pendants appeared in all three graves and were probably personal adornments of the deceased (Table 2). All graves also contained pieces of amber which were deposited in smaller pits located next to each grave.⁴⁹

Wieliszew in Masovia is an example of a Late Mesolithic partial burial of a skull, which must have been deposited on the settlement site without a formal grave context since bone fragments were scattered across a large area. The cranium from Wieliszew was originally interpreted as evidence of cannibalism because of the cut marks on the skull.⁵⁰ However, a recent re-examination of the skull revealed that the long incision was not a cut mark but a healed trauma.⁵¹

Numerous burned human bones were also found beyond formal grave contexts at Grądy-Woniecko and

⁴⁴ Kobusiewicz, Kabaciński 1991.

⁴⁵ Kobusiewicz, Kabaciński 1991.

⁴⁶ Kobusiewicz, Kabaciński 1991, fig. 4.

⁴⁷ Marciniak 2001.

⁴⁸ Marciniak 2001.

⁴⁹ Marciniak 2001.

⁵⁰ Wiercińska, Szlachetko 1977.

⁵¹ Tomczyk *et al.* 2019.

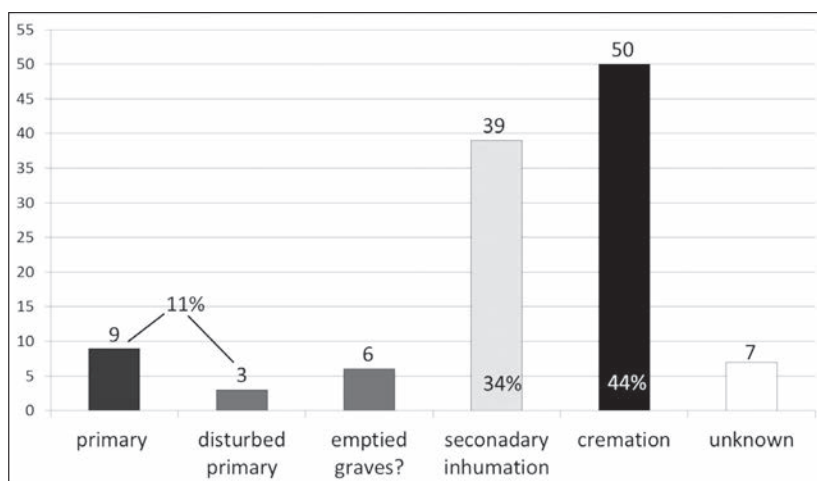


Fig. 7. Dudka cemetery (Masuria). Percentage share of different burial types (compiled by K. Bugajska).

Leśna Góra in northern Masovia. At both sites, bones formed more or less visible concentrations which may represent separate cremation burials.⁵² This suggests that a kind of cremation burial, in which the remains were placed just on the surface of the ground, may have been a common practice in north-eastern Poland.

Dudka cemetery, Masuria, north-eastern Poland: cremation as a multi-step burial rite

The cemetery at Dudka was used in the Mesolithic and para-Neolithic (Zedmar culture). Unfortunately, reliable radiocarbon dates are available for only two graves at the cemetery and there are no direct dates for burned bones (Table 1).⁵³

The cemetery at Dudka is exceptional on the European Plain because of a large number of cremation burials, at least 50, which comprise 44% of the 114 individuals determined at the cemetery (Table 3; Fig. 7). All cremation burials at Dudka are secondary deposits. Burned bones were usually placed in the same grave, with primary burials in the sitting position and secondary inhumations, which is a rare custom in the Mesolithic of the European Plain (Fig. 8). In some cases, burned bones were also added to disturbed graves from which selected bones or even whole skeletons of primary burials were taken out (Fig. 8).

It is worth noting that the proportion of secondary inhumation is also exceptionally high at the Dudka cemetery – 34% (Fig. 7) – and many loose human bones were also found in the settlement area of the site. This in-

dicates that local hunter-gatherers followed a multi-step burial rite which consisted of a temporary burial within the settlement area for the time needed for the soft tissue to decompose, after which the bones were collected and carried to a destination grave at the main cemetery.⁵⁴

Cremation is in fact another kind of multi-step ritual, if the body is burned on a pyre and then the collected bones are deposited in a final grave. The combustion played the same role as a temporary burial, i.e. the bones were cleaned from the soft tissue. Therefore, cremation was an alternative for multi-step inhumation and collected burned bones could be treated in the same way as unburned bones in the next steps of the ritual. They were undoubtedly selected and divided into parts because the majority of cremated burials at Dudka are represented by incomplete skeletons, similarly to secondary inhumations (Fig. 9). Only in few cases all the bones of particular individuals were deposited in final graves. Moreover, the bones of individuals who were buried in the same grave were often burned in a different manner, suggesting that they were collected from different pyres and at different times (Table 2).

No remains of a funeral pyre appeared in the graves at Dudka (Table 2). This may have resulted from the fact that the bones were carefully collected from the pyre and, perhaps, cleaned. Charcoals from pyres may have also been lost if bones were stored over a longer period of time and repacked before their final deposition at the cemetery.

The way of burning is very diversified at Dudka. Four main categories were distinguished: 1 – highly fragmented white bones with a soft, floury surface (Fig. 10A), 2 – white, yellowish-white or light grey bones, extremely

⁵² Piasecki, Kapla 2003; Wawrusiewicz *et al.* 2017, 56.

⁵³ Gumiński, Bugajska 2016.

⁵⁴ Bugajska, Gumiński 2016.

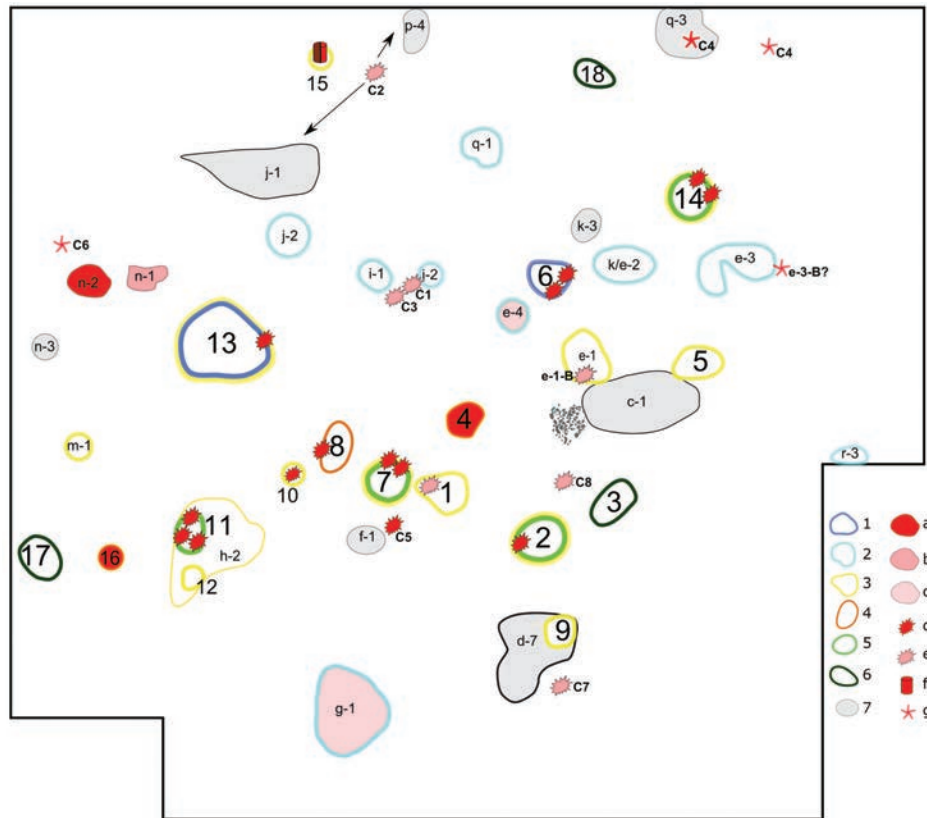


Fig. 8. Dudka, plan of the cemetery (Masuria, north-eastern Poland). 1 – grave with disturbed sitting burials (selected bones of particular individuals were purposely taken out); 2 – emptied graves (a whole skeleton was intentionally taken out); 3 – graves with secondary inhumation burials; 4 – grave with a secondary burial of a dog; 5 – graves with sitting primary burials; 6 – graves with primary burials placed on the side or back; 7 – pits of an unknown purpose. The manner of deposition of burned bones: a – loosely in the pit; b – small number of bones placed around the pit; c – manner of deposition unknown, small number of bones inside the pit; d – concentration of burned bones at the top of the grave; e – possible concentration of burned human bones; f – burned bones deposited in a container; g – single bones of an individual (compiled by K. Bugajska).

hard, strongly deformed and slightly fragmented (Fig. 10B, 14D), 3 – bones unevenly burned to a blue-white or grey colour (Fig. 11), 4 – slightly and unevenly burned brown-black bones (Fig. 12).

Burned bones were deposited in different ways at Dudka. They were often placed in concentrations located at the top of graves or pits, which was the case for at least 26 individuals (Fig. 8; Table 2). In four graves, burned bones of at least 19 individuals were deposited loosely in the pit. This was the case for graves VI-4 and VI-16 which contained an exceptionally large number of cremated individuals, as well as grave VI-n-2 (Fig. 13) and probably pit VI-g-1, each of which contained only a few burned bones of a single individual (Table 2).

An exceptional way of deposition was used in grave VI-n-1 (Fig. 13). Several human bones burned black were purposely placed around the pit, just at its edge.

A strongly burned roe deer antler was deposited inside the pit and other possible grave goods were found in the filling, but human bones were absent (Fig. 13). This is the only example where offerings were placed inside the grave, whereas the bones of the deceased were outside.

In one case – grave VI-15 – the burned remains of a young male were deposited in a container together with the unburned bones of a dog. The container (basket?) probably had a partition in the middle because the bones of the male and the dog each took up exactly half of it (Figs 14A–B, 9). The unburned bones of another male individual were placed at the bottom of the grave and next to the container (Figs 14–15).⁵⁵ Burned bones were generally mixed anatomically, however large parts of the skull were put at one side of the grave (Figs 14B; 15: 1). Larger bone pieces had probably been placed in the container first and all the small fragments were added

⁵⁵ Bugajska 2015.

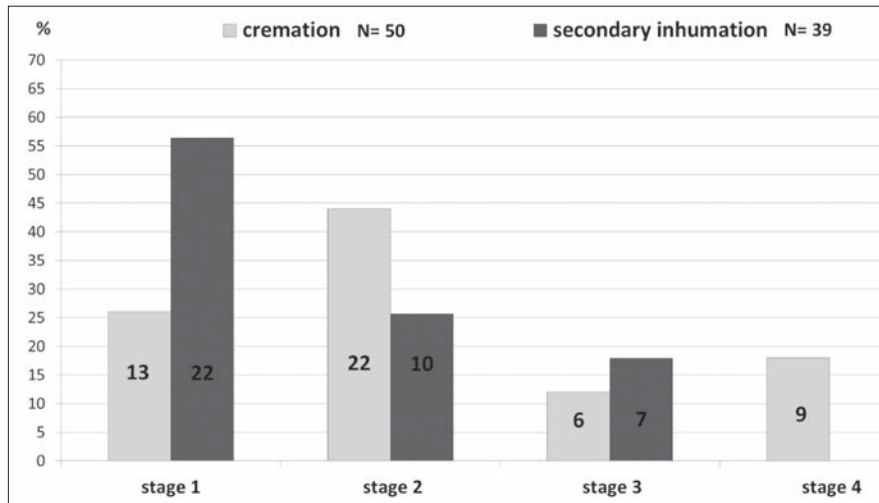


Fig. 9. Dudka cemetery, the completeness of skeletons: stage 1 – single bones; stage 2 – less than half of the skeleton; stage 3 – more than half of the skeleton; stage 4 – complete skeleton (compiled by K. Bugajska).



Fig. 10. Dudka cemetery, different manners of burning. A – grave VI-14, bones burned to a chalky white and grey colour (internal surface of long bones), soft floury surface, highly fragmented; B – grave VI-16, bones burned to a yellowish-white colour, highly deformed and shrunk, slightly fragmented (small number of unidentified bones) (photo by K. Bugajska).

afterwards (Fig. 15). Cremated remains were presumably taken from the pyre and placed directly in the container in which they were buried because the skeleton is complete and the bones are preserved in relatively large fragments, especially the skull and some of the long bones

(Fig. 14C–D). Therefore, it seems that the remains were not repacked or stored for a longer time before the final deposition in the grave. They were more likely transported directly from the pyre to the cemetery.



Fig. 11. Dudka cemetery, different manners of burning. Bones burned unevenly to a brown-grey-white (A–C) or blue-grey-white (D) colour. A – grave VI-4, occipital bones of individual VI-4-B; B – grave VI-16, skull fragments, individual VI-16-F; C – grave VI-16, individual VI-16-E; D – grave VI-16, long bones of individual VI-16-E/F (photo by K. Bugajska).

Graves VI-4 and VI-16

Graves VI-4 and VI-16 are very similar regarding the number of cremated individuals, the manner of burning and the way in which bones were deposited.

Grave VI-4 contained the burned bones of at least nine individuals and two unburned bones of an adult and a child (Table 2). The unburned bones cannot belong to any of the cremated individuals and neither do they match any of the individuals identified at the cemetery. These bones may have been accidentally mixed with the cremated remains, but it most probably happened when they were stored at the settlement and not because of any hypothetical disturbances of the grave. The remains of all

the deceased were mixed so they must have been placed in the grave at the same time (Fig. 16).

Grave VI-16 contained the cremated remains of eight individuals and the unburned bones of a female and two children (Table 2). The burned bones of different individuals were mixed with each other and with unburned female remains – individual B (Figs 17–18). This indicates that it was a one-off secondary deposit. The bones of the two children were probably added already at the cemetery since they were put only at the bottom and top of the grave (Fig. 18). At the bottom, there were selected bones of a younger child (individual A), whereas a complete skull of an older child (individual K) was



Fig. 12. Dudka cemetery, different manners of burning. Bones slightly and unevenly burned black-brown with partial burning to a blue-white colour. A – grave VI-4, individual A, skull; B – grave VI-16, postcranial bones of individual VI-16-G; C – grave VI-16, skull of individual VI-16-D; D – grave VI-16, bones of extremities of individual VI-16-D (photo by K. Bugajska).

found at the top of the grave, but it was badly damaged by ploughing.⁵⁶

In both graves, the cremated remains indicate different circumstances of burning. Four different manners of burning were distinguished for the remains in grave VI-4 and three for grave VI-16 (Table 2; Figs 10–12). This

suggests that bones were collected from different funeral pyres. There were at least three or four such events for each grave. Moreover, even though the bones of each individual were burned to the same colour, the completeness of skeletons varies (Table 2). This indicates that the deceased were cremated at different times, and the bones

⁵⁶ Bugajska, Gumiński 2016, fig. 25.

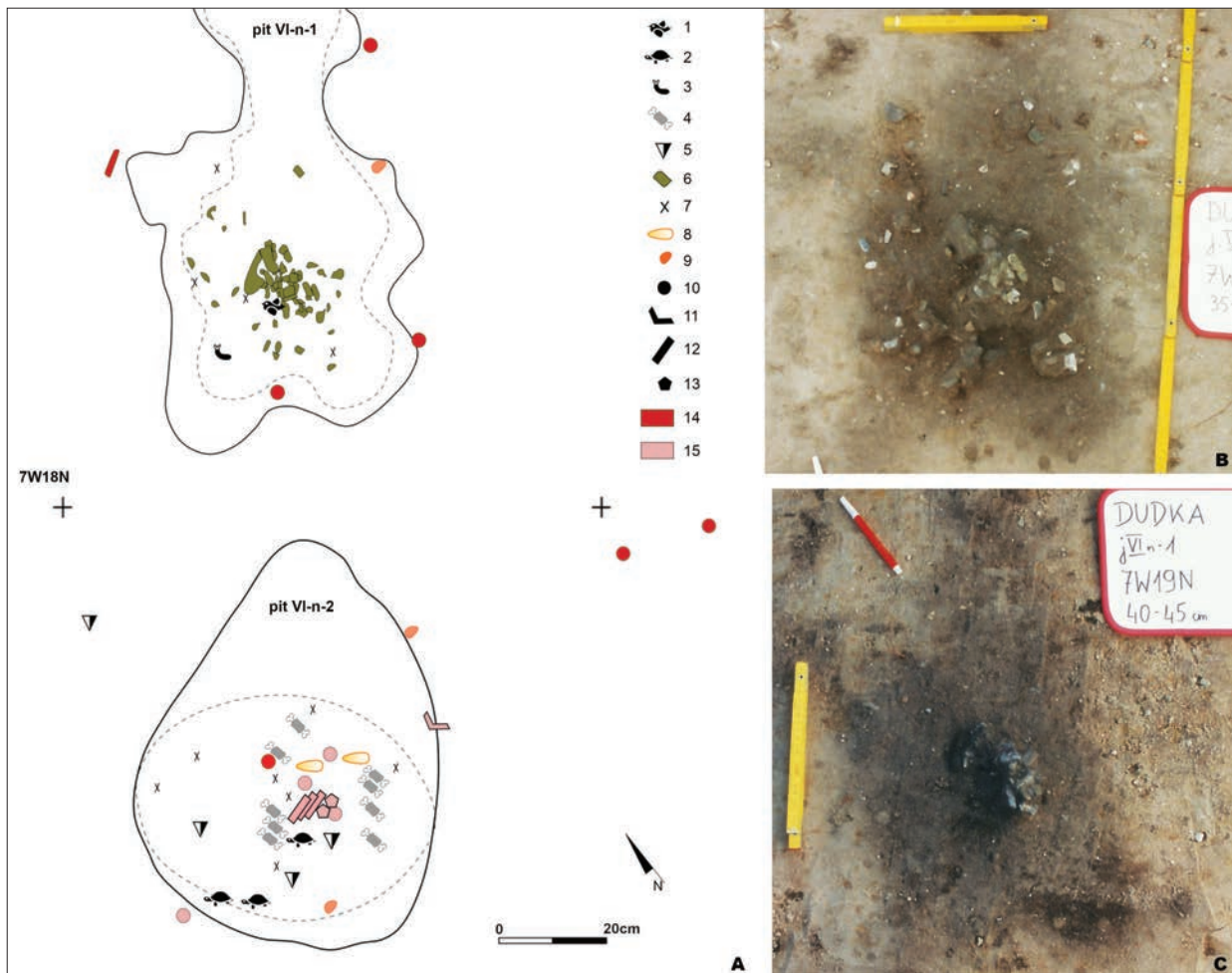


Fig. 13. Dudka, graves VI-n-1 and VI-n-2 with single cremation burials. A – drawing of the pits: 1 – bird bone; 2 – piece of turtle carapace; 3 – hedgehog jaw; 4 – unidentified animal bones; 5 – animal teeth; 6 – burned roe deer antler; 7 – flint; 8 – belemnite; 9 – ochre. Fragments of human bones: 10 – skull; 11 – mandible; 12 – long bones; 13 – vertebra; 14 – bones of individual VI-n-1-A; 15 – bones of individual VI-n-2-A. B – grave VI-n-1, 35–40 cm (photo by W. Gumiński); C – grave VI-n-1, 40–45 cm (compiled by K. Bugajska; photo by W. Gumiński).

were collected, divided and stored for a long time before being deposited in the final grave. It may be assumed that the more incomplete remains of given individuals were probably kept at the settlement much longer and then divided more times. Therefore, it is difficult to distinguish individuals who could have been cremated together on the pyre. This seems to have occurred in the case of three individuals (F, G, H) from grave VI-4 (an adult and two children), whose bones were burned to a chalky white colour and their skeletons remained complete (Table 2).

Both graves contained mixed assemblages of burned and unburned grave goods. A burned belemnite, bone points and a bone dagger appeared in grave VI-16, and burned flints and one belemnite in grave VI-4 (Table 2).⁵⁷ All of these goods were possibly personal

belongings which were collected from the pyre. In both cases, unburned offerings were also found, such as animal teeth and bird bones, which were symbolic and were probably added to the grave during a funeral ceremony.⁵⁸ In grave VI-4 there were two wild boar tusks and a duck bone, and four elk incisors, one roe deer incisor and an owl bone appeared in grave VI-16 (Table 2).

Concentrations with burned human bones

Concentrations of burned human bones were recorded during the exploration of nine graves (Fig. 8). They may have been much more numerous but were

⁵⁷ Gumiński, Bugajska 2016: figs 28, 43.

⁵⁸ Gumiński 2014.



Fig. 14. Dudka, grave VI-15, a cremation burial of a young male (white bones) deposited in a container together with a secondary burial of a dog (brown bones). A – top view of the grave; B – side view, pieces of a burned skull in the foreground; C – completeness of the burned skeleton (individual VI-15-A); D – examples of burned human bones: a – skull; b – vertebrae; c – lower extremities; d – upper extremities (compiled by K. Bugajska; photo by K. Bugajska and W. Gumiński).

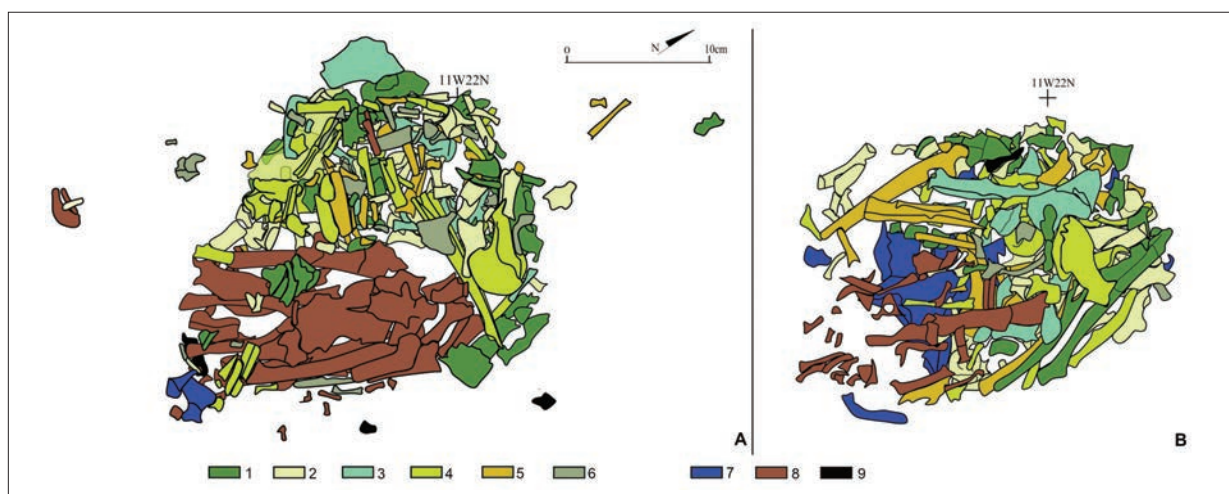


Fig. 15. Dudka, grave VI-15, a cremation burial in a container. A – upper part of the pit, 25–35 cm; B – lower part of the pit, 40–55 cm; 1–6 – burned bones, individual VI-15-A (young male); 1 – skull; 2 – vertebrae and ribs; 3 – pelvis; 4 – lower extremities; 5 – upper extremities; 6 – unidentified burned bones; 7 – unburned bones of individual B (young male); 8 – dog; 9 – grave goods (compiled by K. Bugajska).

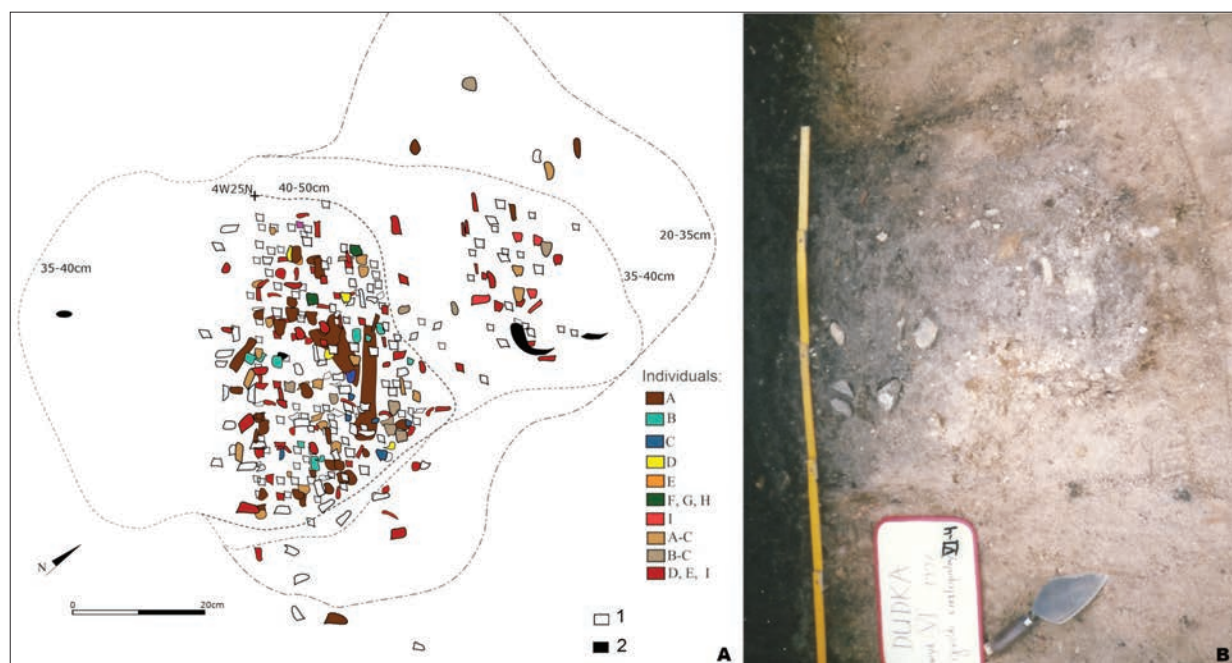


Fig. 16. Dudka, grave VI-4 with 11 individuals, including at least nine after cremation. A – drawing of the grave with marked bones of identified individuals: 1 – burned human bones; 2 – grave goods; B – northern part of the grave (compiled by K. Bugajska; photo by W. Gumiński).

probably destroyed by modern ploughing since many burned bones were scattered at the cemetery and at least seven clusters were distinguished according to their distribution (Fig. 8; Table 2).

Burned remains were placed six times in a concentration above sitting primary burials (Figs 8, 19–20). In most cases, there were also secondary inhumations in the graves, but they were placed in a pit next to the sitting individuals. Only in grave VI-7 the unburned bones of a small child were placed at the top of the grave, exactly like the burned remains (Fig. 20). It is difficult to determine the temporal difference between the interment of the deceased inside the pit and the deposition of the burned bones at its top. Only for grave VI-6 it can be ascertained that the sitting burial was disturbed first, then selected bones were taken out and finally the burned bones were placed at the top of the pit.⁵⁹ Burned remains were rarely added to primary burials laid on the side or on the back,⁶⁰ however, one probable concentration (individual C-8) was located near grave VI-3 (Fig. 8).

Burned bones also appeared inside or around pits, or possibly emptied graves from which whole skeletons

(primary burials) were taken out with only several small bones missing (Fig. 8). This is the case for grave VI-e-4 (individual B) which includes some burned bones in the fill, as well as the cremated remains of two individuals (C-1 and C-3) appearing around the pits VI-i-1 and VI-i-2, one of which is probably an emptied grave. Two other clusters of burned human bones are connected with pits of undetermined function. One appeared near the small pit VI-f-1, and the other between pits VI-p-4 and VI-j-1 (Table 2; Fig. 8).

In five cases, cremated bones were deposited just above secondary inhumations (Figs 8, 21). One of these is grave VI-8 which contained a secondary burial of a dog. The burned human remains were placed just over the grave as 'a small addition' (Fig. 21B). In turn, the burned bones of at least two human individuals and one dog were placed above a secondary burial of a female in grave VI-10 (Fig. 21A). Concentrations of burned bones probably also appeared above grave VI-1 with three secondary burials and at grave VI-e-1 with a secondary deposit of a skull. Another one was placed near grave VI-9, as suggested by the many burned bones of one individual scattered around it, most probably due to modern ploughing.⁶¹

⁵⁹ Bugajska, Gumiński 2016.

⁶⁰ Bones from grave VI-17, previously published as individual VI-17-B (Bugajska, Gumiński 2016), in fact belonged to grave VI-16.

⁶¹ The burned bones from the fill of grave VI-9 previously published as individual VI-9-C (Bugajska, Gumiński 2016; Gumiński, Bugajska 2016) were added to individual C-7.



Fig. 17. Dudka, grave VI-16 with 11 individuals, including at least eight after cremation. A – upper part of the pit destroyed by ploughing; B – middle part of the pit, 35 cm; C – lower part of the pit with unburned bones of a female (femur, humerus) mixed with burned bones (photo by W. Gumiński).

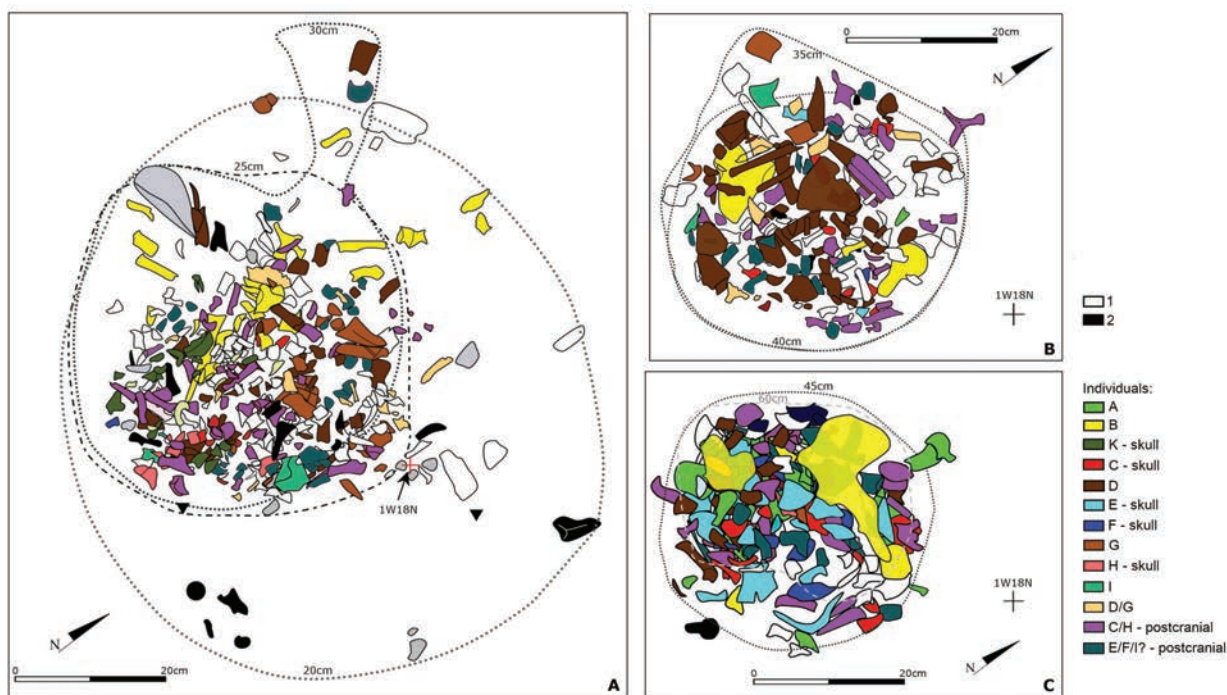


Fig. 18. Dudka, grave VI-16 with marked bones of identified individuals. A – upper part of the pit, 20–30 cm; B – middle part of the pit, 35–40 cm; C – lower part of the pit, 45–60 cm; 1 – unidentified burned human bones; 2 – grave goods (compiled by K. Bugajska).



Fig. 19. Dudka, graves with concentrations of burned human remains at the top. A – grave VI-13, the burned bones of at least two individuals (marked with a red line) were placed just behind the skull of a sitting individual and next to a secondary deposit of the skull (seen from the bottom part); B – grave VI-11, three concentrations of burned bones (marked with a red line) placed around the skull of a sitting child (photo by W. Gumiński).

In most cases, a single concentration contained the bones of one or two individuals. If there were two deceased, usually an adult and a child, their bones were mixed together (Table 2). Only in grave VI-11⁶² there were three separate concentrations placed around the skull of a sitting child and each consisted of the bones of a single individual (Fig. 19B).

The bones from concentrations were usually burned evenly and strongly to a white colour (16 individuals) and were often highly fragmented (8 individuals). This manner of burning is more frequent in concentrations over graves than in cases where bones were placed inside a pit (Fig. 22).

Usually the amount of burned remains in a concentration was very small (Table 2). It was just a handful of bones, apparently taken at random from a sack with 'ancestors' remains'. It is worth noting that concentrations of scarce burned bones are analogous to deposits of single unburned bones which were a common practice at Dudka as well. Such small 'additions' probably had an important meaning because they may have belonged to significant dead whose remains were divided and stored for a longer time than others'.

Grave goods rarely appeared together with burned bones placed in concentrations (Table 2) and there were only single burned flints, animal bones or belemnites, which were most likely personal belongings.

Conclusion and discussion

In all of the investigated regions, the oldest cremation burials are dated to the Early Mesolithic and it may be concluded that the burning of the dead was a custom which appeared in all of these areas in parallel and independently. Moreover, there are some specific features of cremation for each region or even for particular cemeteries which would also indicate an aboriginal genesis of this funeral rite.

On the Western European Plain, burned bones were deposited in large pits together with grave goods, whereas in southern Scandinavia bones were usually placed in small rounded pits and grave goods appeared in less than half of the graves. By contrast, the deposition of burned bones directly on the ground was probably a typical custom in north-eastern Poland. Burning of the body

⁶² The burned bones published as individual VI-12B (Bugajska, Gumiński 2016; Gumiński, Bugajska 2016) in fact come from grave VI-11.



Fig. 20. Dudka, grave VI-7 with a sitting primary burial of an elderly male (individual VI-7-A). Concentrations of burned bones (nos. 93–94) and a secondary burial of a small child (individual VI-7-B) deposited at the top of the grave: 1 – individual VI-7-A; 2 – bones of a child ca. 2 years old (individual VI-7-B); 3 – unburned ulna of individual C, a partial secondary burial; 4 – burned human bones in the fill of the pit; 5 – singed bone of individual VI-7-E; 6 – concentrations with burned bones (at least individual D); 7 – grave goods (compiled by K. Bugajska).



Fig. 21. Dudka, graves with concentrations of burned bones (marked with a red line) above or next to secondary inhumation burials. A – grave VI-10, numerous small concentrations of burned bones of two human individuals and one dog spread over a secondary burial of a female deposited in a container; B – grave VI-8 with a secondary burial of a dog accompanied by a small concentration of burned human bones (photo by W. Gumiński).

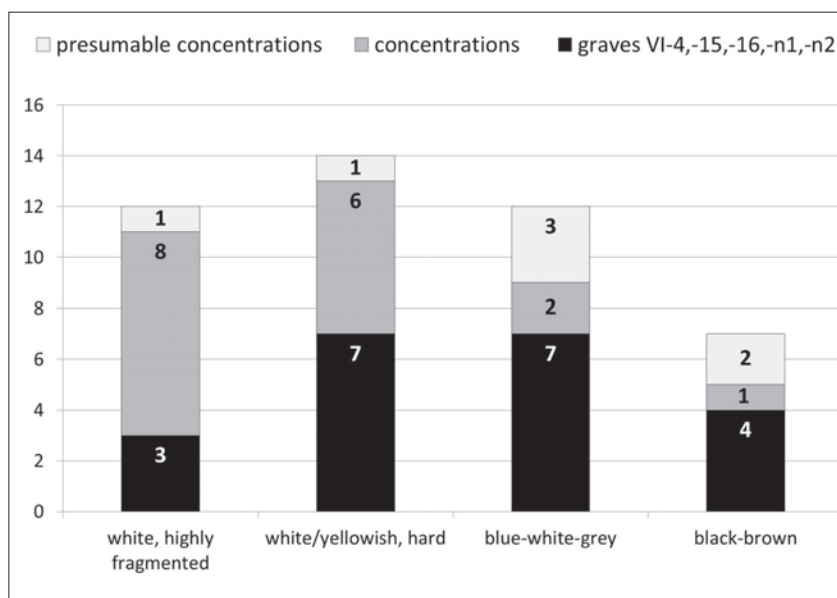


Fig. 22. Dudka cemetery, the manner of burning. Concentrations of burned bones versus burials placed inside grave pits (compiled by K. Bugajska).

within the grave (primary cremation) is a unique feature of the cemetery at Mszano. In turn, the deposition of burned bones together with primary or secondary inhumations was typical for the Dudka cemetery, whereas it was extremely rare in other regions and cemeteries, as it is known only from Motala and Abri des Autours.

In each region, or even at each cemetery, the relation between cremation and inhumation is different. In one case, cremation may have been the dominant burial custom, as was probably true for the Middle Mesolithic of the Netherlands. In other cases, cremation was practised by and for a part of the local society, as in the case of the Middle Mesolithic of the Seine Valley and at several other cemeteries: Nivå, Vedbæk Gøngehusvej and Dudka. Finally, there are cemeteries such as Skateholm I and II where only single individuals were cremated. This suggests that cremation was presumably performed there only in special circumstances or for exceptional members of the local community. Nevertheless, in each case there were probably specified rules for cremation practices. Consequently, its meaning could be different for each region or even cemetery.

It is worth noting that cremation burials across the European Plain belong mostly to the Middle Mesolithic, and their prevalence was locally high at the time.

Cremation was also comparably frequent in the Early Mesolithic, taking into account the generally small number of graves dated to that period. In contrast, in the Late Mesolithic cremation seems to have played a marginal role in Scandinavia as well as in the Western European Plain. At that time, funerary customs became more unified and primary burials were dominant. Only in north-eastern Poland, including the Dudka cemetery, cremation was still a common practice in the Late Mesolithic and para-Neolithic.

It should be emphasised that at the Dudka cemetery, cremation burials were comparably frequent to secondary inhumations, and the remains from funeral pyres were treated similarly to bones taken from temporary burial places or from disturbed primary burials. Therefore, cremation was probably an alternative for inhumation as a kind of multi-step funeral rite. Instead of a temporary burial for the time of decay, bones were cleaned from soft tissue with fire. In both cases, the remains were later divided, selected, kept in the settlements and finally deposited in destination graves. Taking into account the fact that in all regions the cremated skeletons were often incomplete, the perception of cremation as a multi-step rite may have been more widespread across the European Plain in the Mesolithic since the early stage of this period.

Bibliography:

- Arts N., Hoogland M. 1987 A Mesolithic settlement area with a human cremation grave at Oirschot V, municipality of Best, the Netherlands, *Helinium* XXVII, 172–189.
- Becker C.J. 1952 Maglemosekultur på Bornholm, (in:) *Årbøger for Nordisk Oldkyndighed og Historie* 1951, København, 96–177.
- Bosset G., Valentin F. 2013 Pratiques sépulcrales mésolithiques de la moitié nord de la France: le cas des sépultures isolées et leur intégration dans l'espace, (in:) B. Valentin, B. Souffi, T. Ducrocq, J-P. Fagnart, F. Séara, C. Verjux (eds), *Palethnographie du*

- Mésolithique Recherches sur les habitats de plein air entre Loire et Neckar. Actes de la table ronde internationale de Paris, 26 et 27 novembre 2010. Société préhistorique française (Séances de la Société préhistorique française, 2-1)*, Paris, 207–216.
- Brinch Petersen E., Meiklejohn C. 2003 Three Cremations and a Funeral: Aspects of Burial Practice in Mesolithic Vedbæk, (in:) L. Larsson, H. Kindgren, K. Knutsson, D. Loeffler, A. Åkerlund (eds), *Mesolithic on the Move*, Oxford, 485–493.
- Bronk Ramsey C. 2009 Bayesian analysis of radiocarbon dates, *Radiocarbon* 51(1), 337–360.
- Bugajska K. 2014 Obrządek pogrzebowy łowców-zbieraczy epoki kamienia w południowej Skandynawii i na Niżu Środkowoeuropejskim, *Przegląd Archeologiczny* 62, 5–69.
- Bugajska K. 2015 In the ground or in the basket? Burial wrappings from the Stone Age hunters' cemetery at Dudka, Masuria, NE-Poland, *Novensia* 26, 9–23.
- Bugajska K., Gumiński W. 2016 How many steps to heaven? Loose human bones and secondary burials at Dudka and Szczepanki, the Stone Age foragers' sites in Masuria, NE-Poland, (in:) J. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt, H. Meller (eds), *Mesolithic burials - Rites, symbols and social organization of early postglacial communities*. Tagungen des Landesmuseums für Vorgeschichte Halle 13/II, Halle (Saale), 511–544.
- Cauwe N. 2001 Skeletons in Motion, Ancestors in Action: Early Mesolithic Collective Tombs in Southern Belgium, *Cambridge Archaeological Journal* 11(2), 147–163.
- Ducrocq T., Bridault A., Munaut A.V. 1991 Un gisement mésolithique exceptionnel dans le Nord de la France: Le Petit Marais de La Chaussée-Tirancourt (Somme), *Bulletin de la Société préhistorique française* 88/9, 272–281.
- Ducrocq T., Ketterer I. 1995 Le gisement mésolithique du "Petit Marais", La Chaussée-Tirancourt (Somme), *Bulletin de la Société préhistorique française* 92/2, 249–260.
- Eriksen B.V., Andersen H.C.H. 2016 An Early Mesolithic cremation grave from Southern Jutland, Denmark, (in:) J. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt, H. Meller (eds), *Mesolithic burials - Rites, symbols and social organization of early postglacial communities*. Tagungen des Landesmuseums für Vorgeschichte Halle 13/I, Halle (Saale), 73–80.
- Gumiński W. 2014 Wyposażenie symboliczne w grobach łowców-zbieraczy epoki kamienia na cmentarzysku Dudka na Mazurach, *Archeologia Polski* LIX, fasc. 1–2, 121–186.
- Gumiński W., Bugajska K. 2016 Exception as a rule. Unusual Mesolithic cemetery and other graves at Dudka and Szczepanki, Masuria, NE-Poland, (in:) J. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt, H. Meller (eds), *Mesolithic burials - Rites, symbols and social organization of early postglacial communities*. Tagungen des Landesmuseums für Vorgeschichte Halle 13/II, Halle (Saale), 465–510.
- Gummesson S., Molin F. 2016 The Mesolithic cemetery at Strandvägen, Motala in eastern Sweden, (in:) J. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt, H. Meller (eds), *Mesolithic burials - Rites, symbols and social organization of early postglacial communities*. Tagungen des Landesmuseums für Vorgeschichte Halle 13/I, Halle (Saale), 145–159.
- Jensen O.L. 2016 Double burials and cremations from the Late Mesolithic site of Nivå 10, Eastern Denmark (in:) J. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt, H. Meller (eds), *Mesolithic burials - Rites, symbols and social organization of early postglacial communities*. Tagungen des Landesmuseums für Vorgeschichte Halle 13/I, Halle (Saale), 95–107.
- Kobusiewicz M., Kabaciński J. 1991 Late Mesolithic Dwelling Object in Pomorsko (Western Poland), *Przegląd Archeologiczny* 38, 5–15.
- Küßner M., Schunke T. 2016 A Mesolithic burial and a hazelnut roasting site in Coswig, Wittenberg District, Central Germany, (in:) J. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt, H. Meller (eds), *Mesolithic burials - Rites, symbols and social organization of early postglacial communities*. Tagungen des Landesmuseums für Vorgeschichte Halle 13/I, Halle (Saale), 345–357.
- Larsson L. 1980 Stenåldersjägarnas boplatser och gravar vid Skateholm, *Limhamniana* 1980, Malmö, 13–39.
- Larsson L. 1982 Skateholmsprojektet. Nya gravar och ett nytt gravfält från jägarstenåldern, *Limhamniana* 1982, Malmö, 11–41.
- Larsson L. 1983 Skateholmsprojektet. På spåren efter gravsedsförändringar' ceremoniplatser och tama råvar, *Limhamniana* 1983, Malmö, 49–84.
- Larsson L. 1989 Late Mesolithic Settlements and Cemeteries at Skateholm, Southern Sweden, (in:) C. Bonsall (ed.), *Mesolithic in Europe, Papers presented at Third International Symposium*, Edinburgh, 367–378.
- Larsson M. 2017 *The life and death in the Mesolithic of Sweden*, Oxbow Books.
- Louwe Kooijmans L.P. 2007 Multiple Choices – Mortuary practices in the Low Countries during the Mesolithic and Neolithic, 9000-3000 cal BC, *Bericht der Römisch-Germanischen Kommission* 88, 552–580.

- Marciniak M. 2001 The burial ritual cemetery from the Boreal period in Mszano, Brodnica district, *Fontes Archaeologici Posnanienses* 39, 95–123.
- Meiklejohn C., Bosset G., Valentin F. 2010 Radiocarbon dating of Mesolithic human remains in France, *Mesolithic Miscellany* 21/1, 10–56.
- Meiklejohn C., Niekus M.J.L.T., van der Plicht J. 2015 Radiocarbon dating of Mesolithic human remains in the Netherlands, *Mesolithic Miscellany* 23/2, 3–48.
- Naze G., Robert B. 2006 Concevreux – Les Jombras, *ADLFI. Archéologie de la France - Informations* [Online], Picardie, (<http://journals.openedition.org/adlfi/4405>), posted 1 March 2006, accessed 21 January 2020.
- Niekus M.J.L.T., Ploegaert P.H.J.I., Zeiler J.T., Smits L. 2016 A small Middle Mesolithic cemetery with cremation burials from Rotterdam, the Netherlands, (in:) J. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt, H. Meller (eds), *Mesolithic burials - Rites, symbols and social organization of early postglacial communities*. Tagungen des Landesmuseums für Vorgeschichte Halle 13/II, Halle (Saale), 567–592.
- Niemi A.R. 2001 *De virksomme døde gravskikk som sosial diskurs i det sein-mesolittiske Sør-Skandinavia*, Hovedfagsoppgave i arkeologi, Universitetet i Tromsø, Høsten.
- Nilson-Stutz L. 2003 *Embodied rituals and ritualized bodies. Tracing ritual practices in Late Mesolithic burials*, Acta Archaeologica Lundensia series 8th, 46, Lund.
- Persson O., Persson E. 1988 Anthropological report concerning the interred Mesolithic Populations from Skateholm, Southern Sweden, (in:) L. Larsson (ed.), *The Skateholm Project I. Man and Environment*. Acta Regia Societas Humaniorum Litteratum Lundensis LXXIX, Lund, 89–105.
- Piasecki K., Kapla W. 2003 Analiza antropologiczna materiałów kostnych ludności kultury janisławickiej pochodzących z badań wykopaliskowych na stanowisku Leśna Góra oraz z badań powierzchniowych z terenu Równiny Kurpiowskiej, (in:) E. Kawałkowska (ed.), *Kultura Janisławicka w Polsce północno-wschodniej i terenach sąsiednich*, Ostrołęka, 145–149.
- Polet C., Cauwe N. 2002 Les squelettes mésolithiques et néolithiques de l'abri des Autours (prov. de Namur, Belgique), *C.R. Paleovol* 1, 43–50.
- Sjögren K.G., Ahlström T. 2016 Early Mesolithic burials from Bohuslän, western Sweden, (in:) J. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt, H. Meller (eds), *Mesolithic burials - Rites, symbols and social organization of early postglacial communities*. Tagungen des Landesmuseums für Vorgeschichte Halle 13/I, Halle (Saale), 123–143.
- Sørensen S.A. 2017 *The Kongemose Culture*, Copenhagen.
- Tomczyk J., Myska A., Ostrowska A., Sulgostowska Z., Palczewski P. 2019 A cut mark on the Mesolithic (ca. 5850 BC) cranium from Wieliszew (Poland): A revision of an analytical conclusion from previous studies, *International Journal of Osteoarchaeology* 29, 665–669.
- Toussaint M., Brou L., Le Brun-Ricalens F., Spier F. 2009 The Mesolithic site of Heffingen-Loschbour (Grand Duchy of Luxembourg). A yet undescribed human cremation possibly from the Rhine-Meuse-Schelde culture: anthropological, radiometric and archaeological implications, (in:) P. Crombe, M. Van Strydonck, J. Sergeant, M. Boudin, M. Bats (eds), *Chronology and evolution within the Mesolithic of North-West Europe. Proceedings of an international meeting, Brussels, May 30th – June 1st 2007*, Newcastle upon Tyne, 239–260.
- Valentin F., Cottiaux R., Buquet-Marcon C., Confalonieri J., Delattre V., Lang L., Le Goff I., Lawrence-Dubovac P., Verjux Ch. 2008 Découvertes récentes d'inhumations et d'une incinération datées du mésolithique en île-de-france, *Revue archéologique d'Île-de-France* 1, 21–42.
- Vang Petersen P. 1977 Vedbæk Boldbaner – endnu en gang, *Søllerødbogen* 1977, 131–170.
- Verlinde A.D. 1974 A Mesolithic Settlement with Cremation at Dalfsen, *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek* 24, 113–117.
- Wawrusiewicz A., Kalicki T., Przeździecki M., Frączek M., Manasterski D. 2017 *Grądy-Woniecko. Ostatni łowcy-zbieracze znad środkowej Narwi*, Białystok.
- Wiercińska A., Szlachetko K. 1977 Anthropological study of the human skull from Wieliszew, Warsaw Voivodship, *Archeologia Polona* 18, 187–203.