Groot, Maaike

Animals in funerary ritual in the Roman Netherlands

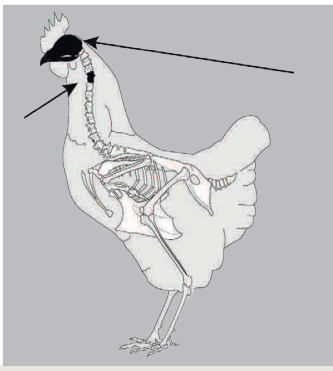
in: Deschler-Erb, Sabine – Albarella, Umberto – Valenzuela Lamas, Sílvia – Rasbach, Gabriele (Hrsg.), Roman animals in ritual and funerary contexts: proceedings of the 2nd Meeting of the Zooarchaeology of the Roman Period Working Group, Basel 1st-4th February 2018, 61-78.

DOI: https://doi.org/10.34780/1vadd09ax6

Herausgebende Institution / Publisher:
Deutsches Archäologisches Institut

KOLLOQUIEN ZUR VOR- UND FRÜHGESCHICHTE 26





Sabine Deschler-Erb | Umberto Albarella
Silvia Valenzuela Lamas | Gabriele Rasbach

ROMAN ANIMALS IN RITUAL AND FUNERARY CONTEXTS

Proceedings of the 2nd Meeting of the Zooarchaeology of the Roman Period Working Group, Basel, 1st–4th February 2018

This volume includes a number of papers that were originally presented at the conference *Roman Animals in Ritual and Funerary Contexts*, which was held in Basel (Switzerland) from 1st–4th February 2018. The conference represented the second meeting of the International Council for Archaeozoology (ICAZ) Working Group on the *Zooarchaeology of the Roman Period*.

The articles present ritually deposited animal remains across a wide geographical range and incorporate both archaeological and zoological findings. The integration of these two strands of evidence is also one of the central concerns of the ICAZ Working Group, as in the past they have often been dealt with separately. However, it is precisely this interdisciplinary cooperation that opens up new perspectives on ritual practices in a wide variety of contexts. In this volume we see the enhancement of our understanding of ritual treatment of animals in central sanctuaries, in rural areas, at natural sites, and as part of building construction processes.

The case studies presented in this volume demonstrate how animal remains such as bones and eggshells provide information beyond diet, economy, and differences in social hierarchy. Their interdisciplinary investigation additionally enables insights into practices governed by cultural, religious, and ideological conditions.

The aim of the Zooarchaeology of the Roman Period Working Group (https://alexandriaarchive.org/icaz/workroman) is to represent a network of exchange and collaboration across borders and to enable the understanding of the interconnections between the research questions associated with animal remains from this important historical period.

ISBN 978-3-447-11641-1

www.harrassowitz-verlag.de

Sabine Deschler-Erb, Umberto Albarella, Silvia Valenzuela Lamas, Gabriele Rasbach

ROMAN ANIMALS IN RITUAL AND FUNERARY CONTEXTS

DEUTSCHES ARCHÄOLOGISCHES INSTITUT
Römisch-Germanische Kommission, Frankfurt a. M.

KOLLOQUIEN ZUR VOR- UND FRÜHGESCHICHTE 26

DEUTSCHES ARCHÄOLOGISCHES INSTITUT
Römisch-Germanische Kommission, Frankfurt a. M.

Sabine Deschler-Erb, Umberto Albarella,
Silvia Valenzuela Lamas, Gabriele Rasbach

ROMAN ANIMALS IN RITUAL AND FUNERARY CONTEXTS

Proceedings of the 2nd Meeting of the Zooarchaeology of the Roman Period Working Group, Basel 1st–4th February, 2018.

HARRASSOWITZ VERLAG · WIESBADEN

XVI, 256 Seiten mit 146 Abbildungen

Library of Congress Cataloging-in-Publication Data
A CIP catalog record for this book has been applied for at the Library of Congress.

Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über https://dnb.de/ abrufbar.

Verantwortliche Redaktion: Redaktion der Römisch-Germanischen Kommission des Deutschen Archäologischen Instituts, Frankfurt am Main

Verantwortlicher Redakteur: H.-U. Voß, Formalredaktion: J. Gier, Bildredaktion: O. Wagner

Umschlagfoto: A.-S. Vigot, Einband: Catrin Gerlach

Buchgestaltung und Coverkonzeption: hawemannundmosch, Berlin
Prepress: le-tex publishing services GmbH, Leipzig

Otto Harrassowitz GmbH & Co. KG, Wiesbaden · https://www.harrassowitz-verlag.de/

ISBN 978-3-447-11641-1
doi: 10.34780/b03671ada6

Gedruckt auf säurefreiem und alterungsbeständigem Papier
Printed in Germany

Vorwort zur Reihe „Kolloquien zur Vor- und Frühgeschichte“

In Händen halten Sie, liebe Leserin und lieber Leser, den 26. Band der „Kolloquien zur Vor- und Frühgeschichte“, der Ihnen neu und doch vertraut vorkommen mag. Denn diese Reihe, die von der Römisch-Germanischen Kommission (RGK) und der Eurasien-Abteilung des Deutschen Archäologischen Instituts (DAI) gemeinsam herausgegeben wird, existiert seit 23 Jahren, seit im Jahr 1997 die Akten des Internationalen Perlensymposiums in Mannheim als Band 1 publiziert wurden. Neu ist aber, dass die RGK erstmals die Herausgabe eines Bandes im neuen Reihenformat des DAI betreut hat. Die Aufmachung der „Kolloquien zur Vor- und Frühgeschichte“ (KVF) entspricht nun der Aufmachung zahlreicher weiterer Publikationsreihen des DAI. Das neue Layout ist moderner, attraktiver und nutzerfreundlicher. Es ist nun für viele DAI-Publikationsreihen nutzbar und hat einerseits einen hohen Wiedererkennungswert, erlaubt andererseits individuelle Anpassungen und Nutzungen.

Auch der vorliegende Band ist, wie es seit ihren Anfängen prägend für die KVF ist, ein Beispiel international ausgerichteter, Forschungstraditionen und -regionen übergreifender Wissenschaft. Inhaltlich schließt dieser 26. Band an eine ganze Reihe von KVF-Sammelbänden mit interdisziplinärer bzw. fachübergreifender Ausrichtung an. Mit KVF 26 stehen diesmal interdisziplinäre Untersuchungen zu Mensch-Tier-Beziehungen in den verschiedenen regionalkulturellen Kontexten des Römischen Reiches im Mittelpunkt und insbesondere die Rolle von Tieren in Zusammenhang mit Bestattungen und anderen Ritualen.

Knochengewebe vermag sehr gut, viele verschiedene Spuren menschlichen Handelns zu konservieren, und diese Spuren können wir als Zeugnisse dieser Handlungen, aber auch der dahinterstehenden Überlegungen, Absichten und Traditionen verstehen. So erlauben Tierknochen, aber auch andere Überreste wie Eierschalen, die Verknüpfung zoologischer Methoden und Fragen mit jenen einer sozial- und kulturhistorisch orientierten Archäologie. Tierreste sind also in jedem Sinne *archäologische* Funde, die nicht nur zu Ernährungs- und Wirtschaftsfragen Auskunft geben können, auch nicht allein zu sozialhierarchisch begründeten Unterschieden bei Bestattungsbeigaben, sondern auch zu *per se* kulturhistorischen Fragen wie eben jenen nach kulturell, religiös bzw. weltanschaulich bestimmten Praktiken, nach Differenzen in ihrer Ausübung, nach ihren regional spezifischen Bedeutungen und nach ihren Veränderungen.

Damit liegt ein informativer und instruktiver 26. Band der KVF vor mit neuen Ansätzen, neuen Fragen und neuen Einsichten in einem neuen gestalterischen Gewand. Die Aufnahme der Reihe KVF in die einheitliche Publikationsgestaltung des DAI ermöglicht auch, diesen und weitere KVF-Bände in Zukunft in der *iDAI.world* – der digitalen Welt des DAI – unter *iDAI.publications/books* online zugänglich zu machen und zum Abruf im Open Access bereitzustellen. Zwar dient auch den interdisziplinär arbeitenden Altertumswissenschaften das gedruckt erscheinende Werk nach wie vor als Hauptmedium fachwissenschaftlichen Austauschs, doch stehen uns durch die digitale Vernetzung unterschiedlicher Daten- und Publikationsformate mittlerweile zahlreiche weitere Möglichkeiten der Veröffentlichung wissenschaftlicher Inhalte zur Verfügung. Das neue Publikationsformat ermöglicht die zukunftsweisende Verknüpfung von Print und digitalen Dokumentations- und Publikationsressourcen, z. B. durch das zeitgleiche Bereitstellen digitaler Supplemente.

Das Erscheinen von 26 Bänden in kurzen Abständen zeigt, dass die vor über 20 Jahren konzipierte Reihe erfolgreich war und ist, innovativ bleibt und in eine lebendige Zukunft blickt. Auch künftig werden Eurasien-Abteilung und RGK die Reihe „Kolloquien zur Vor- und Frühgeschichte“ im neuen Gewand und – wo sinnvoll und notwendig – als hybride Verknüpfung analoger und digitaler Wissensvermittlung fortführen. Und wie bisher werden wir in die KVF Beiträge von Tagungen und Symposien aufnehmen, an deren Vorbereitung und Durchführung wir personell bzw. organisatorisch beteiligt waren.

Zuletzt noch ein Dank an alle an der vorliegenden Publikation Beteiligten. Für die Möglichkeit im neuen Reihenformat des DAI publizieren zu können, danken wir ganz herzlichen den Kolleginnen und Kollegen der Redaktion der Zentrale. Die Bildbearbeitung der Beiträge lag in den Händen von Oliver Wagner. Johannes Gier war für das Lektorat der Beiträge verantwortlich. Lizzie Wright redigierte die englischen Texte, Hans-Ulrich Voß betreute die Drucklegung des Buches. Ihnen wie den Herausgeber*innen des Bandes danken wir sehr für die hervorragende Vorbereitung und Durchführung der Publikation.

Frankfurt am Main, den 12.11.2020

Eszter Bánffy
Erste Direktorin

Kerstin P. Hofmann
Zweite Direktorin

Alexander Gramsch
Redaktionsleiter

Preface to the series "Kolloquien zur Vor- und Frühgeschichte"

In your hands, dear reader, you hold the 26th volume of the series "Kolloquien zur Vor- und Frühgeschichte": It might seem to you different, but still familiar, because this series, concomitantly published by the Romano-Germanic Commission (RGK) and the Eurasia Department of the German Archaeological Institute (DAI), has been in existence for 23 years. The first volume, published in 1997, consisted of the proceedings of the "Internationales Perlensymposium" held in Mannheim. What is new is that the RGK has published a volume in the new DAI series format for the first time. The layout of "Kolloquien zur Vor- und Frühgeschichte" (KVF) now matches the layout of numerous other DAI publication series. This modern layout is more attractive and more user-friendly; the new format is mirrored across many DAI publication series. Not only does it have a distinctive design; it also enables individual adaptations and uses.

The present volume, as is characteristic of the KVF series from its beginnings, is an example of internationally oriented scholarship spanning diverse research traditions and research fields. In terms of content, this 26th volume continues a long tradition of conference proceedings with an interdisciplinary or cross-disciplinary orientation published within KVF. The focus of KVF 26 is on interdisciplinary studies of human-animal relationships in different regional-cultural contexts of the Roman Empire. In this, particular emphasis lies on the role of animals in burial and other ritual contexts.

Bone tissue excellently preserves many different traces of human actions. These traces can be interpreted as the evidence of these actions as well as of the underlying reflections, intentions, and traditions. Animal bones as well as other remains such as eggshells therefore make it possible to link zoological methods and issues with those related to socially and cultural-historically oriented archaeology. Animal remains are thus *archaeological* finds in every sense: They provide information not only about diet and economy, or about differences in grave goods based on social hierarchy. They touch on key cultural issues such as culturally, religiously or ideologically determined practices. Moreover, zooarchaeological analyses allow us to detect differences in these practices, to identify regionally specific meanings and the changes therein.

Thus, an informative and instructive 26th volume of the KVF series is available in a new design, including new approaches, new research questions, and new insights. In the future, through the incorporation of the KVF series into the common DAI publication design this and further volumes can be published online: on the *iDAI.world* platform – the digital world of the DAI – under *iDAI.publications/books* and in Open Access. Printed publications admittedly still serve as a main medium for subject-specific exchanges for interdisciplinary archaeological studies. The new publication format allows digital networking of various data and publication formats providing us with numerous additional possibilities for the publication of scientific content and enabling the future-oriented linking of print and digital documentation and publication resources, for example through the simultaneous provision of digital supplements.

The publication of 26 KVF volumes at short intervals shows that this series conceived over 20 years ago has been successful, remains innovative, and looks ahead to a lively future. From now on the Eurasia Department and the Romano-Germanic Commission will continue the series "Kolloquien zur Vor- und Frühgeschichte" in the new design and, where this seems reasonable and vital, in the form of a hybrid connection of analogue and digital knowledge. As in the past, in the KVF series we will continue incorporating proceedings of meetings and symposia in the preparation of which we are involved personally or organisationally.

Lastly we want to express our gratitude to all who participated in producing the present publication. We thank our colleagues from the editorial office at the Head Office of the German Archaeological Institute for the opportunity to publish in the new DAI series format. The digital imaging of the contributions was carried out by Oliver Wagner. Johannes Gier was responsible for the copyediting of the contributions. Lizzie Wright edited the English texts. Hans-Ulrich Voß was in charge of the editorial process. We are very grateful to all these people and to the editors of the volume for the outstanding preparation and realisation of this publication.

Translated by Karoline Mazurié de Keroualin.

Frankfurt am Main, 12 November 2020

Eszter Bánffy
Director

Kerstin P. Hofmann
Deputy Director

Alexander Gramsch
Head of the editorial office

Inhaltsverzeichnis

(Logo: Stefanie Deschler)

Preface

by *Sabine Deschler-Erb / Umberto Albarella / Silvia Valenzuela Lamas / Gabriele Rasbach*

This volume includes contributions that were originally presented at the conference *Roman Animals in Ritual and Funerary Contexts*, which was held in Basel 1st–4th February 2018 and organised by Sabine Deschler-Erb. The conference represented the second meeting of the International Council for Archaeozoology (ICAZ) Working Group on the *Zooarchaeology of the Roman Period*.

ICAZ Working Groups are largely informal and independent collectives of researchers engaged with a theme of common interest. Their association with ICAZ allows them to connect to a larger international community and benefit from a number of shared facilities, such as the ICAZ web page <https://www.alexandriaarchive.org/icaz/index (last access: 20.10.20)> and Newsletter <http://alexandriaarchive.org/icaz/publications-newsletter (last access: 20.10.20)>. They also enjoy the opportunity to share the ICAZ ethos of collaboration, mutual aid, and international solidarity.

The *Zooarchaeology of the Roman Period* ICAZ Working Group was originally proposed by Silvia Valenzuela Lamas and Umberto Albarella and approved by the ICAZ International Committee in 2014. The aspiration to create such a group emerged from the awareness that the Roman World was intensively connected. Nevertheless, much research on the use of animals in Roman or Romanised areas has been carried out at a localised level, often oblivious of parallel studies undertaken in other regions of Roman influence. It was clear that many of the investigated research themes – such as the use of animals in religious contexts, livestock trade, and husbandry improvements, to mention just a few – would benefit from greater integration and enhanced international synergies. This applied to the methodological approach, as well as the actual evidence from different areas of the Empire. With this objective in mind, the first meeting was organised in Sheffield (UK) 20th–22nd November 2014 by the two Working Group promoters and focused on *Husbandry in the Western Roman Empire: a zooarchaeological perspective*. The core objective of the meeting was to bring together researchers operating in different areas of the former Roman World and contiguous regions, which was successfully achieved. Some of the contributions to that conference were published in a monographic issue of the *European Journal of Archaeology* (Volume 20, Special Issue 3, August 2017).

The focus on the western Empire that characterised the first meeting led to the need to open up geographically for the second meeting and focus on a thematic investigation which would be of fully international relevance. Sabine Deschler-Erb proposed to organise the second meeting in Basel (Switzerland) and this, at the very core of Europe, proved to be a very successful location. She suggested a number of possible topics to the informal membership of the group and the theme of 'ritual' was chosen. This was another fruitful move as there was hardly any shortage of material to present, and the conference provided a whirlwind of case studies across different areas, whose connections and shared questions could clearly be identified. The objective of the second meeting to move beyond the focus on the Western Empire was fully achieved. The list of papers included in this volume clearly shows the great geographic range on display, with different contributions presenting research based in the south, north, east, and west of the Roman area. The modern countries featured in the book include Austria, Belgium, Britain, Egypt, France, Germany, Greece, Italy, Malta, the Netherlands, Romania, Serbia, Switzerland and Turkey.

The Basel conference and its proceedings should provide an ideal springboard for further success and interconnection of researchers investigating the use of animals in Roman times.

Last but not least, we would like to express our great gratitude to all of the institutions and people who made the Basel conference and these proceedings possible. We thank the University of Basel, especially the Integrative Prehistory and Archaeological Science, for hosting the conference, as well as for technical and administrative support; the Swiss National Foundation, the Provincial Roman Archaeology Working group of Switzerland, and the Vindonissa chair of the University of Basel for their financial support; the Römerstadt Augusta Raurica, the Kantonsarchäologie Aargau, and the Römerlager Vindonissa for their warm welcome and generous catering; the organisation team, Monika Mráz, David Roth, and Viviane Kolter-Furrer, whose help was essential before, during, and after the conference; all student volunteers, Florian Bachmann, Debora Brunner, Marina Casaulta,

Laura Caspers, Sarah Lo Russo, Hildegard Müller, and Benjamin Sichert, who worked with great commitment; and the Romano-Germanic Commission, Frankfurt, who accepted these proceedings for their series. We thank Hans-Ulrich Voß and Johannes Gier, who carried out an excellent editing job.

The next conference will take place in Dublin (Ireland) on 11th–13th March 2021 and will be organised by Fabienne Pigière on the topic of *Animals in Roman economy*. It will certainly provide new opportunities for cross-fertilisation, collaboration, and exchange of ideas.

Animals in funerary ritual in the Roman Netherlands

by *Maaike Groot*

Keywords

cemetery, Roman, Late Iron Age, Netherlands, funerary ritual, animals, burned bone

Schlüsselwörter

Gräberfeld, römisch, Späte Eisenzeit, Niederlande, Bestattungsrituale, Tiere, verbrannte Knochen

Mots-clés

nécropole, romain, âge du Fer tardif, Pays-Bas, rituel funéraire, animaux, os brûlé, incinération

Introduction

This paper provides a review of animal remains from cremation graves in the Roman Netherlands in order to highlight the role of animals in funerary ritual. The study will focus on two regions: the river area in the central Netherlands, which roughly coincides with the Roman *civitas Batavorum*, and the south-eastern part of the Netherlands (covering the Dutch part of the *civitas Tungrorum*). Although the focus will be on the Roman period, there will be some overlap with the Late Iron Age, for two reasons. First, it is not always possible to separate Late Iron Age from early Roman graves, and a larger data set is available when those graves are included. Second, it offers the opportunity to look for continuity or discontinuity of funeral practices during the Late Iron Age/Roman transition. A recent paper focusing on funerary ritual in the Iron Age will further enable a chronological comparison[1].

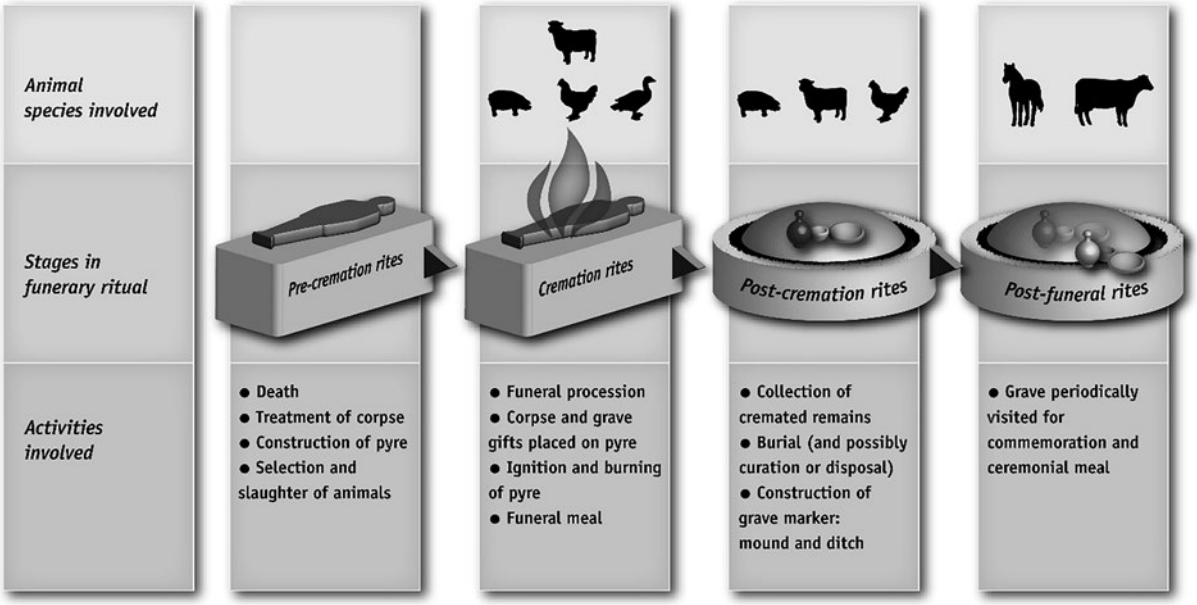
The paper will attempt to answer the following questions. What animal species were selected for funerary ritual? Is there a difference compared to animal remains found in settlements? Were certain body parts selected for burning on the pyre? Is there a difference between the burned and unburned animal remains found in graves? What animal remains are found in cemeteries in features other than graves? Are there any differences between the two study regions? Are there any differences between the Late Iron Age and Roman period? The focus will be on broad regional and temporal trends in the role of animals in funerary rituals rather than the differences between the individual cemeteries.

Funerary ritual in the Late Iron Age and Roman Netherlands

The most common method for disposal of the dead in the 1st century AD in the Roman-occupied part of the Netherlands was cremation. Parts of animals, pottery and sometimes glass were placed on the pyre and burned with the deceased. The remains of the animals were thus mixed up

1 van den Helm / Van Dijk 2017.

doi: 10.34780/1vadd09ax6



1 Stages of funerary ritual and the role of animals as suggested for the Roman cemetery of Tiel-Passewaaij (Groot 2008, fig. 4,14).

with the human cremated remains[2]. After cremating the dead, only parts of the cremated remains were collected and buried in a grave[3]. Unburned grave goods such as tableware, portions of meat, knives, coins, and personal items were placed in the grave with the washed cremated remains[4]. The grave was covered by a small mound and surrounded by a round or rectangular grave ditch. There is some evidence that people returned to the grave for commemoration[5]. Because of the nature of archaeology, our data is heavily biased towards the later stages in funerary ritual, when organic and inorganic material is buried underground *(fig. 1)*[6]. Traditionally, excavation has tended to focus on the central grave. The cemetery of Tiel-Passewaaij has shown that other features in the cemetery demand just as much attention if we are to understand all aspects and phases of funerary ritual[7]. The ditches surrounding cremation graves, for instance, can also contain finds. It is important to be aware of the fact that by focusing on animal remains, we are of course only looking at one element in a complex social practice. Previous publications have included material culture and/or used an anthropological approach to studying funerary ritual[8].

Methodology

Identification

Most of the animal bone fragments from cemeteries are completely calcined and heavily fragmented, which makes identification challenging. Ribs and vertebrae are usually only identified to size (e. g. medium or large mammal). It is important to consider this category when analysing anatomical elements in graves, otherwise we would be missing an entire body part, which is rich in meat. Worked bone is not included in this study, since this represents artefacts, whereas most of the animal bones represent food offerings.

2 It was probably not possible for the family to separate the burned human from the accompanying burned animal remains, so that burial of the cremated animal remains may be accidental rather than deliberate.
3 Hiddink 2003a, 121; Parker Pearson 1999, 7.
4 Since usually little charcoal is found, it is assumed that the cremated remains were generally washed. Aarts / Heeren 2017, 135.
5 Aarts / Heeren 2017, 139; Groot 2008, 184–186.
6 See Aarts / Heeren 2017, 131–139 for a discussion of all aspects of the funerary ritual.
7 Aarts / Heeren 2011.
8 E. g. Aarts / Heeren 2017; Groot 2008; Hiddink 2003b.

Quantification

Quantification in cremation cemeteries is not straightforward and should be approached differently from that in settlements. In studying settlement refuse, it is possible that several fragments from the same species, found in different features dating to the same period, could be part of one individual. Slaughter and butchery will result in separation of different body parts, which could end up in different parts of the settlement. Refuse can also stay above ground for a while or be dumped secondarily. In cremation cemeteries, we are dealing with features that represent distinct events. It is unlikely that different graves date to the exact same moment. For each burial, separate individual animals are butchered. In this case, fragments from the same species from different graves should be understood as different individuals. Also, fragments from the same species within a grave are likely to be from the same individual, unless there are indications that contradict this (e. g. two right hind legs, or animals of different ages). Therefore, it is more appropriate to use the number of fragments for settlements, and the number of times a species is found in graves for cemeteries. There is another reason against using the number of fragments. In the Roman Netherlands, we always find just part of what was originally present on the funeral pyre, because only part of the burned fragments was selected for burial[9]. In settlement refuse, what ends up in below-ground features is more random or caused by other factors. Nevertheless, the number of fragments will also be included here, as it may provide insight into the amount of meat placed on the pyre.

Burned vs. unburned

In cemeteries with good preservation conditions, burned as well as unburned animal bones are found. The river area mostly has clay soils, which preserve bone very well. In the south-eastern Netherlands, the sandy soils are not conducive to good bone preservation, and only completely calcined bones are found. This limits the questions that can be asked and results in a biased view. The cemeteries in the river area that provide evidence on unburned animal bones give us a more complete picture of funerary ritual. In comparing the two regions, it is important that only the burned bones from the river area are compared with those of the south-eastern Netherlands, since including the unburned bones could distort the comparison.

Body parts and meat portions

To understand the role of animals in funerary ritual, we can reconstruct the body part or meat portion that was placed on the pyre, based on the elements that are present. In many cases, several elements from a body part are present, such as for instance in grave 723-2 from Nederweert-Rosveld, where fragments from a pig's pelvis, tibia, calcaneum, astragalus and phalanx are present. In that case, it is clear that a hind limb from a pig has been burned in its entirety. Including those fragments of bone only identified to size can add to the confidence of the reconstruction. For example, the combination of a pig tibia and a medium mammal femur in grave 1209 in Nederweert-Hoebenakker leads to a more secure reconstruction of the presence of a hind limb. When only one element is present, e. g. a tibia or calcaneum, it is possible that this is a result of the selection of only part of the cremated remains for burial, and that a whole hind limb was originally present. To increase the size of the data set, in this study, it has been assumed that an entire body part was present on the funeral pyre even when only one element is present. However, we will later see that this may not be a valid approach.

Data set

For this study, only cremation graves and their accompanying ditches have been included. Inhumation graves are much rarer and have not been included, since they represent a different kind of funerary ritual.

For the river area, eleven cemeteries are included in the study *(tab. 1; fig. 2)*, although data from two of them have been combined, since the two cemeteries from Tiel-Medel-Afronding are located close together and each one has only a few graves with animal bones. Six of the cemeteries include both burned and unburned animal bones. All cemeteries date to the Roman period. The data set for the river area consists of a total of 127 graves with identified burned animal remains.

9 Hiddink 2003a, 121; Aarts / Heeren 2017, 135; Lauwerier 1990, 3.

For the south-eastern Netherlands, nine cemeteries are included in this study *(tab. 1)*. The cemetery of Nederweert-Hoebenakker was excavated and analysed during three different campaigns and the results are presented separately here. Five cemeteries provide data for the Roman period (76 graves with identified burned animal remains), four cemeteries for the Late Iron Age (76 graves with identified burned animal remains) and four cemeteries for the Late Iron Age/Roman period (63 graves with identified burned animal remains). For two of the Late Iron Age/Roman cemeteries (Nederweert-Rosveld and Someren-Waterdael), the data have not been split up according to the different periods, as this resulted in too much data loss[10]. Some of the graves from Nederweert-Hoebenakker and Weert-Molenakkerdreef could not be dated more accurately than Late Iron Age/Roman.

site	region	date	n cremation graves	n graves with animal bone	n graves with burned animal bone	% graves with burned animal bone	n graves with identified burned animal bone
Tiel-Passewaaij*	RA	50–270 AD	230	111	86	37	31 (44)
Zaltbommel-De Wildeman*	RA	50–200 AD	86	23	19	22	10 (12)
Zoelen-Scharenburg*	RA	100–250 AD	34	25	24	71	18 (19)
Huissen-Loovelden*	RA	mid-1st–early 4th c. AD	102	59	31	30	20 (49)
Nijmegen-Hatert	RA		188	20	20	9	15
Cuijk-Heeswijkse Kampen	RA	0–150 AD	131	18	18	14	15
Tiel-Medel Afronding*	RA	40–270 AD	80	21	18	23	8 (15)
Valburg-Molenzicht*	RA	late 1st–first half 3rd c. AD	27	16	12	44	3 (7)
Cuijk-Grotestraat	RA	150–250 AD	42	4	4	10	3
Oss-Ussen Zuidoost	RA	Roman	93	4	4	4	4
Maasbree-Siberië	SN	Early Roman/Middle Roman	59	18	18	31	13
Weert-Kampershoek Noord 2	SN	Early Roman/Middle Roman	135	26	26	19	20
Weert-Kampershoek	SN	Roman	19	5	5	2	3
Nederweert Hoebenakker 2009	SN	Roman	82	16	16	20	10
Nederweert-Hoebenakker 2013–2014	SN	Roman	146 for all periods	24	24	46 for all periods	15
Weert-Molenakkerdreef	SN	Roman	43	17	17	42	15
Nederweert-Hoebenakker 2013–2014	SN	LIA/Roman	146 for all periods	19	19	46 for all periods	10
Nederweert-Rosveld	SN	LIA/Roman	125	42	42	28	25
Someren-Waterdael	SN	LIA/Roman	95	41	41	43	17
Weert-Molenakkerdreef	SN	LIA/Roman	31	13	13	39.5	11
Weert-Kampershoek Noord 7	SN	LIA	15	7	7	47	3
Nederweert-Hoebenakker 2013–2014	SN	LIA	146 for all periods	24	24	46 for all periods	20
Nederweert-Hoebenakker 2017	SN	LIA[11]	33	17	17	52	11
Weert-Molenakkerdreef	SN	LIA	36	23	23	64	20
Helden-Panningen-Stokx	SN	LIA	61	39	39	64	22

Tab. 1 Cremation cemeteries included in this study, with information on their dates, total numbers of cremation graves and numbers of cremation graves containing animal remains. *: cemetery has yielded both burned and unburned animal bones. RA: river area: SN: south-eastern Netherlands. n cremation graves: either the number excavated or the number examined by a physical anthropologist, whichever is the smallest. This number should be seen as an estimate, since depending on the amount and weight of cremated remains present, not every grave may have been counted in the excavation report. This can vary between cemeteries. n graves with identified animal bone: the number in brackets includes graves with identified unburned bone. Tiel-Medel Afronding: data from two cemeteries (Hazenkamp and De Reth). See *table 9* in the appendix for references for the zooarchaeological publications for all cemeteries.

10 Nederweert-Rosveld: 25 graves with identified animal bones in total, out of which one dates to the Roman period and five to the Late Iron Age. Someren-Waterdael: 17 graves with identified animal bones in total, out of which nine date to the Roman period and two to the Late Iron Age.

11 With the exception of one Roman grave.

2 Map of the Netherlands with the sites included in this study.

Results

Proportion of graves with animal remains

For the river area, 4 to 71 % of all cremation graves contain burned animal remains, with an average of 23 %. For the southern Netherlands, the proportion of Roman cremation graves with animal bones varies from 19 to 42 %, with an average of 24 %. For the Late Iron Age/Roman graves, 28 to 43 % of graves contain animal remains, with an average of 38 %. For the Late Iron Age graves, 47 to 64 % of all graves contain animal bones, with an average of 59 %. For all periods for the cemetery of Nederweert-Hoebenakker (excavations 2013–2014), the proportion of cremation graves containing animal remains is 46 %.

Graves: presence of species

Pig is present in all 15 larger cemeteries (more than ten graves with identified burned bones). Sheep is absent only in the cemetery of Zaltbommel-De Wildeman. Chicken is present in seven of the nine Roman cemeteries and absent in all Late Iron Age and Late Iron Age/Roman cemeteries. Chicken is not found in the Netherlands until the Roman period, so that explains its absence. Cattle is also found in seven cemeteries and seems more common in the river area (present in four out of six cemeteries and three out of nine cemeteries in the south-eastern Netherlands). Horse is only found once, in the Late Iron Age cemetery of Helden-Panningen. Goose is found in three and duck in two cemeteries, all situated in the river area. In most cases, it is not known whether the ducks and geese are wild or domestic[12]. The exception is a diving duck (*Athya* sp.) in Zoelen-Scharenburg. While deer is present in three cemeteries, in all cases only antler is found, and the finds represent artefacts rather than food.

In the majority of graves, only one species is present, but some graves have fragments of two or more species. The maximum is four in a grave in Zoelen-Scharenburg: pig, sheep, duck and diving duck. The data show a difference between the two regions: a higher proportion of graves in the river area have remains of more than one species than in the cemeteries in the south-eastern Netherlands *(tab. 2)*.

	1 species	2 species	3 species	4 species	total
river area	90	29	7	1	127
river area %	71	23	6	1	
south-eastern NL Roman	62	12	2	–	76
south-eastern NL Roman %	82	16	3	–	
south-eastern NL LIA/Roman	59	4	–	–	63
south-eastern NL LIA/Roman %	94	6	–	–	
south-eastern NL LIA	58	18	–	–	76
south-eastern NL LIA %	76	24	–	–	

Tab. 2 Number of animal species present among the burned animal remains in cremation graves.

Graves: proportions of species

Table 3 shows the number of times animal species are found in cremation graves (burned remains only) as well as the percentage out of the total number of cremation graves with burned, identified animal bones. In the river area, chicken and cattle are found in a higher proportion of graves than in the south-eastern Netherlands. Goose and duck only occur in the river area. In the south-eastern Netherlands, pig and sheep or goat are both found in higher proportions in Roman graves than in the river area *(tab. 3)*. For the Late Iron Age/Roman period, the proportion of graves with sheep or goat bones is comparable to that in the Roman river area, but pig is found in a much higher proportion in the south-eastern Netherlands. In the Late Iron Age south-eastern Netherlands, the proportion of pig is even higher, while proportions of graves with sheep or goat are similar to those from other periods in this region. The only grave with horse remains dates to this period. As in the other periods in the southeast, cattle is found, but very infrequently.

12 However, since wild ducks and geese are nowadays very common in the river area and neither is found in cemeteries in the south-eastern Netherlands, it seems likely that they represent wild rather than domestic species. Furthermore, there is no evidence for domestic duck in the Netherlands until the Middle Ages. Çakirlar et al. 2019.

	pig	sheep/goat	chicken	cattle	horse	goose	duck	n
river area	66	42	33	8	–	6	5	127
river area %	52	33	26	6	–	5	4	
south-eastern NL Roman	48	30	9	1	–	–	–	76
south-eastern NL Roman %	63	39	12	1	–	–	–	
south-eastern NL LIA/Roman	42	18	–	1	–	–	–	57
south-eastern NL LIA/Roman %	74	32	–	2	–	–	–	
south-eastern NL LIA	62	28	–	2	1	–	–	76
south-eastern NL LIA %	82	37	–	3	1	–	–	

Tab. 3 Number of graves per species and percentages out of the total number of graves with identified, burned animal bone. Since more than one species can occur in a single grave, the total percentage exceeds 100 %.

Numbers of fragments

Pig is not only the most common species with regard to the number of graves it is found in, but also dominates the number of fragments, with 47 % for the Roman river area and 62 % for the Roman south-eastern Netherlands *(tab. 4)*. In the Late Iron Age and Late Iron Age/Roman graves, it is found in even higher proportions. Sheep or goat may be the second most common species in terms of presence in graves, but in terms of number of fragments, for the Roman period in the river area, chicken takes the second place. This is not the case in the south-eastern Netherlands.

	pig	sheep/goat	chicken	cattle	horse	goose	duck	n
river area	225	68	164	6	–	10	4	477
river area %	47	14	34	1	–	2	1	
south-eastern NL Roman	113	54	12	2	–	–	–	181
south-eastern NL Roman %	62	30	7	1	–	–	–	
south-eastern NL LIA/Roman	89	25	–	1	–	–	–	114
south-eastern NL LIA/Roman %	78	22	–	1	–	–	–	
south-eastern NL LIA	154	45	–	4	1	–	–	204
south-eastern NL LIA %	75	22	–	2	<1	–	–	

Tab. 4 Number of burned fragments per species in cremation graves. Not including Nijmegen-Hatert, since no numbers of fragments are published for this cemetery.

Graves: body parts

For the river area, the proportions of body parts of pig burned on the pyre are roughly equal for the head, front leg and hind leg *(fig. 3)*. For sheep or goat, hind legs are overrepresented with 51 %, followed by 29 % for front legs and small proportions for the foot, head and rump *(fig. 4)*. Unidentified medium-sized mammal is represented by 57 % rump, 24 % head and smaller proportions for the legs.

In the Roman south-eastern Netherlands, 54 % of pig body parts are hind legs, followed by 30 % front leg and small proportions of head, rump and foot. For sheep or goat, hind legs slightly outnumber front legs and there is a small proportion of feet. Body parts not further identified than medium-sized mammal are the rump, front and hind leg. In Late Iron Age/Roman graves in the south-eastern Netherlands, body parts from pig are dominated by hind legs with 84 %, with small proportions of front leg, rump and head. Hind legs are only slightly overrepresented for sheep or goat, with 55 % hind leg and 45 % front leg. The body parts from medium-sized mammal are mostly from the rump (60 %) and hind leg (27 %). Hind legs of pigs are similarly dominant in Late Iron Age graves (87 %), with the remaining body parts all front legs. For sheep or goat, hind legs are also the most commonly offered body part (77 %); all other body parts are front legs. Among the medium-sized mammal bones, the rump dominates with 91 %; the other 9 % are front legs.

Overall, left front and hind legs of both pig and sheep or goat dominate over right limbs *(fig. 5)*. This difference is most pronounced for the Late Iron Age and more so for pig than for sheep or goat. While the overrepresenta-

tion of left hind limbs is not statistically significant for the individual phases and regions, it is so when the data are combined ($p = 0.018$)[13].

Relationship between sex of deceased and animal species

The number of graves with identified animal remains and human remains with sex determination is usually quite small and the sex determinations have varying degrees of certainty. Any tentative patterns that have been suggested for individual cemeteries disappear when data are combined to reach a larger sample size. For the river area, bird remains are most common in graves of men, pig remains in graves of women and remains of sheep or goat in children's graves *(fig. 6)*[14]. However, these differences could just be due to the still small sample size, and there is no statistical significance[15]. For the south-eastern Netherlands, again, no clear pattern is visible. Bird remains are more common in graves of women than in those of men and children, sheep or goat is found slightly more often in children's graves and pig is most common in graves of men *(fig. 7)*[16]. As for the river area, the differences are not statistically significant[17].

Slaughter ages

Pigs included in funerary ritual in the Roman river area were mostly slaughtered at an age younger than 2/2.5 years *(fig. 8)*. A dominance of young pigs is also found in most settlement sites in the central Roman Netherlands[18]. Young pigs also dominate in graves in the south-eastern Netherlands (all periods combined), but to a somewhat lesser extent. Due to the absence of preserved unburned bone in most sites in the south-eastern Netherlands, no comparison with settlements can be made for this region. For sheep and goat, the data set for slaughter ages is too small to say much, but there does not seem to be such a strong focus on young animals here[19].

Unburned animal bone

The study of unburned animal bones in cremation cemeteries is limited to six sites in the river area, since unburned bone is not preserved in most of the sites included in this study. In graves, sheep or goat is most commonly found, followed by cattle and then pig *(tab. 5)*. Species present with unburned remains that were not represented among the burned bones are horse (found only once in a Late Iron Age grave in the south-eastern Netherlands), dog and fish. In terms of numbers of fragments, pig is the best represented species, followed by sheep or goat and cattle. Cattle is often represented by a single bone, and, as suggested for the cemetery of Huissen-Loovelden, this should perhaps be seen as a symbolic gift (*pars pro toto* for an entire animal) rather than a food offering[20]. Combinations of more than one species are also found among the unburned animal bone, with a maximum of five species in a grave in Huissen-Loovelden. Combinations are found more often among the unburned and combined burned/unburned bone than when only the burned bone is taken into account *(tabs 2 and 6)*.

13 Single proportion test in PAST 3.23; hypothetical proportions: 50 % left, 50 % right. The difference for the Late Iron Age southern Netherlands is significant (0.02), but this significance is lost when a correction for multiple testing is applied (Holm method).

14 Based on data from Tiel-Passewaaij, Zaltbommel-De Wildeman, Zoelen-Scharenburg, Huissen-Loovelden, Tiel-Medel-Afronding and Valburg-Molenzicht.

15 Chi-square test in PAST 3.23.

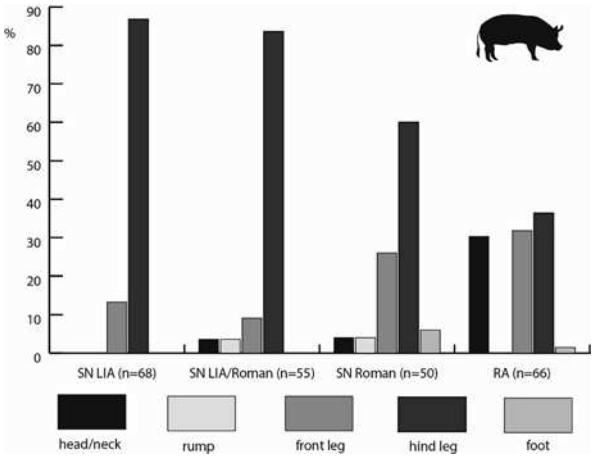
16 Based on data from Maasbree-Siberië, Nederweert-Hoebenakker 2013–2014, Someren-Waterdael, Nederweert-Rosveld, Weert-Kampershoek Noord 2 and 7 and Helden-Panningen.

17 Chi-square test in PAST 3.23.

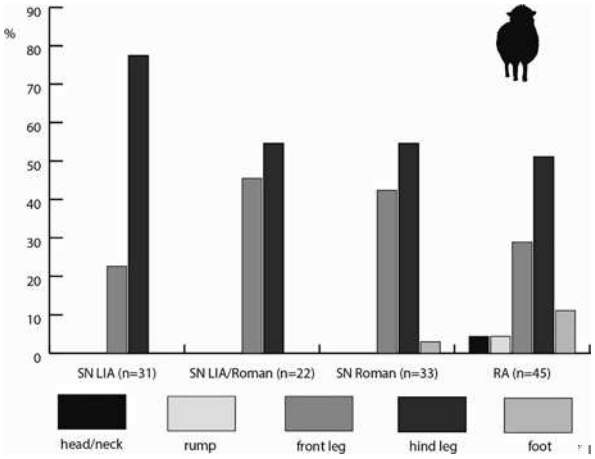
18 Groot / Deschler-Erb 2015, 453; 455 fig. 10.

19 River area: seven younger than 2/2.5 years, four older than 2/2.5 years. South-eastern Netherlands: eleven younger than 2/2.5 years, twelve older than 2/2.5 years

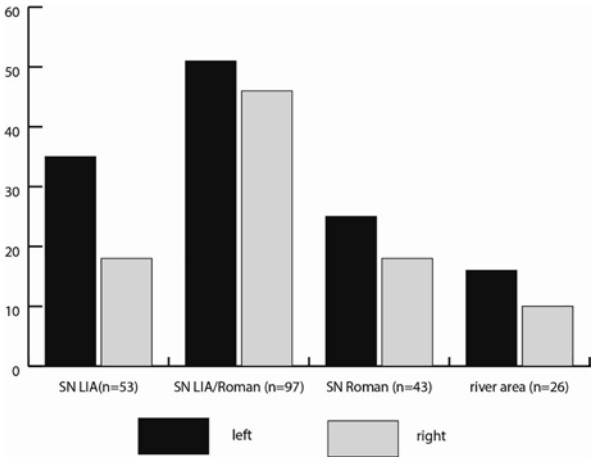
20 Groot 2017, 130.



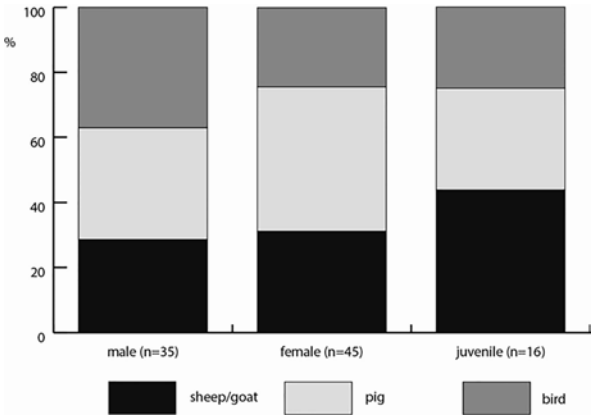
3 Body parts of pigs present in cremation graves in the two regions. SN = south-eastern Netherlands; RA = river area.



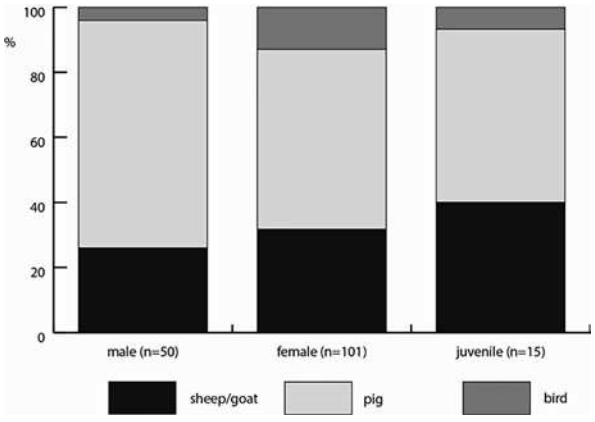
4 Body parts of sheep and goats present in cremation graves in the two regions. SN = south-eastern Netherlands. RA = river area.



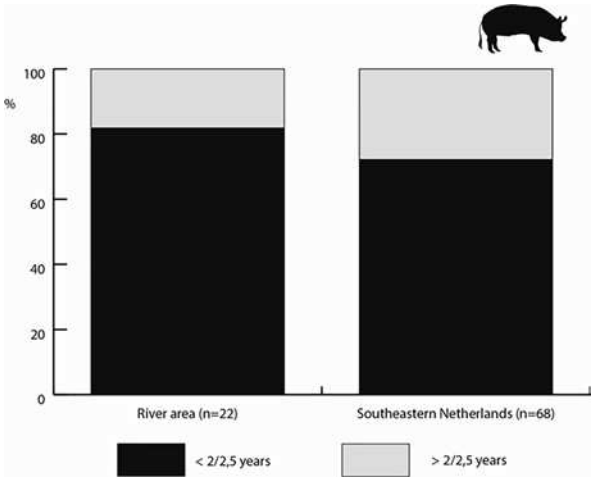
5 The presence of left and right body parts of pig, sheep, and goat in cremation graves in the two regions. SN = south-eastern Netherlands. RA = river area.



6 The proportions of animal species present in graves, separated by sex and age of the deceased, for the cemeteries in the river area.



7 The proportions of animal species present in graves, separated by sex and age of the deceased, for the cemeteries in the south-eastern Netherlands (all periods combined).



8 Slaughter ages for pigs in the cemeteries for the two regions (all periods combined for the south-eastern Netherlands).

	pig	sheep/goat	chicken	cattle	horse	goose	duck	dog	fish	n/total
river area n graves	22	32	4	29	8	1	1	3	2	73
river area % n graves	30	44	5	40	11	1	1	4	3	
river area n fragments	123	71	24	47	7	7	5	3	2	289
river area % n fragments	43	25	8	16	2	2	2	1	1	

Tab. 5 Number of graves per species with unburned animal remains and number of unburned fragments per species from graves. Total >100 % since more than one species can be found in one grave. Data from Tiel-Passewaaij, Zaltbommel-De Wildeman, Zoelen-Scharenburg, Huissen-Loovelden, Tiel-Medel-Afronding and Valburg-Molenzicht.

	1 species	2 species	3 species	4 species	5 species	total
river area unburned	40	15	4		1	60
river area unburned %	67	25	7		2	
river area burned + unburned	86	37	16	4	1	144
river area burned + unburned %	60	26	11	3	1	

Tab. 6 Number of animal species present among the unburned and combined burned/unburned animal remains in cremation graves.

Unburned animal bones have also been found in the ditches surrounding graves, but only in four cemeteries. The data set is dominated by Tiel-Passewaaij (34 of the 48 ditches). Most of the unburned bones in ditches are from cattle and horse *(tab. 7)*[21].

	pig	sheep/goat	chicken	cattle	horse	dog	deer	n/total
river area n ditches	3	2	1	26	24	2	1	48
river area % n ditches	6	4	2	54	50	4	2	
river area n fragments	3	2	1	33	26	2	1	68
river area % n fragments	4	3	1	49	38	3	1	

Tab. 7 Number of ditches per species with unburned animal remains and number of unburned fragments per species from ditches. Data from Tiel-Passewaaij, Zaltbommel-De Wildeman, Huissen-Loovelden and Tiel-Medel-Afronding.

Other features

In some cemeteries, animal remains are also found outside cremation graves and their surrounding ditches. Since these remains are unburned, they are only found in the river area, where preservation conditions for unburned bone are good. Furthermore, even in the river area, they are not found in every cemetery. Therefore, it is difficult to analyse these finds at a regional level and they are only mentioned here for completeness.

Animal burials

Animal burials are found in three of the cemeteries in the river area. If animals were ever buried in cemeteries in the south-eastern Netherlands, their bones have not been preserved, since only calcined bone tends to preserve well in this region.

Three of the burials are of horses. Adult male horses were found in Tiel-Passewaaij and Tiel-Medel (6–7.5 years old), both with withers heights above the averages for this region in the Early and Middle Roman period, which are 133 and 140 cm (149 and 147 cm, respectively)[22]. No

21 The only burned bones from ditches have been found in Tiel-Passewaaij: 2 fragments of pig and 4 fragments of chicken. The chicken fragments were found together, which suggests deliberate deposition rather than a stray find. Groot 2008, 173.

22 Groot 2016b, 122.

cause of death could be established and no pathological changes were observed. The horse found in Zaltbommel-De Wildeman was a mare of average withers height (141 cm). The mare reached an age of twelve years and displayed several different types of pathological changes, which would have affected her usefulness as a riding horse[23]. More horse burials in cemeteries are known from outside the research areas, although with a different context: urban rather than rural. In Valkenburg (province of South Holland), a stallion of 6–7 years was buried in the cemetery used by the inhabitants of the nearby *vicus*[24]. Several horses are known from Roman cemeteries in Cologne; one had its throat cut with an iron knife, which was buried with the animal[25].

Burials of cattle are present in the cemeteries of Tiel-Passewaaij and Tiel-Medel. In both cases, the skeletons were heavily fragmented and not much can be said about them, apart from the fact that the one in Tiel-Passewaaij was a calf of less than six months old[26].

'Graves' without human remains

Some pits look like cremation graves during excavation, but during the analysis are found not to contain human remains, only animal remains. In Tiel-Passewaaij, five such pits were found, all from the later phase of the cemetery (AD 200–270) and all in the periphery of the cemetery[27]. The pits are characterised by large amounts of (often burned) ceramics. Three of the five pits were surrounded by a ditch, like a grave. Other finds are glass, hobnails and a coin. The amount of animal remains was higher than in the true graves. One pit contained only pig remains. The other four pits contained bones from pig and chicken, and two also had other species present (goose and fish). There is a clear preference for the left hind leg of pig. The pits resemble cremation graves apart from two things: first, they seem to contain more finds and second, burned human remains are absent. Different interpretations have been suggested, such as a pit containing pyre remains, remains from a ceremonial meal, an offering to the ancestors as a kind of commemorative event and a cenotaph[28].

In Huissen-Loovelden, a so-called pottery deposit contained five ceramic vessels together with a burned tooth of a sheep or goat, but no human remains[29]. However, the pit is located next to a true grave within a surrounding ditch, so it could be associated with that grave. Another pit was interpreted by the excavators as a pottery deposit or disturbed grave[30]. The pit contains two ceramic vessels and the unburned left and right front and hind limbs of a pig; it is surrounded by a ditch. A pit in the cemetery of Zaltbommel-De Wildeman (CR21) contained no human remains and more than half of the burned animal bones were from pig[31]. The pit contains very little pottery and is therefore not comparable to the pits in Tiel-Passewaaij or Huissen.

Original ground surface

Tiel-Passewaaij is the only cemetery for which a relatively large number of animal bones were found that were not directly related to any of the features[32]. They are assumed to have been deposited on the original ground surface and quickly incorporated into the soil, perhaps as a result of flooding. Of the 202 fragments that were identified, 70 % are from horse and 21 % from cattle. The small amount of other fragments are from dog, sheep or goat, pig and goose. The horse bones show an overrepresentation of skull and hind limb fragments when compared to the adjacent settlement, while for cattle, the body part distribution is similar to the settlement refuse.

Discussion

For the Roman period, the average proportions of graves containing animal remains are very similar for the two regions: 23 and 24 %. The Late Iron Age cemeteries in the south-eastern Netherlands show a much higher proportion of 59 %, while the Late Iron Age/Roman cemeteries have a proportion of 38 %.

23 Esser et al. 2010, 228–229.
24 Verhagen 1987, 94–97.
25 Riedel 2000, 195.
26 Groot 2008, 178; van Haasteren / Groot 2019.
27 Groot 2008, 179.
28 Aarts / Heeren 2011, 49–50; Groot 2008, 179.
29 van der Feijst et al. 2017, 205–206.
30 van der Feijst et al. 2017, 229.
31 Esser et al. 2010, 224.
32 Groot 2008, 174–177.

This suggests a decrease in the practice of placing meat portions on the pyre. Van den Helm and Van Dijk conclude that for the Iron Age, an average of 19 % of graves contain animal remains[33]. However, since this figure is for the entire Iron Age, it may hide changes within the period. For the Late Bronze Age/Early Iron Age in the southern Netherlands and northern Belgium, 1 to 16 % of cremation graves contain animal bones, with an average of 8.5 %[34]. This suggests an increase in the practice of burning animal parts on the pyre from the Late Bronze Age to the Late Iron Age, followed by a decline in the Roman period. Both changes are highly significant[35].

Pig and sheep are the most common animals among the burned animal bones from cremation graves; chicken is common for the Roman period. Cattle is found occasionally, while goose and duck are only found in the river area and horse only once, in the south-eastern Netherlands. It is unclear whether the absence of ducks and geese in the south-eastern Netherlands represents a cultural difference, or whether it is related to the differences in environment, with ducks and geese more common in the water-rich river area. Hiddink has attributed the exact proportions of species that were burned on the pyre to local variations in funerary ritual[36]. While exact proportions vary, a common factor in cremation cemeteries is that pig and chicken are better represented among the cremated remains when compared to their proportions in animal bone assemblages from rural settlements. The data from cremation graves in the river area can be compared to those from settlements in the same region[37]. Due to the lack of animal bone data from settlements in the southern Netherlands, a comparison is not possible for that region. The comparison in the river area shows very clearly that pig and chicken were selected for funerary ritual. These two species account for 84 % of all (burned) fragments from graves and only for 10 % of the fragments from settlements. Chicken was not present in the Netherlands until the Roman period, but Iron Age graves do show a preference for pig, followed by sheep or goat[38]. In Late Bronze Age/Early Iron Age cemeteries, a preference for sheep or goat is rather found, followed by cattle, pig and dog in smaller numbers[39]. We can therefore conclude that the preference for pig in funerary rituals arose during the later Iron Age, while the preference for chicken was a Roman phenomenon. In Roman Wallonia, pig is the most common species in three cemeteries, while the second species seems to differ in different cemeteries (chicken or sheep or goat)[40].

For the river area, chicken is the third species in terms of number of graves per species, but the second in terms of number of fragments. Considering the size of chickens, it should not be surprising that they are placed on the pyre complete or nearly complete and thus more fragments are present. However, this does not explain the difference between pig and sheep or goat, which are similar in size. For both regions and all periods, the mean number of fragments per grave for pig is higher than that for sheep or goat *(tab. 8)*. This cannot be explained by the difference in the number of bones in the legs of the two species, since the difference is mainly in the foot, and feet are not frequent in graves. Perhaps the meat portions for sheep or goat were smaller and caution should be exercised in reconstructing whole front or hind limbs based on the presence of one or two fragments.

	n graves	n fragments	mean n fragments per grave
river area			
pig	66	225	3.4
sheep/goat	42	68	1.6
chicken	33	164	5
Roman SN			
pig	48	113	2.4
sheep/goat	30	54	1.8
chicken	9	12	1.3
LIA/Roman SN			
pig	42	89	2.1
sheep/goat	18	25	1.4
LIA SN			
pig	62	154	2.5
sheep/goat	28	45	1.6

Tab. 8 Summary of the number of graves and number of fragments per species and the mean number of fragments per grave.

For pig, there was a very strong selection of hind limbs, which is most pronounced in the Late Iron Age and Late Iron Age/Roman south-eastern Netherlands. In the Roman period, the forelimb is also common in both regions. For sheep or goat, a selection of hind limbs is present in the Late Iron Age south-eastern Netherlands and

33 van den Helm / van Dijk 2017.

34 de Mulder 2011; Groot 2018b; Hissel et al. 2007, 101; Smits 2017; Temmerman 2008, tab. 8; Tol et al. 2000, 25; Zeiler 2013.

35 Increase from Late Bronze Age up to the Late Iron Age: Cochrane-Armitage test for proportional trends in R; $p < 2 \times 10^{16}$. Decrease between the Late Iron Age and the Roman period: proportion test in R; $p < 2 \times 10^{16}$.

36 Hiddink 2003a.

37 Groot 2016b.

38 van den Helm / van Dijk 2017, 111.

39 de Mulder 2011; Groot 2018b; Temmerman 2008, 330; Zeiler 2013.

40 Pigière 2017, 179.

it is the most common body part for all periods, but front limbs are only slightly less common in the Late Iron Age/Roman and Roman south-eastern Netherlands. For both species, the strong preference for hind limbs in the Late Iron Age disappears in the Roman period, although this development is only statistically significant for pig[41]. Following on from the previous paragraph, we should consider that perhaps the body parts for sheep or goat were not complete limbs. Parts of the rump were also placed on the pyre, as the ribs and vertebrae – which are only identified to size – show. In the Roman period, the two regions show a statistically significant difference in body part selection for pig, especially in the head and hind leg[42].

Not only was there a selection for body part, there was also a selection for the left-hand side. This preference only applies to the hind limb and is found for both pig and sheep or goat. It is most pronounced in the Late Iron Age, and more so for pig than for sheep or goat, but the left hind limb outnumbers the right for all periods and both regions. A similar preference is found in an Iron Age cemetery in Yorkshire, where left sheep humeri outnumber right humeri by 24 to 2[43]. A selection on body side was also noticed by MacKinnon for Greek and Roman animal sacrifice, although in this case it is usually the right rather than the left[44]. The only archaeological example of a dominance of the left side is Nemea, Greece, where sacrifices were made to a chthonic hero[45]. There is no strong relationship between animal species and the sex of the deceased. Regarding age, mostly young pigs were selected for funerary ritual, while sheep could be young or older.

Unburned animal bones are only present in the river area, due to preservation conditions. We can only assume that they would have been present in the cemeteries in the south-eastern Netherlands as well. In graves, sheep, cattle and pig are the most common species. In the case of cattle, usually only a single bone is found, and this could be a symbolic gift, representing the living animal, rather than a food offering. The unburned remains from grave ditches show a completely different picture from burned animal bones in graves: here, cattle and horse dominate. The pottery in ditches is also different from that found in graves, with storage and cooking ware rather than tableware. The finds in grave ditches are believed to represent commemorative rituals[46]. The five animal burials found in cemeteries in the river area are horses and cattle. It is not surprising that horse and cattle feature in funerary ritual in the river area. Cattle traditionally played an important role in life in this region, dominating livestock, providing the most commonly consumed meat, providing essential power and manure for arable farming and sharing a roof with people. Rural settlements in the river area specialised in horse breeding to some degree in the 2nd and 3rd centuries AD.

There are three main ways in which animals play a role in funerary ritual[47]. First, living animals can be included in some way, such as in parades or pulling a wagon carrying the deceased. Second, animals can be buried with the deceased as companions. There is no evidence for either in the Late Iron Age and Roman Netherlands. The few animal burials in cemeteries are not directly related to individual graves. The third way in which animals take part in funerary ritual is as food. Food can be given to the dead to consume in the afterlife or it can be part of a feast for the survivors. Fasting – the absence of food – or sharing food with the community and with the deceased can also be an important part of funerary ritual. In the Late Iron Age and Roman Netherlands, the animal remains found in graves represent food, most likely food offerings to the deceased. This is especially clear when unburned animal bones are found on a plate in a grave[48].

Conclusions

The analysis of burned animal bones from cremation graves has led to an understanding of how animals were used in funerary ritual. It is important to keep in mind that we are dealing with an incomplete record. First, only burned bones have been preserved in the south-eastern Netherlands and second, only part of the cremated remains was buried in the grave. Nevertheless, some conclusions can be made for animals in funerary ritual

41 Monte Carlo-based Chi-square test in PAST 3.23; $p < 0.005$.
42 Monte Carlo-based Chi-square test in PAST 3.23; $p < 0.005$. The importance of the two categories (head and hind leg) was derived from their adjusted residuals.
43 Legge 1991, 140–142.
44 MacKinnon 2010.
45 MacKinnon 2010, 255.
46 Aarts/Heeren 2017, 139.
47 See Groot 2008, 161–165 for a more extensive discussion of (animals in) funerary ritual.
48 E. g. in Huissen-Loovelden: van der Feijst et al. 2017, 68.

in the Late Iron Age and Roman Netherlands. Food offerings of pig, sheep and chicken were buried on the pyre with the dead and more food offerings were placed in the grave pit next to the cremated remains. Animal remains found in the ditches surrounding graves may be a result of commemorative rituals. The animal remains from graves show a selection for species, body part and left side of the body. There appears to be little concern for selection of certain species for men, women or children. The preference for pig for inclusion on the pyre seems to originate in the Iron Age, while the inclusion of chicken is first found in the Roman period.

site	reference
Tiel-Passewaaij	Groot 2008; Groot 2011a
Zaltbommel-De Wildeman	Esser et al. 2010
Zoelen-Scharenburg	van Dijk 2011
Huissen-Loovelden	Groot 2017
Nijmegen-Hatert	Thijssen 1990
Cuijk-Heeswijkse Kampen	Lauwerier 1990
Tiel-Medel Afronding	van Haasteren / Groot 2019
Valburg-Molenzicht	Groot 2011b
Cuijk-Grotestraat	Lauwerier 1990
Oss-Ussen Zuidoost	Lauwerier / IJzereef 1998
Maasbree-Siberië	Groot 2011c
Weert-Kampershoek Noord 2/7	Groot / Hiddink 2014
Weert-Kampershoek	Hiddink 2003c
Nederweert Hoebenakker 2009	Groot / Hiddink 2012
Nederweert-Hoebenakker 2013–2014	Groot 2016a
Nederweert-Rosveld	Groot / Hiddink 2006
Someren-Waterdael	Groot / Hiddink 2011
Weert-Molenakkerdreef	Cavallo / Hiddink 2003
Nederweert-Hoebenakker 2017	Groot 2018a
Helden-Panningen-Stokx	Groot / Hiddink 2008

Tab. 9 References for the zooarchaeological studies for the individual cemeteries.

Acknowledgements

I would like to thank the organisers of the 2nd Roman Period Working Group conference, two reviewers for their helpful comments and Dr. Georg Roth for his help with statistical testing.

References

Aarts / Heeren 2011 J. Aarts / S. Heeren, Opgravingen bij Tiel-Passewaaij 2. Het grafveld aan de Passewaaijse Hogeweg. Zuidnederlandse Archeologische Rapporten 41 (Amsterdam 2011).

Aarts / Heeren 2017 J. Aarts / S. Heeren, Buried Batavians. Mortuary rituals of a rural frontier community. In: J. Pearce / J. Weekes (eds), Death as a Process. Studies in Funerary Archaeology 12 (Oxford 2017) 123–154.

Çakirlar et al. 2019 C. Çakirlar / Y. van den Hurk / I. van der Jagt / Y. van Amerongen / J. Bakker / R. Breider / J. van Dijk / K. Esser / M. Groot / T. de Jong / L. Kootker / F. Steenhuisen / J. Zeiler / T. van Kolfschoten / W. Prummel / R. Lauwerier, Animals and People in the Netherlands' Past: >50 Years of

Archaeozoology in the Netherlands. Open Quaternary 5,1, 2019, 13.

Cavallo / Hiddink 2003 C. Cavallo / H. A. Hiddink, Het dierlijk botmateriaal. In: H. A. Hiddink (ed.), Het grafritueel in de Late IJzertijd en Romeinse tijd in het Maas-Demer-Scheldegebied, in het bijzonder van twee grafvelden bij Weert. Zuidnederlandse Archeologische Rapporten 11 (Amsterdam 2003) 167–180.

de Mulder 2011 G. de Mulder, Funeraire rituelen in het Scheldebekken tijdens de late bronstijd en de vroege ijzertijd. De grafvelden in hun maatschappelijke en sociale context (Gent 2011).

Esser et al. 2010 E. Esser / J. van Dijk / M. Groot, Archeozoölogisch onderzoek. In: H. A. P. Veldman / E. Blom (eds), Onder de zoden van Zaltbommel. ADC Monografie 8 (Amersfoort 2010) 201–231.

Groot 2008 M. Groot, Animals in ritual and economy in a Roman frontier community. Excavations in Tiel-Passewaaij. Amsterdam Archaeological Studies 12 (Amsterdam 2008).

Groot 2011a M. Groot, Dierlijk bot. In: J. Aarts / S. Heeren (eds), Het grafveld aan de Passewaaijse Hogeweg. Opgravingen bij Tiel-Passewaaij 2. Zuidnederlandse Archeologische Rapporten 41 (Amsterdam 2011) 81–100.

Groot 2011b M. Groot, Verbrand en onverbrand dierlijk bot. In: A. Veldman / L. van der Feijst (eds), Graven in het verleden van Valburg, een midden-Romeins grafveld en bewoningssporen uit de Laat-Romeinse tijd te Molenzicht. ADC rapport 2519 (Amersfoort 2011).

Groot 2011c M. Groot, Verbrand dierlijk bot. In: J. van Renswoude / M. Schurmans (eds), Opgravingen in Maasbree-Siberië. Een grafveld uit de Romeinse tijd en bewoning uit de late prehistorie en Vroege Middeleeuwen. Zuidnederlandse Archeologische Rapporten 48 (Amsterdam 2011) 153–155.

Groot 2016a M. Groot, Verbrand dierlijk bot uit de graven. In: H. A. Hiddink (ed.), Archeologisch onderzoek in het plangebied Hoebenakker te Nederweert 2. Een grafveld uit de Late IJzertijd en Romeinse Tijd, bewoning uit de Vroege IJzertijd, Vroege en Volle Middeleeuwen. Zuidnederlandse Archeologische Rapporten 59 (Amsterdam 2016) 153–159.

Groot 2016b M. Groot, Livestock for Sale. Animal Husbandry in a Roman Frontier Zone. Amsterdam Archaeological Studies 24 (Amsterdam 2016).

Groot 2017 M. Groot, Zoologie. In: L. M. B. van der Feijst / L. P. Verniers / E. Blom (eds), De grafkamer van Huissen. Opgravingen in het kader van de aanleg van nieuwbouwlocatie Loovelden. ADC-Monografie 23 (Amersfoort 2017) 124–133.

Groot 2018a M. Groot, Verbrand dierlijk bot. In: H. A. Hiddink (ed.), Archeologisch onderzoek in het plangebied Hoebenakker te Nederweert 3. De laatste graven van het grafveld uit de Late IJzertijd en Romeinse Tijd, een erf uit de Volle Middeleeuwen. Zuidnederlandse Archeologische Rapporten (Amsterdam 2018) 153–159.

Groot 2018b M. Groot, Verbrand dierlijk bot. In: H. A. Hiddink (ed.), Archeologisch onderzoek aan de Kasteelstraat te Hofstade (stad Aalst, Oost-Vlaanderen). Een urnenveld uit de Late Bronstijd/ Vroege IJzertijd, graven uit de Romeinse tijd en bewoningssporen uit de Midden Ijzertijd–Romeinse tijd. Zuidnederlandse Archeologische Rapporten 75 (Amsterdam 2018) 111–116.

Groot / Deschler-Erb 2015 M. Groot / S. Deschler-Erb, Market strategies in the Roman provinces. Different animal husbandry systems explored by a comparative regional approach. Journal of Archaeological Science. Reports 4, 2015, 447–460.

Groot / Hiddink 2006 M. Groot / H. A. Hiddink, Dierlijk bot. In: H. A. Hiddink (ed.), Opgravingen op het Rosveld bij Nederweert 2. Graven en grafvelden uit de IJzertijd en Romeinse tijd. Zuidnederlandse Archeologische Rapporten 28 (Amsterdam 2006) 52–56.

Groot / Hiddink 2008 M. Groot / H. A. Hiddink, Dierlijk bot. In: H. A. Hiddink (ed.), Bewoningssporen uit de Vroege IJzertijd en een grafveld uit de Late IJzertijd te Panningen-Stokx, gemeente Helden. Zuidnederlandse Archeologische Rapporten 32 (Amsterdam 2008) 43–50.

Groot / Hiddink 2011 M. Groot / H. A. Hiddink, Dierlijk bot. In: H. A. Hiddink / E. de Boer (eds), Opgravingen in Waterdael III te Someren. Deel 1. Grafvelden en begravingen uit de IJzertijd en Romeinse tijd. Zuidnederlandse Archeologische Rapporten 42 (Amsterdam 2011) 235–240.

Groot / Hiddink 2012 M. Groot / H. A. Hiddink, Dierlijk bot. In: H. A. Hiddink / M. Wesdorp (eds), Archeologisch onderzoek in het plangebied Hoebenakker te Nederweert. Een grafveld uit de Romeinse tijd. Zuidnederlandse Archeologische Rapporten 49 (Amsterdam 2012) 51–54.

Groot / Hiddink 2014 M. Groot / H. A. Hiddink, Dierlijk botmateriaal. In: H. A. Hiddink / E. de Boer (eds), Opgravingen in Weert-Kampershoek Noord fase 2. Bewoning uit de Vroege IJzertijd, Romeinse tijd en Volle Middeleeuwen, alsmede grafvelden uit de Late IJzertijd en Romeinse tijd. Zuidnederlandse Archeologische Rapporten 55 (Amsterdam 2014) 81–86.

Hiddink 2003a H. A. Hiddink, Het grafritueel in de Late IJzertijd en Romeinse tijd in het Maas-Demer-Scheldegebied, in het bijzonder van twee grafvelden bij Weert. Zuidnederlandse Archeologische Rapporten 11 (Amsterdam 2003).

Hiddink 2003b H. A. Hiddink, Aspecten van het grafritueel in de Late IJzertijd en de Romeinse tijd in het Maas-Demer-Scheldegebied. In: H. A. Hiddink (ed.), Het grafritueel in de Late IJzertijd en Romeinse tijd in het Maas-Demer-Scheldegebied, in het bijzonder van twee grafvelden bij Weert. Zuidnederlandse Archeologische Rapporten 11 (Amsterdam 2003) 1–75.

Hiddink 2003c H. A. Hiddink, Een grafveld uit het einde van de 2de en het begin van de 3de eeuw na Chr. te Weert-Kampershoek (provincie Limburg, Nederland). In: H. A. Hiddink (ed.), Het grafritueel in de Late IJzertijd en Romeinse tijd in het Maas-Demer-Scheldegebied, in het bijzonder van twee grafvelden bij Weert. Zuidnederlandse Archeologische Rapporten 11 (Amsterdam 2003) 405–512.

Hissel et al. 2007 M. Hissel / M. Parlevliet / J. Verspay, Begraven, bewonen, beakkeren. Archeologisch onderzoek bij de uitbreiding van de woonwijk Genoenhuis, gemeente Geldrop-Mierlo (Noord-Brabant) (Amsterdam 2007).

Lauwerier 1990 R. C. G. M. Lauwerier, Dierlijk bot uit twee grafvelden uit de Romeinse tijd in Cuijk. Intern rapport Natuurwetenschappelijke Afdeling ROB (Amersfoort 1990).

Lauwerier / Ijzereef 1998 R. C. G. M. Lauwerier / G. Ijzereef, Livestock and meat from the Iron Age and Roman period settlements at Oss-Ussen (800 BC–AD 250). In: H. Fokkens (ed.), The Ussen project. The first decade of excavations at Oss. Analecta Praehistorica Leidensia 30 (Leiden 1998) 349–367.

Legge 1991 A. J. Legge, The animal bones. In: I. M. Stead (ed.), Iron Age Cemeteries in East Yorkshire. Excavations at Burton Fleming, Rudston, Garton-on-the-Wolds, and Kirkburn. English Heritage Archaeological Report 22 (London 1991) 140–147.

MacKinnon 2010 M. MacKinnon, 'Left' is 'right'. The symbolism behind side choice among ancient animal sacrifices. In: D. Campana / P. Crabtree / S. D. deFrance / J. Lev-Tov / A. M. Choyke (eds), Anthropological Approaches to Zooarchaeology. Colonialism, Complexity and Animal Transformations (Oxford 2010) 250–258.

Parker Pearson 1999 M. Parker Pearson, The Archaeology of Death and Burial (Stroud 1999).

Pigière 2017 F. Pigière, Bilan des recherches archéozoologiques sur les nécropoles à crémation du Haut-Empire Romain en Wallonie. In: F. Hanut (ed.), Du bûcher à la tombe. Diversité et évolution des pratiques funéraires dans les nécropoles à crémation de la période Gallo-Romaine en Gaule Septentrionale. (Namur 2017) 177–182.

Riedel 2000 M. Riedel, Early Roman graves in Cologne. In: J. Pearce / M. Millett / M. Struck (eds), Burial, Society and Context in the Roman World. (Oxford 2000) 192–196.

Smits 2017 E. Smits, Boechout. Het fysisch. Antropologisch onderzoek van de crematieresten (Amsterdam 2017).

Termmerman 2008 B. Termmerman, Het urnenveld van Neerharen-Rekem. Reconstructie en betekenis van grafrituelen in de late bronstijd-vroege ijzertijd. [PhD dissertation Vrije Universiteit] (Brussel 2008).

Thijssen 1990 J. R. A M. Thijssen, Dierebotten. In: J. K. Haalebos (ed.), Het grafveld van Nijmegen-Hatert. Een begraafplaats uit de eerste drie eeuwen na Chr. op het platteland bij Noviomagus Batavorum. Beschrijving van de verzamelingen in het Provinciaal Museum G. M. Kam te Nijmegen 11 (Nijmegen 1990) 191.

Tol et al. 2000 A. Tol / N. G. A. M. Roymans / H. A. Hiddink / F. P. Kortlang (eds), Twee urnenvelden in Limburg. Verslag van opgravingen te Roermond en Sittard, 1997–1998. Zuidnederlandse Archeologische Rapporten 6 (Amsterdam 2000).

van Dijk 2011 J. van Dijk, Archeozoölogie. In: H. A P. Veldman (ed.), Graven in Zoelen. De opgraving van een Romeinse nederzetting en grafveld. ADC-rapport 2391 (Amersfoort 2011) 177–190.

van der Feijst et al. 2017 L. M. B. van der Feijst / L. P. Verniers / E. Blom (eds), De grafkamer van Huissen. Opgravingen in het kader van de aanleg van nieuwbouwlocatie Loovelden. ADC-Monografie 23 (Amersfoort 2017).

van Haasteren / Groot 2019 M. van Haasteren / M. Groot, Dierlijk bot. In: D. Habermehl / J. van Kampen / J. van Renswoude (eds), Opgravingen te Tiel-Medel-Hazenkamp en-De Reth. Twee grafvelden uit de Romeinse tijd en nederzettingssporen uit de Late IJzertijd, vroeg-Romeinse tijd en laat-Romeinse tijd. Zuidnederlandse Archeologische Rapporten 80 (Amsterdam 2019) 529–574.

van den Helm / van Dijk 2017 P. van den Helm / J. van Dijk, Iron Age burial rituals. Animal matter(s). Archaeozoological inventory on the use of animals within a burial context. In: S. Arnoldussen / A. Müller / E. Norde (eds), Metaaltijden 4. Bijdragen in de studie van de metaaltijden (Leiden 2017) 107–117.

Verhagen 1987 M. Verhagen, Een Romeins paardegraf uit het grafveld. In: E. J. Bult / D. P. Hallewas (eds), Graven bij Valkenburg 2. Het archeologisch onderzoek in 1986 (Delft 1987) 93–98.

Zeiler 2013 J. T. Zeiler, Dieren op de brandstapel. Archeozoölogisch onderzoek van botmateriaal uit crematiegraven. In: T. Dyselinck (ed.), Maastricht Ambyerveld-Hagerhof. Een laat bronstijd urnenveld. BAAC rapport A-08.0487 (Den Bosch 2013) 131–132.

References of figures

Fig. 1: Groot 2008, fig. 4,14. – All other tables and figures: Author.

Maaike Groot
Institut für Prähistorische Archäologie
Freie Universität
Fabeckstraße 23–25
D-14195 Berlin

Abstract

The most common method for the disposal of the dead in the 1st century AD in the Roman-occupied part of the Netherlands was cremation. Parts of animals, pottery and sometimes glass were placed on the pyre and burned with the deceased. After the cremation, both human and animal remains were collected and buried in a grave. Most graves were surrounded by a ditch and animal remains and other grave goods can also be found in these ditches.

This paper provides a review of animal remains from cremation graves in the Late Iron Age and Roman Netherlands in order to highlight the role of animals in funerary ritual. The study focuses on two regions: the river area in the central Netherlands and the south-eastern part of the Netherlands. Twenty cemeteries are included in this study, with a total of 342 graves with identified burned animal remains. The paper addresses questions regarding the selection of animal species and body parts for funerary ritual, the difference between burned and unburned animal remains found in graves, the presence of animal remains in other features in the cemeteries, chronological developments and regional differences.

The analysis of burned animal bones from cremation graves has led to an understanding of how animals were used in funerary ritual in the Late Iron Age and Roman Netherlands. Food offerings of pig, sheep and chicken were buried on the pyre with the dead and more food offerings were placed in the grave pit. Animal remains found in the ditches surrounding graves may be a result of commemorative rituals. The animal remains from graves show a selection for species, body part and the left side of the body. There appears to be little concern for the selection of certain species for men, women or children.

Zusammenfassung

Tiere im Bestattungsritual in den römischen Niederlanden

Im römisch besetzten Teil der Niederlande war im 1. Jahrhundert n. Chr. die vorherrschende Bestattungsart die Feuerbestattung. Teile von Tieren, Keramik- und manchmal Glasgefäße wurden auf den Scheiterhaufen gelegt und mit dem Verstorbenen verbrannt. Nach der Einäscherung wurden sowohl menschliche als auch tierische Überreste gesammelt und beigesetzt. Die meisten Gräber waren von einem Graben umgeben, worin ebenfalls Tierknochen und andere Funde nachgewiesen werden konnten. Diese Studie bietet einen Überblick über Tierknochen aus Brandgräbern der späten Eisenzeit in den römischen Niederlanden, um die Rolle der Tiere im Begräbnisritual hervorzuheben. Im Mittelpunkt stehen zwei Regionen: die Flussgebiete im Zentrum der Niederlande und die südöstlichen Niederlande. Insgesamt sind 342 Gräber mit identifizierten verbrannten Tierresten aus zwanzig Friedhöfen in diese Studie eingeflossen. Im Mittelpunkt stehen Fragen zur Auswahl der Tierarten und Körperteile für das Begräbnisritual, dem Unterschied zwischen verbrannten und nicht verbrannten Tierresten in Gräbern, dem Vorhandensein von Tierresten in anderen Befunden auf den Friedhöfen, nach zeitlichen Entwicklungen und regionalen Unterschieden.

Die Untersuchungen der verbrannten Tierknochen aus Brandgräbern der späten Eisenzeit in den römischen Niederlanden haben gezeigt, dass Teile von Schweinen, Schafen und Hühnern dem Toten auf den Scheiterhaufen mitgegeben und weitere nicht verbrannte Speiseopfer in die Grabgrube gelegt wurden. Tierreste, die in den

Gräben rund um die Gräber gefunden wurden, könnten als Spuren von Gedenkritualen interpretiert werden. Die Tierreste aus Gräbern zeigen eine Auswahl nach Tierart, Körperteil und linker Körperseite. Bei der Auswahl der Tierarten spielte das Geschlecht oder Alter der Verstorbenen offenbar keine Rolle.

Résumé

Les animaux dans le rituel funéraire des Pays-Bas romains

L'incinération représentait le traitement des morts le plus répandu dans la partie des Pays-Bas occupée par les Romains au 1er siècle ap. J.-C. Des parties animales, de la céramique et parfois du verre étaient placés sur le bûcher et brûlaient avec le défunt. Les restes du défunt et des animaux étaient recueillis après l'incinération pour être enterrés dans une tombe. La plupart des tombes étaient entourées d'un fossé qui pouvait parfois contenir des restes animaux et autres offrandes funéraires.

Cet article examine les restes animaux des tombes à incinération de l'âge du Fer tardif et dans les Pays-Bas romains pour mettre en évidence le rôle des animaux dans le rituel funéraire. L'étude vise deux régions : le bassin fluvial au centre des Pays-Bas et la partie sud-est des Pays-Bas. Cette étude intègre 20 nécropoles totalisant 342 tombes avec des restes animaux incinérés. L'article aborde les questions concernant la sélection des espèces animales et des parties du corps pour le rituel funéraire, la différence entre les restes animaux brûlés et non brûlés trouvés dans les tombes, la présence d'animaux dans d'autres structures des nécropoles, les évolutions chronologiques et les différences régionales.

L'analyse des ossements animaux brûlés provenant de tombes à incinération a permis de comprendre le rôle joué par les animaux dans le rituel funéraire de l'âge du Fer tardif et des Pays-Bas romains. Des offrandes de porcs, moutons et poules étaient ensevelies sur le bûché avec le défunt et d'autres offrandes de nourriture déposées dans la fosse funéraire. Les restes d'animaux trouvés dans les fossés entourant les tombes proviendraient de rituels commémoratifs. Les restes animaux des tombes révèlent une sélection de l'espèce, de la partie du corps et du côté gauche du corps.