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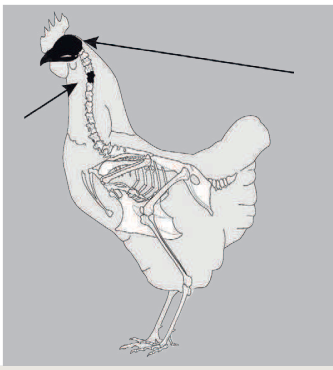

Sabine Deschler-Erb | Umberto Albarella
Silvia Valenzuela Lamas | Gabriele Rasbach

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.

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DEUTSCHES ARCHÄOLOGISCHES INSTITUT
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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	Kerstin P. Hofmann	Alexander Gramsch
Erste Direktorin	Zweite Direktorin	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 ritual and domestic context: A comparative study between the faunal assemblages from residential areas and two sanctuaries at the *vicus* of Kempraten (Rapperswil-Jona, CH)

by *Simone Häberle / Sabine Deschler-Erb / Heide Hüster Plogmann / Barbara Stopp / Sarah Lo Russo / Pirmin Koch / Regula Ackermann*

Keywords

Archaeozoology, macro- and microfaunal remains, roman sanctuaries, rituals, Magna Mater, mithraeum, *vicus*, economy

Schlüsselwörter

Archäozoologie, Makro- und Mikrofaunenreste, römische Heiligtümer, Rituale, Magna Mater, Mithräum, *vicus*, Ökonomie

Mots-clés

archéozoologie, restes macro- et microfaunistiques, sanctuaires romains, rites, Magna Mater, mithraeum, *vicus*, économie

Introduction

In addition to its function as part of a sacred context, animal sacrifice generally also had an economic function. Most animals sacrificed in Roman-period sanctuaries were domestic animals[1], which were primarily kept and used for domestic purposes, as working animals (draught animals, animals used for riding and transport), as sources of food (milk, meat, fat) and raw materials (wool, hide, horn, bone)[2]. However, wild animals from hunting or fishing were also offered up[3]. Sacrificial animals were therefore closely connected to the economic system they were a part of, or from which they were removed by the sacrificial process.

The economic and probably also the sacred value of these offerings could vary significantly. The offering of older animals, for instance, which was rare but not unheard of[4], or of individuals, usually male, which were not

1 E. g. King 2005; Lepetz / Van Andringa 2008.
2 Peters 1998; Groot / Deschler-Erb 2016.
3 E. g. Schmid 1963; Rehazek / Nussbaumer 2009.
4 E. g. Oelschlägel 2006, 61–62; 75.

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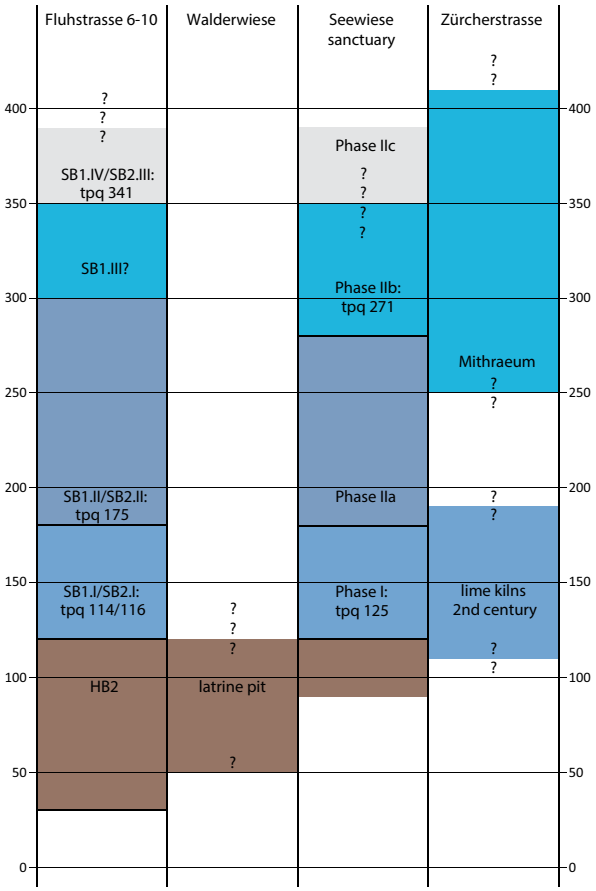
or no longer useful for breeding[5], would obviously not have meant as great a loss as the sacrifice of animals at the ideal age of slaughter or of very young individuals[6]. Ritual feasts, which occurred after the sacrifices and during which some of the meat was consumed, as well as the distribution or sale of the meat to outsiders[7], would have at least partially made up for the economic loss. The offering of pregnant sows in funerary contexts, on the other hand, which has been attested to by archaeozoological evidence, is an example of an economic cost that could not have been recouped[8]. Studies investigating to what extent the circumstances surrounding animal sacrifices in sanctuaries differed from those related to animal husbandry in the associated domestic settlements have been carried out in just a small number of cases and only in relation to Gallo-Roman sanctuaries, e. g. Oedenburg-Biesheim (F)[9] and *Aventicum*/Avenches (CH)[10]. This paper discusses possible reasons behind the selection of certain animal species for domestic and/or ritual purposes. Within the category of sacrificed animals we want to investigate whether the motivations behind the selection of the certain species were mainly 'cultic' or whether economic reasons also played a role. Furthermore, we want to find out how these two systems of selecting animals for these two purposes (cultic vs. economic) were distinct, or whether they were intertwined for the inhabitants of the *vicus* of Kempraten. These questions will be discussed by comparing the animal bones from domestic areas and the two sanctuaries of the Roman *vicus* of Kempraten. This helps us to elaborate commonalities as well as discrepancies between the animal spectra from domestic and sacred contexts. The analyses that have been carried out at Kempraten over the past 10 years have on various levels created ideal conditions for a comparative study, since they cover archaeological and archaeozoological results from domestic areas and from two different sanctuaries – the Gallo-Roman sanctuary Seewiese and the mithraeum – which partially overlap chronologically *(fig. 1)*.

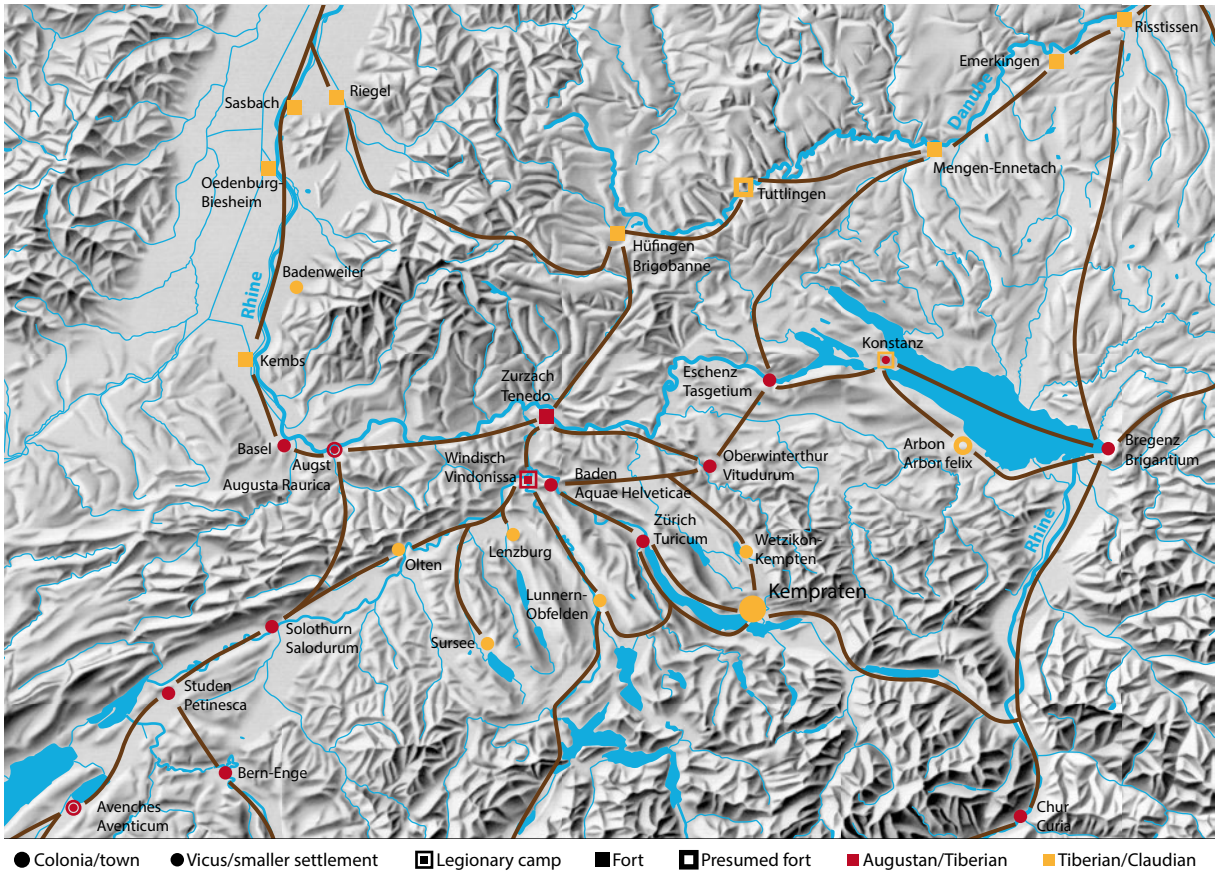


1 Kempraten: Synoptic representation of the dates obtained for the structures/phases at Fluhstrasse 6–10, Walderwiese, Seewiese and Zürcherstrasse. HB = timber construction phase; SB = stone construction phase. Graphic representation: KASG.

The *vicus* of Kempraten

The *vicus* of Kempraten was situated in a district of what is today the town of Rapperswil-Jona. The settlement was conveniently located, from the point of view of transportation, on the northern shore of Lake Zurich, at a junction where the waterway from *Curia*/Chur to *Vindonissa*/Windisch and Gaul intersected with various roads, most importantly the route from central Switzerland across the lake to *Vitudurum*/Oberwinterthur, *Tasgetium*/Eschenz and the Danubian limes *(fig. 2)*. After its establishment on a previously unoccupied site

5 E. g. Oelschlägel 2006, 65.
6 E. g. Deschler-Erb 2015, 56–57; 71–73; 115–116.
7 Van Andringa 2008.
8 Baerlocher et al. 2013, 42.
9 Ginella et al. 2011.
10 Lachiche / Deschler-Erb 2008.



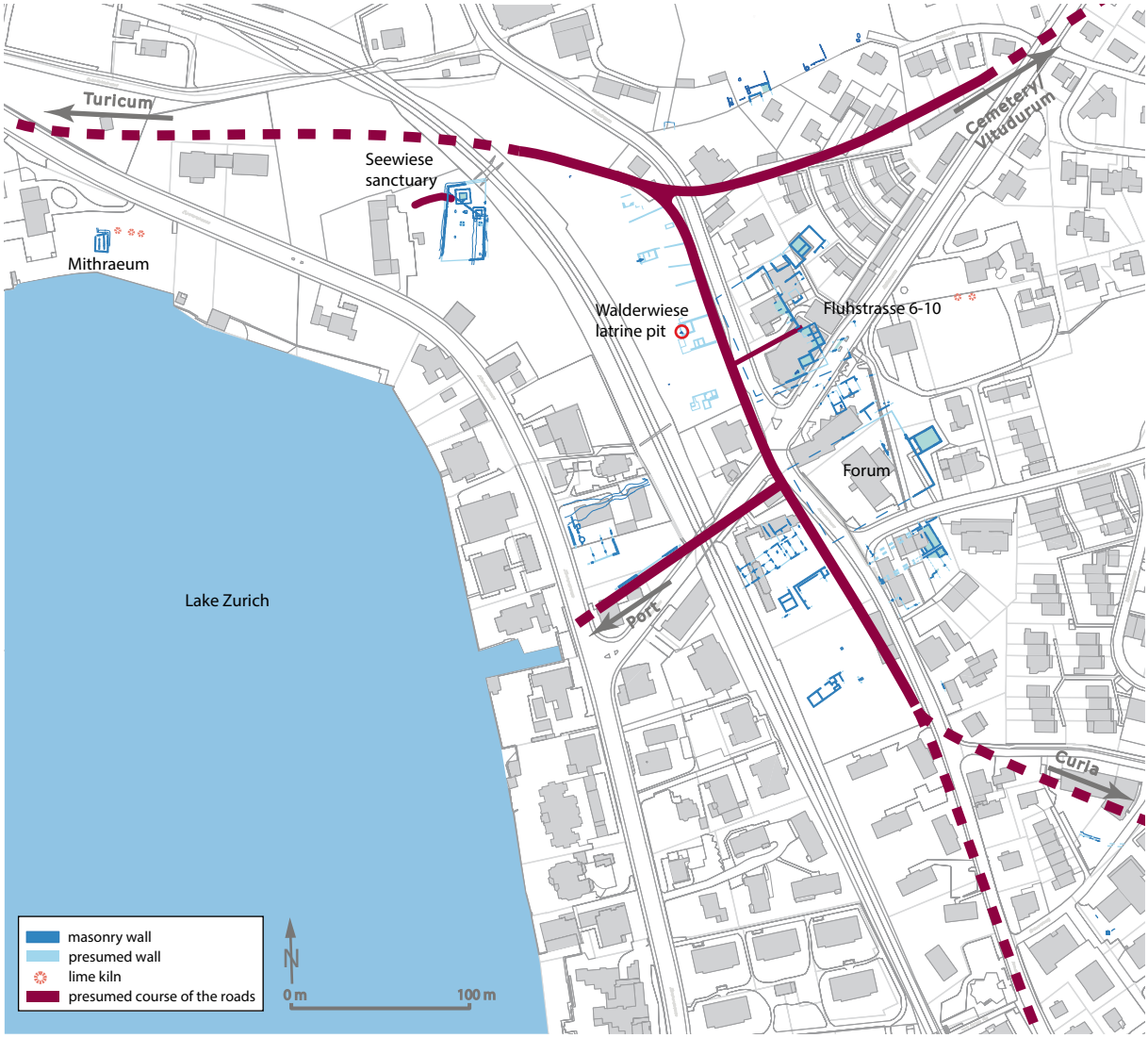
2 Settlement landscape on the Swiss Plateau, on the Upper Rhine and in southern Germany around the mid-1st century AD. Sc. 1 : 1 500 000. Map: KASG (after Ackermann 2013a, fig. 248; based on a swisstopo map).

around AD 35/40, the settlement soon flourished and at around AD 120 the wooden buildings were replaced by stone structures. Apart from some extensions and alterations, most remained intact until Late Antiquity[11]. At its maximum extent, the Roman settlement covered an area of approximately 11 ha *(fig. 3)*[12]. A public area (*forum*) with an *exedra* and at least one other monumental building was built when the stone buildings were erected, if not earlier[13]. Large residential buildings, one of which had an interior courtyard with a *porticus*, stood to the west and north of the *forum*. These buildings probably housed members of the local elite *(see 3.2)*. The streets in the northern part of the *vicus* and south of the *forum* were lined with strip houses. The backyards of both the strip houses and the large buildings in the centre of the *vicus* contained smaller, no less carefully constructed houses with one or two rooms, which probably also served as domestic residences. Outside of the *vicus*, two sanctuaries were established: A Gallo-Roman sanctuary was built on the road to *Turicum*/Zurich in the 2nd century AD *(see 3.3)*. In the late 3rd century AD, if not earlier, a mithraeum was then installed further out on the same road and set slightly back from it *(see 3.4)*.

11 For general information on the *vicus* see Ackermann 2013a, esp. 216–220 and Ackermann 2013b.

12 This does not include the area between Seewiese and the mithraeum which was probably not used for residential purposes.

13 See Matter 2003; Ackermann 2013a, 214–215.



3 Kempraten: Plan of all features from the stone construction phases (as of spring 2019). Sc. 1 : 4000. Plan: KASG.

The archaeozoological material, the studied areas and features

This paper will concentrate on presenting the archaeozoological analyses of features from the residential area, the Gallo-Roman sanctuary and the mithraeum. In all three contexts, the archaeozoological assemblage consists of hand retrieved animal remains and remains from soil samples.

General remarks on the archaeozoological methodology

The hand-retrieved animal bones mainly represent large species such as cattle, sheep/goat, pig but also some wild animal remains and bones of fowl. This category of bone finds is referred to as remains from 'large animal' in the following text. Microfaunal remains such as bones from fish, small mammals and (small) birds, amphibians and reptiles were retrieved from soil samples using the wet-sieving method. Tiny pieces of indeterminable compact and spongy bone from larger animals are also

abound in these samples. Furthermore, a few identifiable skeletal elements of larger animals and fowl are also present in the soil samples. Nevertheless, and for simplification, this animal bone category extracted from soil samples is referred to in the text as 'small animal' remains. Sample collection and processing followed the Institute of Integrative Prehistory and Archaeological Science (IPAS) guidelines[14]. Wet-sieving was undertaken using sieves with mesh sizes of 4 mm, 2 mm, 1 mm, and 0.35 mm. The small animal remains were retrieved from the 4 mm, 2 mm, 1 mm inorganic and organic fractions, with random samples being chosen for the 2 mm and 1 mm fractions due to the large amount of material. The 4 mm fraction from the mithraeum also contained many identifiable remains from large domestic mammals and poultry, which were more appropriate for analysis with the hand-retrieved bone material (e. g. young pig or chicken). Therefore, these bones were extracted from the 4 mm fraction and integrated into the study of the hand-retrieved animal bones. This should be considered when comparing the animal spectra of the different features.

All animal bones were identified using the osteological reference collection at the IPAS and recorded using OSSOBOOK, a database software specially developed for the storage and processing of data with archaeozoological content[15]. The data was analysed using Microsoft Excel.

For the purpose of the comparative study presented here, the finds from the two sanctuaries were combined to create one large analysis unit each, whilst the material from the domestic structures of the *vicus* was divided into five units (three hand-collected and two sieved units). The different units partially corresponded from a chronological point of view *(fig. 1)*. Although this meant that a longer period of time was subsumed into one unit in the case of the Seewiese sanctuary, it did help us to trace the differences between the three different areas examined in the study.

The residential area and the associated archaeozoological assemblages

In an area covering approximately 1100 m² at Fluhstrasse 6–10, parts of residential buildings were uncovered in 2005/06, analysed and the results published in 2013. A sequence of up to four phases of timber construction with a further two in stone was identified[16].

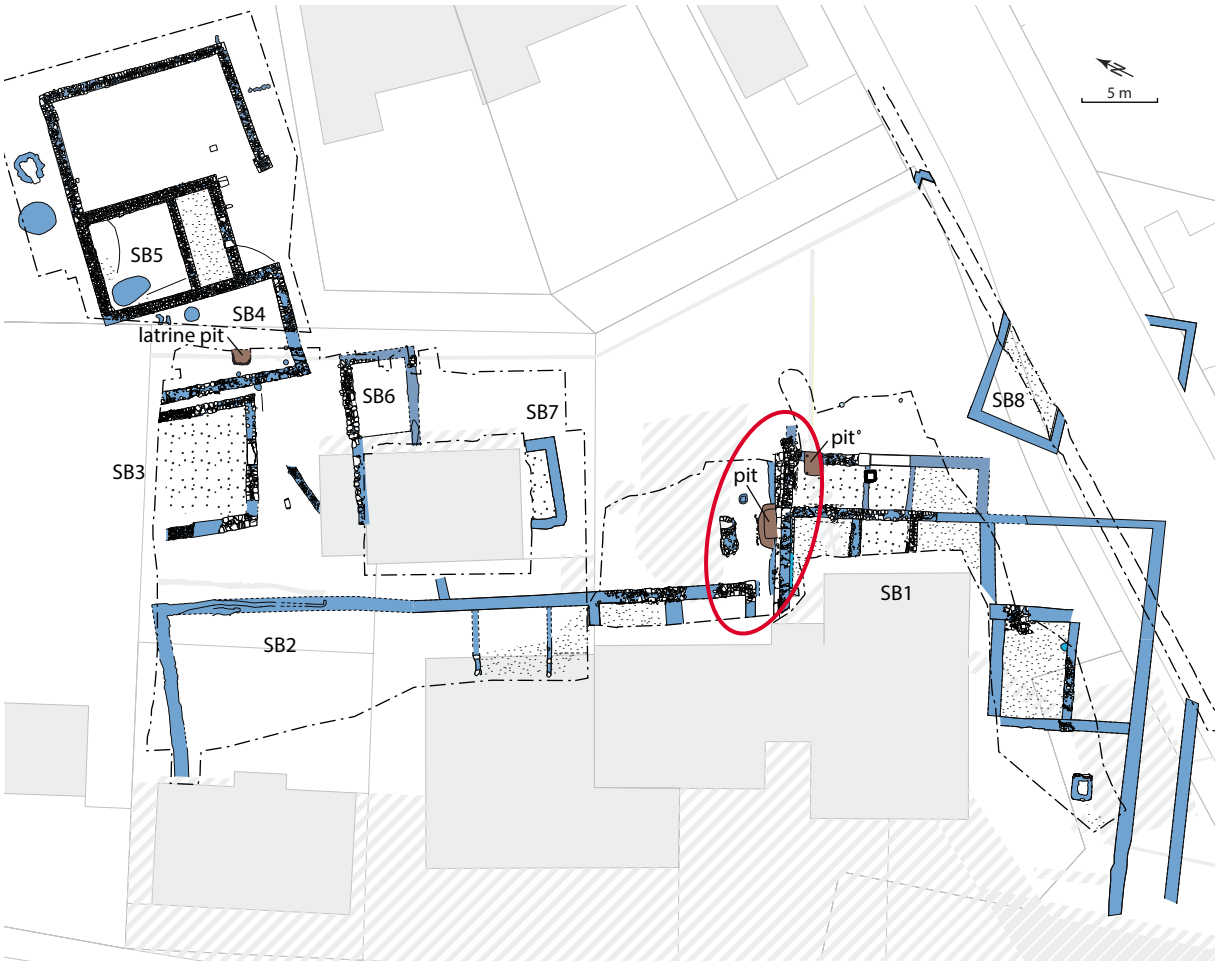
It was not possible to trace any ground-plans of houses or plot boundaries for the timber construction phases (AD 35/40–120). The areas examined were most likely to have been backyards that contained some buildings whilst also serving various other purposes. Most of the bone material analysed was retrieved from a sequence of layers. Two pits, which were primarily identified as storage pits, were also examined *(fig. 4)*[17].

An extensive fire destroyed the timber constructions around AD 120, which were then rebuilt in stone. Two large buildings, SB1 and SB2, which probably extended as far as the Roman road, were constructed at that point *(fig. 4)*. Whilst SB2 was not preserved well enough for it to be characterised in detail, SB1 can be identified as a large, carefully constructed building complex with a postulated interior courtyard, in other words, a *domus*[18].

Analysis of the large animal remains was limited to a small number of features associated with six different construction phases *(fig. 4)*. This allowed us to make initial archaeozoological observations with due regard for the chronological sequence[19]. For the purposes of this study, the 2596 large animal bones identifiable to species level analysed to date were subsumed into three consecutive units. Large animal bones from the timber construction phases (AD 35/40–120) mainly came from a sequence of layers and some of the secondary fills of the two storage pits mentioned above and were not associated with their primary functions. The large animal bones analysed from the stone construction phases SB1.I/SB2.I (AD 120–180) and phase SB1.II/SB2.II (AD 180–4th century AD) were mainly retrieved from two overlying layers at the back of SB2, which were identified as occupation surfaces from the earlier and later stone construction phases respectively *(fig. 1)*[20]. A smaller number of bones were linked to the construction of SB1 or to a kiln dating from the earlier stone construction phase.

Analysis of the small animal remains was limited to the fill of a latrine pit from the last quarter of the 1st century AD found in one of the backyards *(fig. 4)*[21]. It was approximately 1.7 m deep and reached down as far as the waterlogged soil. It had a rectangular shape and its interior was lined with stakes, which may originally have been sealed with loam. Following its primary use as a well or cistern, its secondary function was to serve as a

14 Cf. e. g. Hüster Plogmann 2003.
15 Kaltenthaler et al. 2019.
16 Ackermann 2013a, 23–64.
17 Ackermann 2013a, 28; 30.
18 Ackermann 2013a, 212–213. An interior courtyard surrounded by columns is attested to in the building beneath the Chapel and Cemetery of St. Ursula; ibid.
19 Deschler-Erb 2013.
20 Ackermann 2013a, 52–54; esp. 56.
21 Häberle 2013.



4 Kempraten, Fluhstrasse 6–10: Overall plan of stone constructions SB1–SB8 and the latrine pit from the timber construction phase, which yielded the small animal remains. Red ellipse: Sequence of layers and two pits which yielded the large animal remains examined. Sc. 1 : 500. Plan: KASG.

latrine[22]. The 1076 small animal remains were all retrieved from the latrine sediments.

In addition to the bones from the latrine pit of Fluhstrasse 6–10, a preliminary analysis was also carried out on 521 small animal remains from a latrine pit in the Walderwiese area *(fig. 3)*[23]. Due to a lack of archaeological finds, it was not possible to date the latrine pit on its own merits. By analogy with other excavations in Kempraten, it probably dated from the timber construction phase. However, because the feature was recorded during the excavation of a trial trench carried out in 2002 and no large-scale excavations have been undertaken at the site since then, we can only surmise that it was located adjacent to further residential buildings[24].

The Gallo-Roman sanctuary in the Seewiese area and the associated archaeozoological assemblages

The Gallo-Roman sanctuary on the western periphery of the Roman settlement was excavated between 2009 and 2013 *(fig. 3)*[25].

22 Ackermann 2013a, 42–43. On its dating see Ackermann 2013a, 157–158.

23 The records are kept in the KASG archives, Site no. 53.051, trial trench 3, section 5, layer 18. For more information on the preliminary archaeobiological analysis see Jacomet / Hüster Plogmann 2003.

24 JbSGUF 86, 2003, 237. – See also the results obtained from geophysical prospections carried out by Wolfgang Neubauer (LBI, Vienna) kept in the KASG archives.

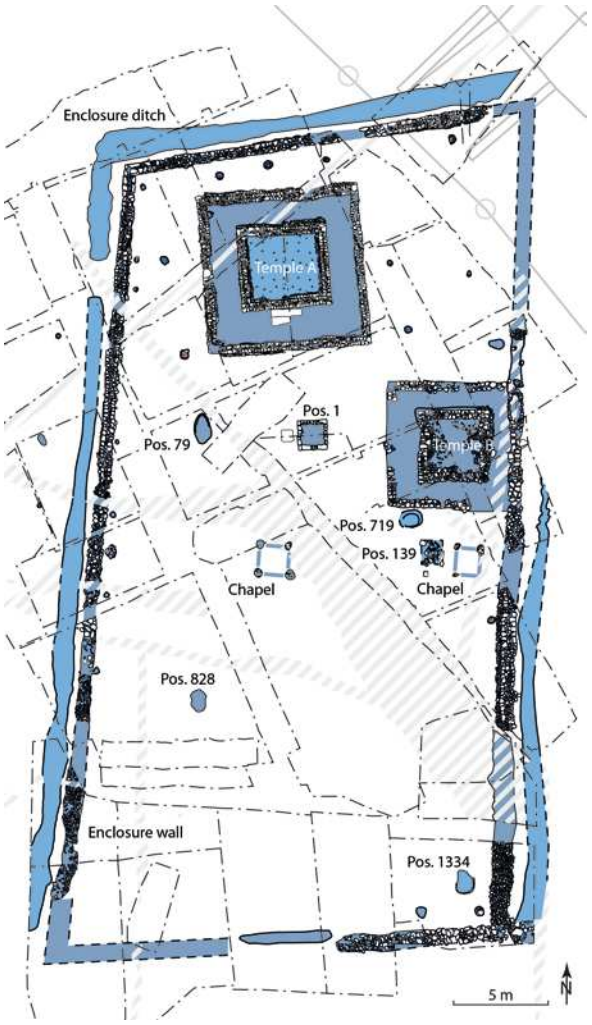
25 The sanctuary is currently the subject of an interdisciplinary research project. The results will be published in a monograph (Koch et al. in prep.). Preliminary results have already been published in Koch et al. 2018.

Four curse tablets invoking the assistance of Magna Mater show that the Goddess was one of the deities venerated in the sanctuary; based on where the tablets were found, we can assume that the larger Temple A to the north was dedicated to her[26]. Along with the Mater Magna Sanctuary at Mainz/Germany, this is the only other archaeologically examined sanctuary for the Goddess in the north-western provinces.

The sacred district occupied an area of approximately 900 m^2. Two Gallo-Roman temples with ambulatories stood in its northern half *(fig. 5)*. These and two simple post constructions, which were interpreted as chapels, were the only buildings that came to light within the sacred district. Although the southern half of the excavated area was in a poorer state of preservation and thus precluded us from drawing any definitive conclusions, the section did appear to be free of any buildings. The features in the sacred district were divided into two construction phases (I and II), though some could not be assigned to either one or the other with any degree of certainty due to intermixing with later material.

Phase I (second quarter of the 2nd century to AD 160/180): Before building work began on the sanctuary, two drainage trenches, Pos. 449 and Pos. 1188, were dug (Phase Ia). During Phase Ib, the sanctuary was enclosed by a ditch. The *cella* of Temple A was constructed in this phase, though hardly any remains of its associated ambulatory have survived. Thanks to a coin recovered from the south wall of the *cella*, its construction can be dated to the second quarter of the 2nd century AD. Due to later alterations, Temple B has only survived in fragments. Two pits, Pos. 719 and Pos. 1334, which were dug down as far as the groundwater level, also belonged to Phase I of the sanctuary. They probably served as open wells, as confirmed by evidence suggesting reinforced walls. A stone-lined hearth Pos. 139 was located south of Temple B probably from as early as Phase Ib. Other concentrations of charcoal may represent simple hearths or may have been redeposited material.

Phase II (AD 160/180 to the end of the 4th century): Towards the end of the 2nd century AD, the enclosing ditch was replaced by a wall (Phase IIa). This was probably accompanied by alteration work carried out on Temple A and the rebuilding of Temple B onto the enclosing wall. A place for burnt sacrifices Pos. 1 was installed at ground level in front of the two temples and bordered by stones. It was in this phase at the latest that the hearth Pos. 139, probably built in Phase Ib, and the pit Pos. 828 began to be used as places for burnt offerings. Other concentrations of charcoal probably attest to further sacrificial sites throughout the area. The well Pos. 79 is likely to have replaced Pos. 719 at that time.

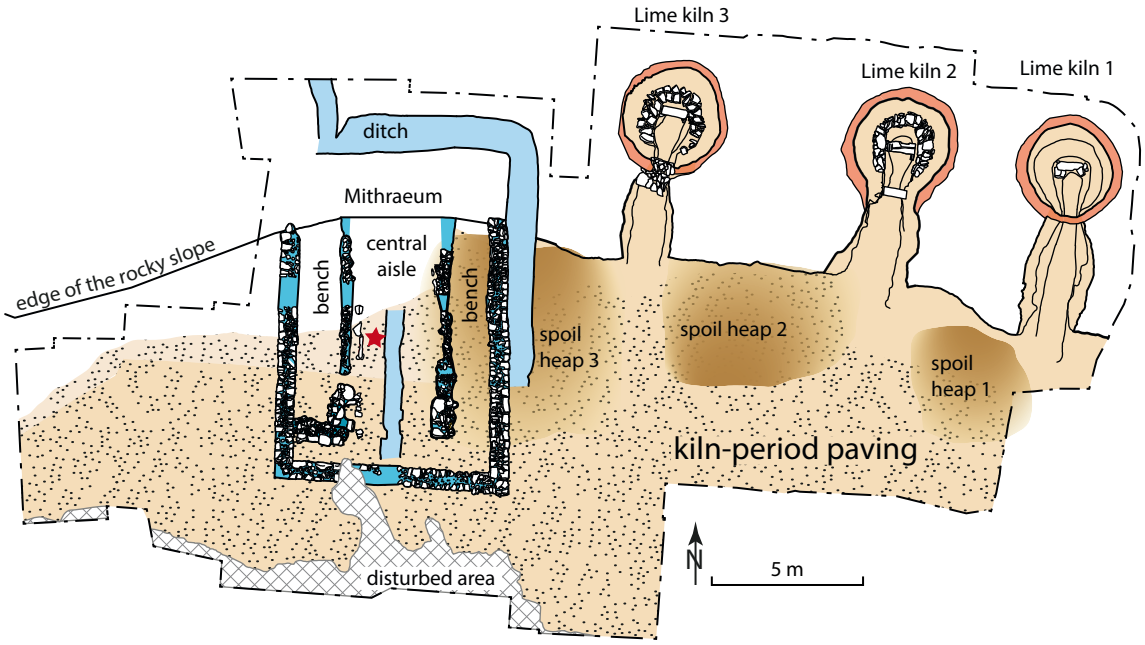


5 Kempraten, Seewiese: Overall plan of Phase II with the mentioned features from Phase I. Sc. 1 : 400. Plan: KASG.

Towards the end of the 3rd century AD, the sanctuary was badly damaged by a conflagration, though Temple A was subsequently renovated (Phase IIb). Coins attest to the presence of people at the site until the second half of the 4th century AD. However, because of the lack of other finds (ceramic or glass vessels), the question of how long the sanctuary was actually in use must remain open. After its definite abandonment the sanctuary fell into ruin (Phase IIc).

Whilst more than 8000 large animal bone fragments were recovered during the excavations, only 4625 could be linked to cult activities. Most of the bones date from

26 For preliminary results on the curse tablets see Frei-Stolba et al. 2015 and Geisseler / Koch 2018.



6 Kempraten, Zürcherstrasse 131: Overall plan of the excavation with the three earlier lime kilns and the later mithraeum. ★ = Location of the archaeobiologically examined quarter of a square metre. Sc. 1 : 250. Plan: KASG.

the period between the second quarter of the 2nd century AD and the 4th century AD, but the majority were retrieved from the most recent and uppermost layers of the site (Phase IIc, Pos. 4 and 89), and from the areas around the central square and south of Temple B. These layers probably resulted from the sanctuary's final phase of intensive use. For the purposes of this comparative study, all bones have been subsumed into one large assemblage.

Small animal remains (n = 24670) stem from a total of 39 soil samples from various features such as the altar for burnt offerings Pos. 1 (Phase II), various hearths and pits. In summary 16 samples have been analysed from Phase Ia and b, another 23 samples come from Phase IIa, b and c. Ideal preservation conditions for organic remains existed in the pits by virtue of the fact that they reached down into the waterlogged soil and this proved beneficial for the analysis of the small animal remains. Altogether, 13 samples were taken from such waterlogged features. Similarly to the large animal remains, the small animal remains from all features were considered as one large assemblage.

The mithraeum at Zürcherstrasse and the associated archaeozoological assemblages

Discovered in 2015, the mithraeum had been fully excavated by February 2016 *(fig. 6)*. It is only the third building dedicated to this mystery cult to have come to light in present-day Switzerland[27].

The site is characterised by two natural rock terraces connected by a slope. This topographical situation was first exploited to accommodate a Roman lime burning operation *(fig. 6)*. After the lime kilns had been decommissioned, the mithraeum was built just to the west of the facility and only a few metres from the shoreline of Lake Zurich. The mithraeum was built no later than the advanced 3rd century AD and continued to be used at least until the beginning of the 5th century AD[28]. Future analyses will hopefully give a precise construction date. The cult building had three phases, was aligned north-south and measured approximately 8 × 10 m. Its floorplan was typical of such edifices, with a lowered central aisle and two reclining benches on either side, which were modified during each of the construction phases[29]. The south,

27 The other two mithraea were found at Martigny (Wiblé 2008, 146–166, with earlier references) and Orbe (Monnier 2016, with earlier references).

28 Ackermann et al. 2020.

29 On the provisional sequencing of the phases see Lo Russo et al. 2018, 205–207. On the architecture of mithraea in general see, e. g., Hensen 2017 (with further references).

east and west walls (or the surviving parts thereof) were retained during all three phases. The wall at the northern end from Phases 1 and 2 did not survive because the ritual space was extended a little further north during each period of renovation. The building was surrounded by a drainage ditch in the north and east.

Only a few deposits and finds had survived from Phase 1 because most had probably been removed, possibly after a conflagration, during the alteration work for Phase 2. The reclining benches on either side and the central aisle were clearly evident. In Phase 1 the building appears to have consisted of just the sacred space with no evidence to suggest separate ante-chambers. In Phase 2, the reclining benches were slightly widened at the expense of the central aisle. The archaeological context and the distribution of finds, particularly of the coins, suggest that the building was now divided in two, with a sacred space in the northern section and three rather small ante-chambers in the southern part of the building. Two sub-phases, 2A and 2B, could be distinguished for the central aisle in Phase 2. At the end of Phase 2, numerous cult objects (altars, fragments of a cult image amongst other things) had been deposited in a pit in the northern half of the central aisle, which by that stage had been completely filled up with accumulated layers of soil rich in finds and charcoal.

The features from Phase 3 survived only in a fragmented state. The final refurbishment involved building the northern wall in stone and can be numismatically dated after AD 388. Interior spot foundations showed that the three-aisled ground-plan had been retained. Moreover, the remains of a gravel floor were uncovered in the northern section of the central aisle. The fact that the construction continued to serve as a mithraeum in this late phase was attested to, amongst other things, by an altar bearing a dedication to INVICTO MITRE and a fragmented cult image with a larger than life-sized depiction of the head of the God Mithras.

As part of a preparatory project in the year 2017, a test study was carried out on a small number of finds and soil samples taken from a quarter of one square metre from the central aisle of the mithraeum (*fig. 6*, red star). Within this test study hand-retrieved animal bones (n = 3378) and animal remains from 12 soil samples (n = 5711) from Phases 1, 2A and 2B have been analysed. The results have been integrated into the study for this paper[30].

Results

From all the three contexts combined a total of 45 573 archaeozoological remains were collected, from which 15 886 specimens have been identified to animal group and/or species. 6515 of these remains were hand-collected during excavation and 9371 were retrieved from sieved soil samples. Details of the identified species can be seen in *tables 1* and *2*.

Large animal remains

Traces of burning:

The burning of animal bones can have various different causes. It can occur in the kitchen during the preparation of a meal. Food waste strewn about can come into contact with fire during a conflagration. Finally, burnt bones can suggest that whole animals or animal parts were deliberately placed on a fire as a sacrificial offering[31].

The proportions of burnt bones in the three zones presented here differed quite considerably. In the domestic features, around 5 % of the bones were burnt[32]. Less than 5 % of the Seewiese sanctuary material showed traces of burning[33], whilst the proportion of burnt bones from the mithraeum was as high as 23 %[34]. The low values yielded by the finds from the Seewiese sanctuary suggest that the large animal bones retrieved from there were kitchen and food waste, as was the case in the domestic areas of the *vicus*. The relatively high values for the finds from the mithraeum may be interpreted as evidence of burnt offerings or as a result of one if not several conflagrations. It is hoped that this question will be resolved by the results of the ongoing investigations[35].

30 Ackermann et al. 2020. The interdisciplinary analysis project began in spring 2019.
31 Deschler-Erb 2015, 103–105.
32 Deschler-Erb 2013, 199.
33 Koch et al. in prep.
34 Ackermann et al. 2020, 54–55.
35 Initial micromorphological analyses rather argue against the outbreak of fire during Phases 2A and 2B (Lo Russo 2018, 169). However, further in-depth discussions are required as part of the post-excavation analyses.

Species	Fluhstrasse 6-10			Seewiese	Zürcherstrasse
	HB	SB1.I/SB2.I	SB1.II/SB2.II	sanctuary	mithraeum
Bos taurus	316	384	277	1036	4
Ovis/Capra	192	131	88	307	39
Sus domesticus	582	397	239	912	281
Equidae	3	4	2	89	
Canis familiaris		1	1	35	
Gallus gallus domesticus/Aves	17	13	15	57	1148
other	6				
Domestic animals total	**1116**	**930**	**622**	**2436**	**1472**
Cervus elaphus	1	2	1	2	
Sus scrofa	2				
Ursus arctos	1			2	
Lepus europaeus	14	1		5	
Castor fiber	1				
Capra ibex				2	
other	1	3	1		
Wild animals total	**20**	**6**	**2**	**11**	**0**
Domestic and wild animals total	**1036**	**936**	**624**	**2447**	**1472**
indet.	1023	1137	834	2178	1906
Total	**2059**	**2073**	**1458**	**4625**	**3378**

Tab. 1 Kempraten: List of large animal bone remains from the residential area at Fluhstrasse 6–10, the Seewiese sanctuary and the mithraeum.

Large animal species frequency:

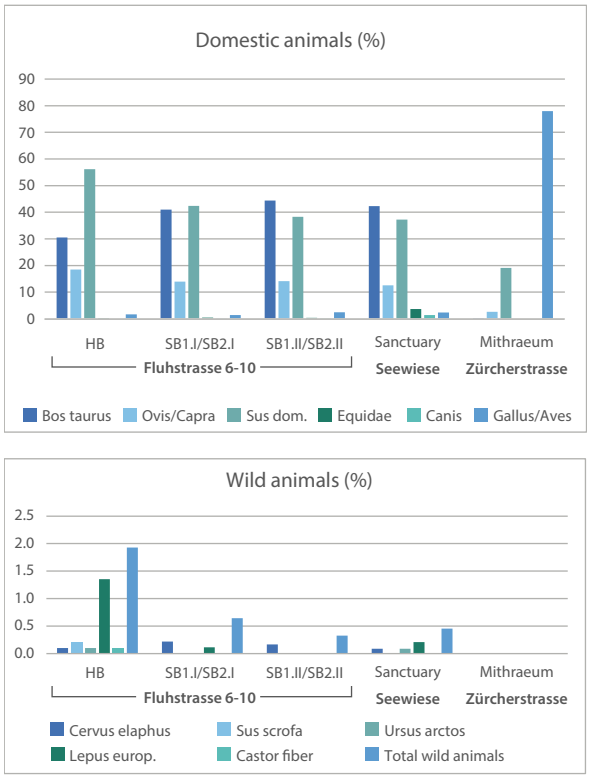
The finds from the domestic areas of the *vicus* exhibited distinct differences between the timber construction phase (HB) and the two stone construction phases (SB) *(fig. 7)*: during the timber construction phase (HB), pig bones (*Sus domesticus*) accounted for more than half of all the bones examined, whilst cattle bones (*Bos taurus*) only amounted to 31 %. During the stone construction phases (SB), pig bones decreased in number, first to 43 % and then to 38 %, whilst cattle bones rose to 41 % and later 44 %. The proportion of cattle at an ideal slaughter age was relatively high, though the material from the stone construction phases also included juvenile and infantile animals[36]. Sheep/goat (*Ovis*/*Capra*) proportions lay below 20 % in all phases and the values tended to decrease further over time. Equines (Equidae), dogs (*Canis familiaris*) and fowl (*Gallus gallus domesticus*), on the other hand, hardly featured at all. The same can be said for wild animals, where the highest values (1.9 %) and the greatest diversity were identified during the timber construction phase.

At 42 %, cattle were the most common of all large animal bones from the Seewiese sanctuary. Young and very young animals were represented in high numbers. The next most abundant species were pig at 37 % and sheep/goat at 13 %. Chicken (2.3 %) and equine (3.6 %) bones played a minor role. Most equine bones were rather highly fragmented and some bore traces of butchery, suggesting that equines were slaughtered at the sanctuary and their meat probably consumed there. So far no comparable evidence was observed in the domestic areas and the mithraeum of Kempraten.

The mithraeum, on the other hand, yielded a completely different range of animal species. Chicken/bird bones accounted for about three quarters of the material (78 %). The number of pig bones amounted to 19 %, the other domestic animals were present in very low numbers and wild animals were completely absent.

In summary, we can state that, with the exception of the consumption of horse meat, the ratios of large animal bones from the Seewiese sanctuary were largely consistent with those from the domestic areas of the *vi-*

36 Deschler-Erb 2013, 203.



7 Kempraten: Animal species frequency among large animal bone remains from the residential area at Fluhstrasse 6–10 (n = 2596), the Seewiese sanctuary (n = 2447) and the mithraeum (n = 1472).

cus. The range of animal species identified at the mithraeum, however, was completely different.

Small animal remains

Taphonomy:

The bulk of the material from both latrine pits consisted of highly fragmented pieces of compact and spongy bone from relatively large mammals and were thus usually indeterminable *(tab. 2)*[37]. Evidence of digestion was identified on several of these, as on some of the small animal remains such as fish vertebrae. The remains of invertebrates, chiefly fragments of maggots (*Diptera larva)* in various stages of their lifecycle, probably indicate the presence of faeces, too. Moreover, fish scales, skull bones and fin-rays pointed to the presence of kitchen waste, since these skeletal elements mainly result from fish preparation.

Hardly any burnt bones were found in the latrine pit at Fluhstrasse 6–10 (3.5 %), whilst almost 25 % of the bone fragments – mainly highly fragmented and indeterminable large mammal bones – from the Walderwiese pit were charred or completely calcined. Together with the charred plant remains, and in particular with the charred amorphous objects (AOV), which regularly occurred both in the latrines and around the hearths[38], they allow us to conclude that this particular pit was also used to dispose of ash from the hearth.

The small animal remains from both sanctuaries were also highly fragmented. Many could not be identified in any detail *(tab. 2)*. The Seewiese sanctuary yielded both severely burnt remains and bones that bore no burn marks whatsoever and/or had been well preserved in the waterlogged soil. Overall, however, charred bones predominated: the average value was 50 %, though one pit, Pos. 1334 (with waterlogged preservation), which was situated quite far from the temples, only yielded 4 % burnt bones. The places for burnt offerings within the sacred district even yielded 82 %–99 % of burnt material, whereas only 7 % of the remains from the mithraeum bore traces of burning. In contrast to the two latrine pits in the residential area, the sanctuaries did not yield any bones with evidence of digestion.

Small animal species frequency:

Small mammals were most numerous in the latrine at Walderwiese (22 %, *fig. 8*). Whilst none of the bone fragments could be identified at species level due to the absence of mandibles, skull parts and loose teeth, the size of the postcranial bones pointed to house, wood or field mice (Muridae and Microtidae). These were probably the carcasses of perceived vermin, which had been disposed of in the latrines. They would have frequented human settlements mainly during the autumn and winter months, feeding on supplies[39]. The same can be presumed for the small mammal remains from the latrine pit at Fluhstrasse 6–10.

37 The absence of larger or even complete skeletal elements was also observed in latrine assemblages from *Augusta Raurica* and *Vindonissa* (cf. Breuer 1992; Hüster Plogmann 2003; Deschler-Erb / Stopp 2013, Ammann / Schwarz 2017). We can assume that people generally refrained from depositing bulky settlement waste in the pits whilst they were still being used as latrines, so as to avoid filling them up too quickly (Ammann / Schwarz 2017, 226).

38 Cf. Jacomet et al. 2006.

39 Cf. Hüster Plogmann et al. 2007.

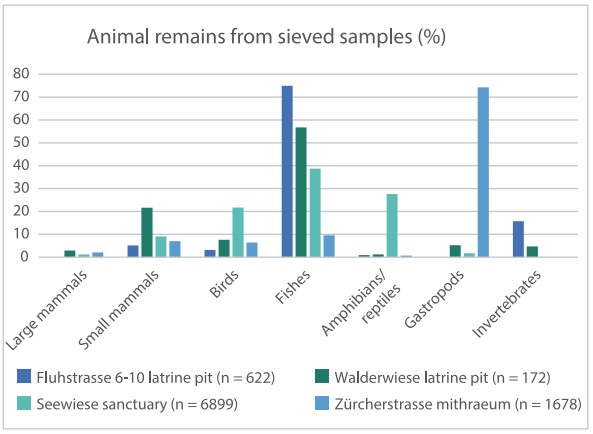
Species	Fluhstrasse 6-10 latrine pit	Walderwiese latrine pit	Seewiese sanctuary	Zürcherstrasse mithraeum
Mammals indet.	**454**	**349**	**17771**	**4038**
Bos taurus		1	8	
Sus domesticus		4	34	30
Ovis aries/Capra hircus		1	35	
Canis familiaris			2	
Equidae			1	
Vulpes vulpes/Canis familiaris			3	
Capreolus capreolus			2	
Large mammals total		**6**	**85**	**30**
Small mammal indet.	25	37		61
Rodentia	5		516	24
Sciurus vulgaris			1	
Muridae			23	15
Mus musculus			1	
Apodemus sp.	2			1
Arvicola terrestris			10	3
Arvicolidae			45	9
Myodes glareolus				1
Microtus agrestis			3	
Microtus arvalis			5	
Microtus sp.			5	
Micromys minutus			1	
Insectivora indet.			1	
Neomys fodiens			1	
Talpa europaea			2	2
Soricidae			1	2
Mustela erminea/nivalis			3	
Mustela nivalis			5	
Small mammals total	**32**	**37**	**623**	**118**
Aves indet.	2	1	918	90
Galliformes/Anseriformes indet.	1			16
Phasanidae	4			
Gallus gallus domesticus/Galliformes		12	541	
Phasianus colchicus			16	
Perdix perdix			3	
Anseriformes			1	
Anatidae			1	
Anser sp.			3	
Buteo buteo			*1*	
Passeriformes	13		13	2
Passer domesticus			1	
Fringilla sp.			1	
Erithacus rubecula			1	
Aves total	**20**	**13**	**1500**	**108**

Tab. 2 (first part)

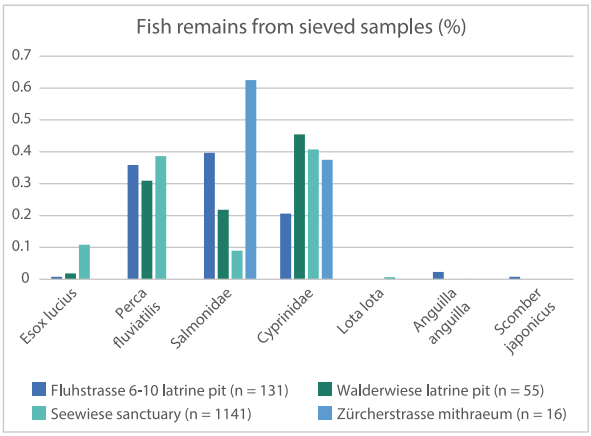
Fishbones accounted for 75 % of the material in the latrine pit at Fluhstrasse 6–10 and for 57 % of the finds from the latrine pit at Walderwiese *(fig. 8)*. Despite the difference in proportions, there was a similar range of fish species in both pits *(fig. 9)*: the species identified were almost exclusively indigenous freshwater fish, including various salmonids – brown trout (*Salmo trutta fario)*, whitefish (*Coregonus* sp.) and grayling (*Thymallus thymallus)* – as well as perch (*Perca fluviatilis*) and cyprinids. The salmonids were the most numerous in the latrine pit at Fluhstrasse 6–10, whereas the cyprinids predominated in the Walderwiese latrine. Most of the fish were no longer than 20 cm when caught. Eel (*Anguilla anguilla*) and pike (*Esox lucius*) were identified only in very small numbers *(tab. 2)*. A vertebra of a Spanish mackerel (*Scomber japonicus*) from the latrine pit at Fluhstrasse 6–10 was the only evidence of imported sea fish. Birds, amphibians and reptiles all accounted for less than 10 % of the range of animal groups and were thus less abundant than in the Seewiese sanctuary. Be-

	Fluhstrasse 6-10 latrine pit	Walderwiese latrine pit	Seewiese sanctuary	Zürcherstrasse mithraeum
Pisces indet.	335	42	1531	145
Esox lucius	1	1	124	
Perca fluviatilis	47	17	441	
Anguilla anguilla	3		1	
Lota lota			8	
Rutilus rutilus	1		31	
Scardinius erythrophthalmus			6	
Leuciscus cephaloides			8	
Barbus barbus			6	
Cyprinidae	26	25	414	6
Salmonidae	39	5	55	8
Salmo trutta fario	1	7	37	
Coregonus sp.	5		8	2
Thymallus thymallus	7		2	
Scomber japonicus	1			
Pisces total	**466**	**97**	**2672**	**161**
Amphibia indet.	2	1	352	1
Rana sp./*Bufo* sp.			17	2
Rana sp.	4		28	
Amphibia total	**6**	**1**	**397**	**3**
Reptilia indet.			76	2
Lacertidae			36	1
Anguis fragilis		1	1392	5
Serpentes			2	
Reptilia total		**1**	**1506**	**8**
Gastropoda		9	116	1250
Invertebrata	98	8		
Total	**1076**	**521**	**24670**	**5716**

Tab. 2 Kempraten: List of small animal bone remains from the residential area at Fluhstrasse 6–10 and Walderwiese, the Seewiese sanctuary and the mithraeum.



8 Kempraten: Animal groups frequency in the residential area at Fluhstrasse 6–10 and Walderwiese, the Seewiese sanctuary and the mithraeum.



9 Kempraten: Fish species frequency in the residential area at Fluhstrasse 6–10 and Walderwiese, the Seewiese sanctuary and the mithraeum.

cause of the predominance of long bone and vertebrae fragments, most bird remains were undetermined. The assemblages were comprised mainly of indeterminate fowl (Galliformes) in the latrine at Walderwiese, and of indeterminate songbirds (Passeriformes) in the latrine at Fluhstrasse 6–10.

The highly fragmented large mammal remains from both latrines in the residential area prevented us from carrying out any further analyses.

The sanctuaries differed from the residential areas in terms of the composition of identifiable animal species *(tab. 2, fig. 8)*. This was particularly clear with regard to

the large number of bones found in the Seewiese sanctuary. But even more remarkable was the relatively large variety of small animal species. Additionally, the few identifiable large animal bones represent a diverse species composition. Besides a relatively high number of domestic pigs and sheep/goats, the range also included small dogs or foxes, equines (Equidae), roe deer (*Capreolus capreolus*), mustelids (Mustelidae), weasels (*Mustela nivalis*), red squirrels (*Sciurus vulgaris*) and various species of mice such as house mice (*Mus musculus*), wood/yellow-necked mice (*Apodemus sylvaticus/flavicollis*) and harvest mice (*Micromys minutus*); voles were represented by European water voles (*Arvicola terrestris*), field voles (*Microtus agrestis*), common voles (*Microtus arvalis*) and bank voles (*Myodes glareolus*), and the insectivores included water shrews (*Neomys fodiens*) and moles (*Talpa europaea*). Besides commensal small mammals such as those found in the latrine pits in the domestic areas, the sanctuaries thus yielded a range of species less closely associated with humans.

Whilst fish were less abundant in the two sanctuaries than in the domestic areas of the *vicus*, they nevertheless accounted for 39 % in the Seewiese sanctuary. In the mithraeum, on the other hand, they only amounted to 10 % *(fig. 8)*. Fish remains from some features in the sacred district at Seewiese were well preserved thanks to the waterlogged conditions, whilst only small numbers of fish remains were retrieved from the dryland area of the mithraeum. The latter were highly fragmented and, as a consequence, almost completely undeterminable *(tab. 2)*. Nevertheless, it was possible to identify salmonids, which serve as an indicator of 'Romanisation'[40], as well as eel (*Anguilla Anguilla*) and burbot (*Lota lota*) in the Seewiese sanctuary, both of which are often found at Roman sites and declared as delicious by various classical authors[41]. The Seewiese sanctuary yielded surprisingly low numbers of salmonids, whilst cyprinids and perch were rather more abundant *(tab. 2)*. As in the domestic areas, most fish were quite small, measuring less than 20 cm in length. Moreover, 124 (= 11 %) remains of pike (*Esox lucius*) were unexpectedly found in the Seewiese sanctuary. Such a concentration is very unusual for Roman Switzerland, where pike are mostly found in military contexts or in *vici*, and always in low numbers[42]. The latrines in the domestic areas on the other hand yielded only one specimen each of this predatory fish. Another aspect worth noting is that the pike found in the Seewiese sanctuary were less than 30 cm long, suggesting that none of them had reached their first spawning season.

Another difference between the sanctuaries and the residential areas can be found in the number of bird bones: both sanctuaries yielded higher numbers of birds than the domestic areas *(fig. 8)*. Birds were particularly numerous in the Seewiese sanctuary, with 22 % of the animal bones belonging to this class. Whilst they amounted to only 6 % in the mithraeum, it must be considered that a significant number of remains from the 4 mm fraction were identified as chicken bones and are included in the analysis of the hand-retrieved bone material, because they obviously belong to the hand-retrieved chicken bones (*see 3.1*). The high proportion of birds in the Seewiese sanctuary can also be attributed to the abundance of chicken bones. Other species were rare and included common pheasant (*Phasianus colchicus*), grey partridge (*Perdix perdix*), ducks (Anatidae), geese (*Anser* sp.), common buzzard (*Buteo buteo*) and a small number of songbirds such as house sparrows (*Passer domesticus)*, finches (*Fringilla* sp.) and robins (*Erithacus rubecula*).

Furthermore, relatively high proportions of reptiles, amphibians and gastropods were found in the Seewiese sanctuary *(fig. 8)*. Scales from beneath the skin of slowworms, for instance, were concentrated in the vicinity of Temple B. Amphibians, on the other hand, were mainly found in the waterlogged areas of the sacred district. The mithraeum yielded mainly small land and water snails, and hardly any amphibians or reptiles.

Discussion

All three areas of the *vicus* at Kempraten yielded a considerable number and variety of large and small animal bones. Our analyses have identified both commonalities and, in some cases, rather large discrepancies between

40 We have used this term to record an adopted or modified scale of value attributed to different fish species in terms of the prevailing dietary habits in the northern Roman provinces. For more information on this topic see Hüster Plogmann 2006, 187–199.

41 Cf. Hüster Plogmann 2006, 187–199.

42 Hüster Plogmann 2002; Hüster Plogmann 2007; Ginella et al. 2011.

both categories. Moreover, in terms of the small animal remains, a distinction should be made between natural and anthropogenic introductions, which in turn can provide interesting evidence pointing to a variety of human uses and activities.

Natural introductions

Amphibians, reptiles, gastropods and small mammals were the main natural introductions. These animal groups first and foremost point to the ecological conditions that existed at the site and in the local area. The fauna identified in the Seewiese sanctuary, i. e. small land snails, frogs and toads as well as various voles and insectivores, suggests a waterlogged terrain with the appropriate habitat for each individual species. Slowworms, which were well represented, favour ground vegetation that offers a lot of dense cover and sufficient soil moisture. However, there must also have been dry and sunny areas. The Seewiese temple buildings provided an adequate number of dry nesting sites for mice and also offered dependable sources of food (e. g. food waste from cult activities?). Moreover, the fact that such a great variety of animal groups was represented suggests that quite a large number of small animals were able to roam the area freely at certain times, particularly in the southern half of the sacred district, where we have proposed the location of a grove based on the archaeobotanical investigations[43]. The small animals from the Seewiese sanctuary suggest that phases of human absence alternated with phases of human activity at the site.

Although not all of the remains from the mithraeum are available for analysis yet, the composition of animal groups mentioned above also suggests that human presence was not constant.

The domestic areas of the *vicus*, however, have yielded comparatively fewer amphibians, reptiles and land snails. Based on the postcranial skeletal elements of small mammals, we can probably expect more commensal rodents, as are often found in settlement contexts from the Roman period[44]. In contrast to the Seewiese sanctuary, insectivores, water shrews in particular, larger voles and elusive mouse species such as harvest mice, were not found in the domestic areas of the *vicus*.

We can therefore assume that the ecological conditions were largely the same throughout the whole area of Kempraten and its environs, but that there was a higher density of species overall in the sacred district, because it was less often frequented by people, and the natural fauna was therefore largely undisturbed and better able to thrive.

Anthropogenic introductions of large and small animals and how to interpret them

By contrast to the animal species mentioned in the last paragraph, we can assume that the remains of domestic mammals, certain bird species and fowl as well as fish were intentionally introduced to the site as part of human activity. However, it is not always possible to determine for what purpose they were brought to the site. In the case of the remains of domestic mammals, birds and fish in the domestic areas, for instance, we would assume that these were left behind after the consumption of meat. This can be confirmed not only by the presence of butchery marks and burnt bones but also more directly by digested bones from the latrines. In the sanctuaries, on the other hand, it is often difficult to distinguish between a sacrificial offering and food waste from a ceremonial feast. In the case of the severely burnt bones (mainly of birds), which were found in greater numbers near the places for burnt offerings in the Seewiese sanctuary, it is more obvious to make the assumption that these were sacrificial offerings than in the case of the mainly unburnt large animal bones. We are inclined to interpret the latter as the remains of ceremonial feasts. Therefore, we can assume that the animal bones found in the two sanctuaries did not come from a domestic context, but were part of a sacred rite, which led to a particular selection of animals.

The selection of animals in domestic and sacred contexts

Based on written and pictorial sources, domestic cattle, pigs and sheep can be seen as the typical choice of sacrificial animal in Roman cult practice[45]. All three species were found in all areas of Kempraten, albeit in varying proportions. The animal species from the domestic areas of the *vicus* and the Seewiese sanctuary exhibited close similarities, particularly in the overlapping peri-

43 Koch et al. 2018.
44 Cf. Hüster Plogmann 2007.
45 Deschler-Erb 2015, 24–25.

ods. The same applies to the slaughter ages of cattle, which suggest a preference for young individuals. This is in contrast to other Roman sites in Switzerland[46], and may be an indication of the economic choices of the region today known as eastern Switzerland. Perhaps animal husbandry and particulary dairy farming were more important here than crop cultivation[47]. The importance of domestic cattle both in the domestic areas of the *vicus* and in the Seewiese sanctuary can be seen as an indication of close economic and probably also social links. The distinctly lesser importance of domestic mammals in the mithraeum, on the other hand, was probably due to the special nature of the cult of Mithras, since mammals also played an unusually insignificant role compared to poultry in other mithraea[48].

Equines played a special part in the Seewiese sanctuary, as suggested both by the slightly higher number of fragments and the evidence pointing to the consumption of horse meat. Because hardly any equine bones have so far been found in the domestic areas of the *vicus*, we can only assume that this was associated with some sort of sacred context. No comparable examples have yet come to light, which makes it more difficult to interpret the situation. The evidence probably attests to local customs, since the sacrifice of horses was rarely practised in Roman religions[49] but did play a relatively important role in Celtic cult practices[50]. It must also be borne in mind that the consumption of horse meat in many regions of the Roman empire was practically taboo[51].

The number of birds, and particularly chicken, was insignificant amongst the mainly unburnt large animal bones in the Seewiese sanctuary and in the domestic areas of the *vicus*. However, they were extremely well represented amongst the burnt bones from the places for sacrificial offerings in the Seewiese sanctuary and in the mithraeum. In both cases this attests to the special importance of poultry in cult practices, both as burnt offerings at Seewiese and as part of the ceremonial feasts that took place at the mithraeum. The burnt offerings may have been linked to the cult of Magna Mater, as suggested by comparable observations made at the Isis and Mater Magna sanctuary in Mainz[52]. In this context, it is worth noting that the Seewiese sanctuary yielded numerous remains of laying hens, whilst cocks were predominant at Mainz[53] and at mithraea – for example at Tienen[54]. However, due to the preliminary nature of our results, we cannot say yet if the same applied to the mithraeum of Kempraten. Additionally there are questions around the origin of the large number of chickens and if they were bred specifically for the ceremonial activities.

Besides severely burnt poultry remains, the Seewiese sanctuary also regularly yielded burnt fish bones, even though such fatty bones tend to be completely incinerated in an oxidising fire. It is highly likely that the fish remains therefore represented only a small proportion of the total number of sacrificial fish at the site. The fish remains included species of the family of cyprinids as well as perch. These were also found in the latrine pits, but in varying numbers. It is unclear whether the discrepancies mirrored different dietary preferences or whether they were the result of varying fishing techniques. Fish sizes were similar in all areas, with the majority measuring less than 20 cm in length; this suggests intensive shoreline fishing. With the exception of the very popular salmonids which, besides perch and cyprinids, were also quite numerous, edible fish such as burbot, eel or Spanish mackerel only occurred in isolated instances. This applied to all areas, including the sanctuary Seewiese, though the latter stood out by virtue of the fact that it had yielded only few salmonids. This could mean that salmonids did not play any role in the cult practices that took place at the sacred district but were popular as part of the diet in the domestic area. The most remarkable aspect, however, was the discovery of 124 pike remains in the Seewiese sanctuary. This species is rarely found at Roman-period sites and, according to written sources, was not particularly favoured as part of the Roman diet[55]. It comes as no surprise, therefore, that both domestic latrine pits at Kempraten only yielded a single specimen each of this predatory fish. In contrast, remains of young pike were found dispersed across all areas for burnt sacrifices in the Seewiese sanctuary. Compared to the other fish species, it is likely that young pike were not favoured in the domestic kitchen, since they have an oversized head and very little edible flesh. Moreover, catching these young specimens involves a lot of effort because they tend to live as solitary individuals in rather inaccessible reed beds along the water's edge. We therefore presume that fishing for pike was likely to have been cultically motivated[56].

46 Groot / Deschler-Erb 2016.
47 Other studies have also come to the same conclusion; Deschler-Erb 2016.
48 E. g. Olive 2004; Lentacker et al. 2004.
49 As a rare example, the so called October horse is mentioned in written sources, Deschler-Erb 2015, 27.
50 Deschler-Erb 2015, 27 and 169–171.
51 Peters 1998, 164.
52 Hochmuth et al. 2005.
53 Hochmuth et al. 2005.
54 On mithraea in general: Lentacker et al. 2004, 81 and 88–90.
55 Ausonius' *Mosella* dating from the 4th century includes this statement about pike: "[…] only in stinking, ponging taverns is it cooked". E. g. Hüster Plogmann 2006, 192.
56 A religious deposit at Basel-Münsterhügel also contained the remains of a pike skull; Stopp 2011, 344–345.

Conclusions

In comparing the animal bones from two sacred sites with those from the residential areas of the *vicus* at Kempraten both commonalities and significant discrepancies were identified.

The biggest differences were observed amongst the naturally occurring small animal remains, the fowl and the fish. Apart from the presence of commensal species of mice in all areas, there was a large variety of wild mammals and significant numbers of amphibians, reptiles and gastropods in the Seewiese sanctuary. Whilst this does not point to the use of these animals as part of the cult practice, it does suggest the discontinuity of the human use of the area, characterised by phases of intensive human activity alternating with phases during which the site lay idle, as we would expect for a sacred district.

There were also differences with regard to the animals that were sacrificed. Chicken bones, for instance, were far less abundant in the domestic areas of the *vicus* than in the sanctuaries. Such higher numbers of chicken bones at sacred sites compared to domestic contexts have also been observed elsewhere. This inevitably raises the question as to where the many chicken found in the sanctuaries came from. According to the finds recovered from the domestic areas of the *vicus* so far, chicken farming does not appear to have been widespread in the region.

Analyses of Roman-period fish remains from sacred contexts are generally quite rare. One reason is that wet-sieving is not often undertaken at excavations of temple sites. Because the fatty bones tend to be completely incinerated at high temperatures, they are not very often detected in places for burnt offerings. Fortunately, the Seewiese sanctuary yielded both burnt and unburnt fish bones, which suggests that fish, young cyprinids and perch in particular, as well as young pike, though of very little culinary value, did indeed play a role in the ceremonial activities, and that these species were probably targeted specifically for use in a sacred context.

The proportions of the large domestic and wild animal bones from the Seewiese sanctuary, on the other hand, besides some perhaps cultically motivated differences (equines), were very similar to those from the domestic areas of the *vicus*. The inhabitants of the *vicus*, or those who performed the ceremonial acts, therefore shared the same meat with the Gods that was also part of their everyday diet. In this case, the local or regional economy and the cultural context were interwoven[57].

The cultic acts performed at the place for burnt sacrifices, probably in veneration of Mater Magna, instead mainly involved offering poultry, and the same applied to the nearby mithraeum. In these cases, the selection of the sacrificial fowl appears to have been cultically rather than economically motivated. In domestic contexts in fact poultry bones are rarely found and chicken farming was not particularly important in this region in general[58]. Therefore, on the basis of the chicken bones, it is not possible to make any further statements concerning the social and cultural affiliation of the people who performed the ceremonies in the sanctuaries as it is in the case of cattle in the Seewiese sanctuary. The same can be said for the fish finds from the Seewiese sanctuary; the selection of species is also highly likely to have been cultically motivated, but the exact background (thus far) remains a mystery.

The archaeozoological comparison between two profane and two sacred areas of the Roman *vicus* has shown that there was a strong link between economic and cult practices. However, there was a different motivation behind the choice of animals that were sacrificed as part of certain cults and practices.

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57 The interconnectedness of the settlement's economic system with the cultically motivated consumption of meat was also observed at Avenches; Deschler-Erb 2015, 110–118.

58 Groot / Deschler-Erb 2015, 453.

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Fig. 1: KASG. – Fig. 2: KASG, after Ackermann 2013a, fig. 248. – Fig. 3–6: KASG. – All other figures: Authors.

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Abstract

In this study, archaeozoological remains (hand-retrieved and retrieved from soil samples) from residential areas and from two different sanctuaries from the *vicus* Kempraten have been analysed and compared. The archaeozoological assemblage consists of 15 886 animal remains identified to animal group and/or species and were recovered from a number of different features which partially overlap chronologically. We discuss commonalities and discrepancies as well as possible reasons behind the selection of certain animal species for domestic and/or ritual purposes. We found remarkable differences amongst the naturally occurring small animal remains, the fowl and the fish. A large variety of natural intruders (wild small mammals, amphibians, reptiles, gastropods) in the gallo-roman sanctuary let us assume that phases of intensive human activity alternated with phases during which the site lay idle. The cultic act in both sanctuaries mainly involved offerings of poultry. The selection of the sacrificial fowl appears to be rather cultically and not economically motivated. The same can be said for the fish finds, especially for young pike from the gallo-roman sanctuary, because in residential areas of the *vicus* fowl and pike were far less abundant than in the sanctuaries. Comparing the proportions of the large domestic and large wild animal bones from the gallo-roman sanctuary with those from the domestic areas of the *vicus*, we can find a large similarity. Therefore, we assume that animals like cattle or pig played an important role in the everyday diet as well as in the cultic rituals of the inhabitants of Kempraten.

Zusammenfassung

Tiere im rituellen und häuslichen Kontext: Eine vergleichende Studie zwischen den Faunengesellschaften aus Wohngebieten und zwei Heiligtümern des *vicus* Kempraten (Rapperswil-Jona, CH)

In dieser Studie wurden sowohl von Hand aufgelesene als auch aus Bodenproben stammende Tierreste aus dem *vicus* Kempraten (Schweiz) untersucht. Die insgesamt 15 886 bis auf Tiergruppe und/oder -art bestimmten Reste stammen aus dem profanen Siedungsbereich sowie einem gallo-römischen Tempelbezirk und einem Mithraeum und überschneiden sich teilweise zeitlich. Die Studie stellt die Unterschiede und Gemeinsamkeiten der Tierreste aus diesen verschiedenen Bereichen des *vicus* vor und diskutiert die Selektion bestimmter Tierarten für häusliche und/oder rituelle Zwecke. Unterschiede zwischen den Bereichen fielen insbesondere bei Anzahl und Zusammensetzung der Reste von natürlich vorkommenden Kleintieren, Geflügel oder Fischen auf. Eine Vielzahl wilder Kleinsäuger, Amphibien, Reptilien und Schnecken im gallo-römischen Heiligtum weisen auf einen Wechsel von Phasen menschlicher Abwesenheit und Phasen menschlicher Aktivität hin. Bei den Kulthandlungen in beiden Heiligtümern spielte Geflügel eine große Rolle. Deren Auswahl ergab sich wohl vor allem aus kultischem Hintergrund und nicht aus wirtschaftlichen Motiven. Gleiches gilt für die Fischfunde, insbesondere für die nachgewiesenen jungen Hechte, denn insgesamt wurden in den Wohngebieten weit weniger Geflügel und Hechte nachgewiesen. Hingegen ergab sich beim Vergleich der Anteile der großen Haus- und Wildtiere aus dem gallo-römischen Heiligtum mit denjenigen aus den Wohngebieten eine große Ähnlichkeit. Es kann also davon ausgegangen werden, dass den Rindern und Schweinen eine wichtige Rolle sowohl in profanen als auch in kultischen Lebensbereichen der Bewohner von Kempraten zukam.

Résumé

Les animaux en contexte rituel et domestique: une étude comparative entre les ensembles faunistiques de zones résidentielles et de deux sanctuaires du *vicus* de Kempraten (Rapperswil-Jona, CH)

On a examiné et comparé dans cette étude les restes archéozoologiques (collectés à la main et extraits d'échantillons de sol) provenant de zones résidentielles et de deux différents sanctuaires du *vicus* de Kempraten. L'ensemble archéozoologique comprend 15 886 restes animaux identifiés à un groupe ou à une espèce et provenant de différentes structures qui se recoupent partiellement sur l'axe chronologique. Nous discutons les points communs et les différences, ainsi que les raisons possibles qui ont mené à sélectionner certaines espèces à des fins domestiques ou rituelles. Nous avons constaté des différences remarquables parmi les restes de petits animaux naturels, la volaille et le poisson. Une grande variété d'espèces invasives naturelles (petits mammifères sauvages, amphibiens, reptiles, gastropodes) dans le sanctuaire gallo-romain fait penser que des phases d'activité humaine intensive alternaient avec des phases où le site restait inoccupé. Le culte observé dans les deux sanctuaires impliquait principalement des offrandes de volaille. La sélection de volaille pour le sacrifice répondait à des motivations plus cultuelles qu'économiques. Ceci vaut également pour le poisson, spécialement les jeunes brochets du sanctuaire gallo-romain, car la volaille et les brochets étaient bien moins fréquents dans les zones résidentielles du *vicus* que dans les sanctuaires. Les pourcentages d'os de grands animaux sauvages et de grands animaux domestiques provenant des sanctuaires sont par contre très comparables à ceux des zones résidentielles du *vicus*. On peut en conclure que des animaux tels que les bovins et les porcs jouèrent un rôle important dans le menu quotidien et dans les rites culturels des habitants de Kempraten.