

SZÜRKÉK, RACKÁK, MANGALICÁK

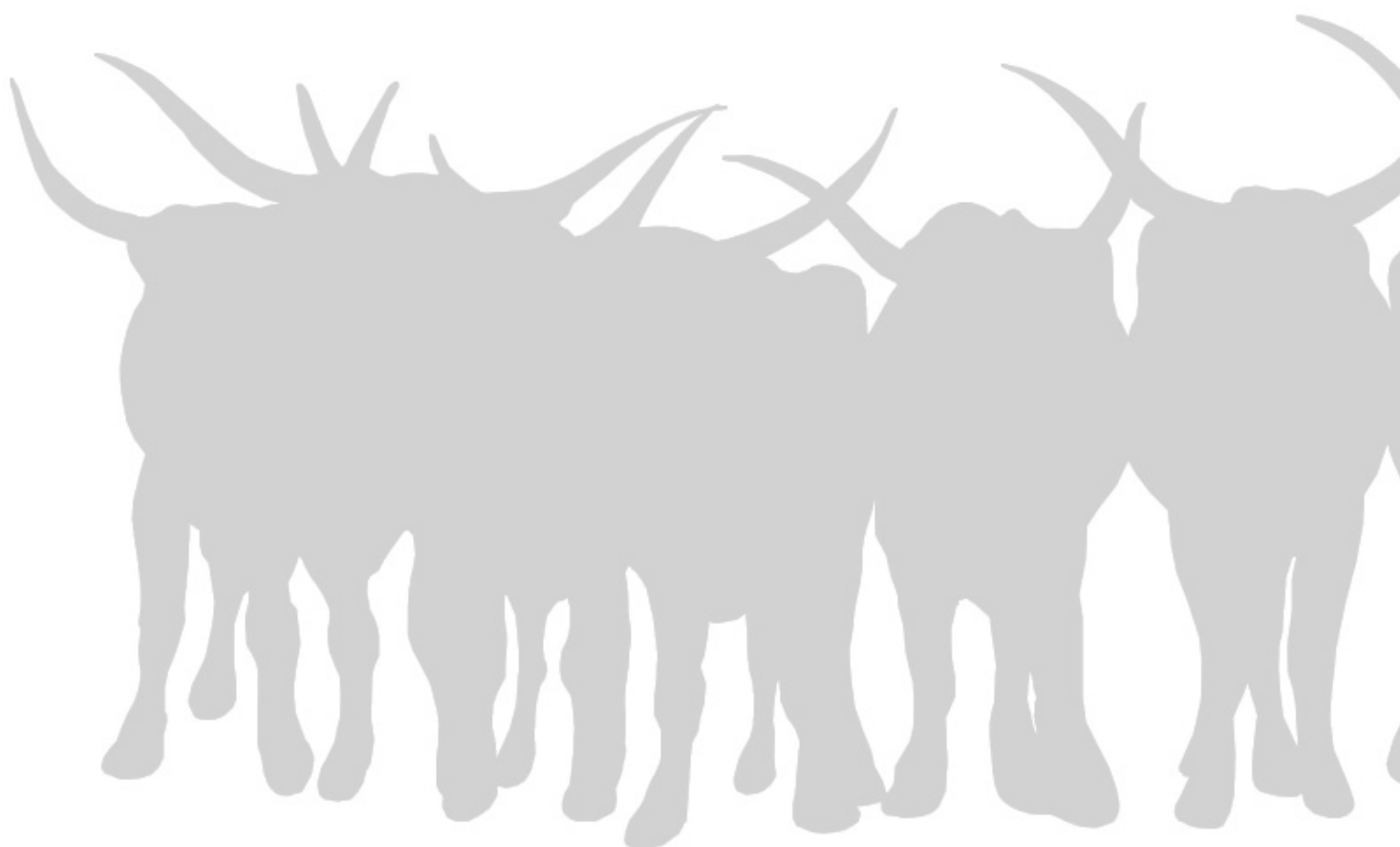
Hungarian Grey, Racka,
Mangalitsa



MAGYAR MEZŐGAZDASÁGI MÚZEUM ÉS KÖNYVTÁR

Hungarian Grey, Racka, Mangalitsa

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A hátsó borítón: Szürke marhák a budapesti Közvágóhídon 1900 körül
Erdélyi Mór felvétele (Eredeti Fényképek Gyűjteménye, lelt. sz.: EF10488)
Back cover: Hungarian Grey cattle at the General Abattoir of Budapest, c. 1900
Photograph by Mór Erdélyi (Original Photographs Collection, cat. no. EF10488)



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MÚZEUM ÉS KÖNYVTÁR
BUDAPEST | VAJDAHUNYADVÁR



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Matjeshering or fish soup? Animal remains from a Hanseatic merchants' site in Bremen

Sózott tengeri hering vagy halászlé? Csontmaradványok egy hanza kereskedő településről Bréma óvárosában

HANS CHRISTIAN KÜCHELMANN¹

Kulcsszavak: hal, sózotthering-kereskedelem, középkor, hanza
Keywords: fish, herring trade, Middle Ages, Hanseatic League

Abstract

A rescue excavation in the medieval city centre of Bremen, in the former medieval harbour area, revealed remains of three stone buildings of a particular type regularly used by Hanseatic merchants as storage houses. Dendrochronological data showed that the buildings were constructed in 1183 AD. The analysed bone sample stems from the ash layer of a catastrophic fire event around 1200 AD. It consists of the typical medieval domesticates (cattle, pig, sheep / goat, domestic fowl) plus a substantial amount of different fish species. The fish bones mainly comprise limnic species, which could have been caught in the local vicinity. The only exception is the marine herring. The finds from a securely dated and short-termed context of a warehouse are strong evidence that Bremen merchants were already involved in the herring trade in the late twelfth century.

Összefoglaló

Egy, a középkori Bréma kikötői területén folytatott megelőző feltárás során három olyan kőépület típus romjait fedezték fel, amelyeket a hanza kereskedők használtak raktárépületként. A dendrokronológiai időmeghatározás megmutatta, hogy ezek az épületek időszámításunk után 1183-ban épültek. Az elemzett csontleleteken megjelenő hamuréteg egy katasztrofális mértékű tüzesetről árulkodott, amely 1200 körül pusztíthatott.

Fellelhetők a tipikus középkori háziállatok leletei (szarvasmarha, sertés, juh/kecske, háziasított szárnyasok), továbbá tekintélyes számú halfajé is. A halcsontleletek főként édesvízi halfajoktól származnak, ezeket legnagyobb részben helyben foghatták. Az egyetlen kivételt a tengeri hering jelentette. E leletek keletkezési ideje nagyon pontosan behatárolható, s mivel ilyen szoros kapcsolatban állnak az itt felfedezett raktárépületekkel, ez egyértelmű bizonyíték arra, hogy a brémai kereskedők érdekeltek voltak a 12. század végi heringkereskedelemben.

Introduction

This is an account of a small assemblage of animal remains recovered from the medieval city centre of Bremen. The bone material as well as the archaeological context display some features of interest compared with other contemporary sites and permit some wider interpretations.

In 2005, a new hotel was opened in the city centre of Bremen, the “Hotel Überfluss”.² The hotel is situated on lot “Schlachte 36–38” directly on the right bank of the River Weser. From September 2003 to March 2004, archaeological rescue excavations were conducted at the site recorded as “Bremen 214-Alt-

stadt” at the local archaeology department “Landesarchäologie Bremen” under the supervision of Dieter Bischof. On-site parts of the river bank were excavated including a quay built in 1154 based on dendrochronological dating. In 1183, the river banks were reinforced by rows of oak logs. Three stone buildings were erected only 1 m behind the new bank reinforcements (figs. 1-2).

These buildings had a relatively small square base area of approximately 5 x 5 m. The walls were built of large irregular fieldstones, so-called “Findlinge” – leftovers of the ice age glaciers, held together with shell lime mortar. Buildings of this type are called “Steenkamern” (stone chambers) in local historic

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² The name of the hotel is a wordplay in German meaning “affluence” as well as “above the river”, the latter relating to the location of the building.

documents.³ The height of the houses cannot be directly inferred from the floor plan, but still existing buildings of the same type, e. g. in Osnabrück (fig. 3), are 12–15 m tall and have multiple storeys.

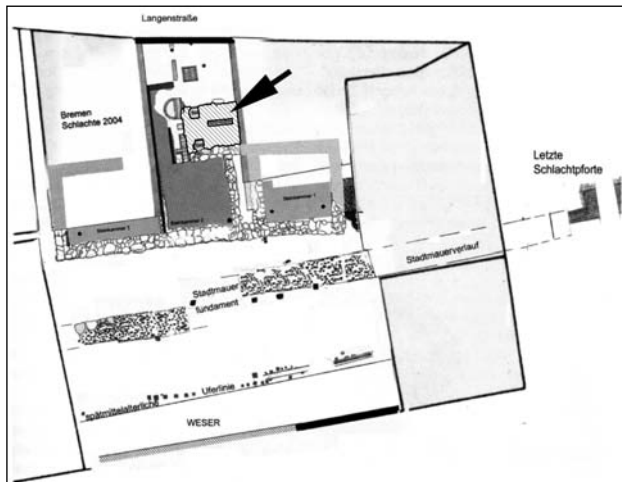


Fig. 1: Excavation plan of the site Bremen 214-Altstadt, Schlachte 36–38; the wooden building (feature 11) is marked by the arrow (from Bischof 2005, 75, Abb. 12).

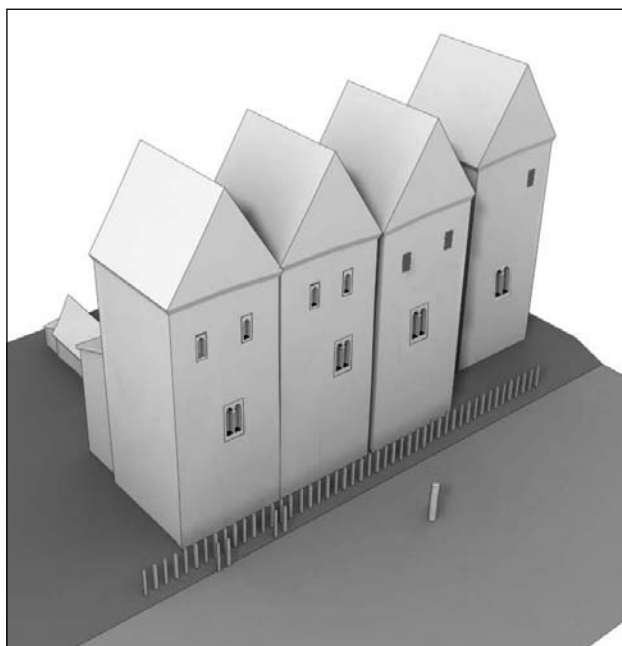


Fig. 2: Reconstruction of Steenkamern after site plan (illustration: Engram; from Bishop 2008, 165, Abb. 5).

The walls were approximately 1 m thick, the ones running along the river were even thicker than 1 m and were probably part of the medieval city defence



Fig. 3: Ledenhof in Osnabrück with medieval Steinwerk on the right (Photo: Mrs Myer; from: <https://de.wikipedia.org/wiki/Datei:Osnabr%C3%BCckLedenhof.jpg>).

system in the direction of the river.⁴ Steenkamern, also called “Steinwerke”, are regularly mentioned in historical documents as being storerooms and warehouses used by merchants. Owners names of these particular pieces of real estates at the Schlachte 36–38 are mentioned for the first time in sixteenth century documents.⁵

Attached to the stone houses on the opposite side, facing the inner city on the Langenstraße, were wooden buildings constructed at the same time, of which wooden posts and wattle and daub walls remained (fig. 1). The central one of these wooden buildings (feature 11) was destroyed by a fire around 1200.⁶ The Steenkamern were torn down around 1600 and were replaced by larger warehouses which continued in use until the late nineteenth century.⁷

The street name “Schlachte” appears for the first time in a document of 1250 as “slait”. The word derived from the Lower German term “slacht” meaning a row of posts hammered into the river banks providing a quay for ships.⁸ The physical remains of the first bank reinforcement could be documented during the excavation, archaeological and historical data thus give consistent evidence for the use of the location as quayside.

The construction date of the quay and the ware houses is of particular interest from a local historical point of view since it marks the shift from the former harbour location at the “Balge”, a small branch of the River Weser allowing disembarkation directly beneath the market place, to the Schlachte situated approximately 1 kilometre down the river on the banks of the main stream. The reason for this shift was probably twofold: The ships were becoming larger, had more gauge and were no longer able to reach the harbour

³ E.g. a quote from the Rinesberch-Chronik for the year 1200: “... baute man vor und in Bremen die großen Steinkammern wegen der Brandgefahr und auch, dass die reichen Leute sicher darin schlafen konnten.” [“... in and out of Bremen the large stone chambers were built because of the fire hazard and also, that the rich people could sleep safe therein.”].

⁴ Bischof 2004a, 2005, 67–72, 2008, 161–166, 2009a

⁵ Bischof 2005, 68, 2008, 163, personal communication 5. 1. 2016.

⁶ Bischof 2004b, 2005, 69–70, 2009a, 71.

⁷ Bischof 2005, 75–77, 2008, 174, 2009a, 71.

⁸ Bischof 2005, 68, 2008, 163, 2009a, 70, Schiller – Lübben 1878, 222–223, note also the English verb “to slay”.

by the market place. The Balge branch became shallower due to increasing siltation and waste disposal.⁹ The newly constructed buildings thus mark a major shift in the economic life of the city. The construction date predates the development of the Hanseatic League in the early thirteenth century and Bremen's membership from 1260 onwards. However, the city was already an important merchants town in the twelfth century.

Apart from the above-mentioned historical documents, archaeological finds from this site spanning a time period from the eleventh to the eighteenth century testify to the activities of merchants. Of special importance for the reconstruction of trade connections are fragments of a green-glazed pitcher from the late twelfth century ash layer of the burnt wooden house. The pitcher was manufactured in Rouen in Normandy, France. In addition there were finds of coins from Lund in Denmark (1259–1286), Osnabrück (1359–1395) and Minden (1460) as well as ceramics from England, Flanders and the Lower Rhine area, whetstones from Scandinavia and a fig seed, probably of Mediterranean origin. Other finds, like a golden finger ring with an emerald, also from the twelfth century layer and red and green glazed roof tiles provide evidence of the wealth of the inhabitants. A bronze stylus found in the same layer reflects the daily commercial activities of these merchants.¹⁰

The major part of the animal remains has not yet been analysed in detail, but a superficial overview revealed remains of horse, cattle, pig, poultry and fish.¹¹ Special bone finds include one complete and two fragmented bone combs and a piece of working waste from a rosary bead workshop.¹² The analysed sample presented here comprises finds from the ash layer of the burnt down wooden building (feature 11). These finds can be assigned to the short time span between the construction of the building and the catastrophic fire (1183 – c. 1200).

Material and methods

The analysed sample consisted of 493 bone remains plus an indeterminate number of fish scales from stratum 1 of the ash layer from the wooden building (feature 11). The finds were mainly hand-collected. Two additional soil samples of 0,5 litres were screened using a 1 mm mesh. The bone finds were analysed using the osteological reference collections of the Archäologisch-Zoologische Arbeitsgruppe Schleswig-Kiel (AZA) at the Schleswig-Holstein-

isches Landesmuseum Schloß Gottorf in Schleswig, the Vienna Institute for Archaeological Science Wien (VIAS) and the author's reference collection. Fish remains were identified by Dirk Heinrich and Norbert Frotzler assisted in the identification of the amphibian bone. For each find the zoological data of animal species, skeletal element, body side, part of bone, age at death status and sex were recorded where possible. The classification of age at death and bone part follows the system of the AZA.¹³ Osteometrical measurements were taken with callipers based on von den Driesch¹⁴ and Morales and Rosenlund.¹⁵ The anatomical nomenclature follows Nickel et al. and Lepiksaar.¹⁶ Each find was monitored for morphologically visible pathologies, anatomical anomalies and taphonomic traces such as weathering, traces of burning, bite and tool marks.

Results

Archaeozoology

Of the 493 bone finds, only 30,8% could be identified to the taxonomic level of species or family resulting in a NISP¹⁷ of 152. There were 336 finds (68,2%) that could only be assigned to their taxonomic class (mammals, birds and fish). Five very small fragments (1,0%) could not be assessed at all. The material consists mainly of fish remains (n = 381 = 77,3%),¹⁸ compared to 102 mammals (20,7%), four birds (0,8%) and one frog (0,2%). If the bone weight is taken as the reference value mammals comprise 98,7% of the total weight (1263,3 g), compared to only 0,7% for fish and 0,6% birds. The spectrum of the identified animal species and their relative abundance is shown in table 1. Pathologies and anomalies could not be observed on any of the specimens.

Class *Mammalia* – mammals

All 44 identifiable mammal bones were from domestic species. In order of their abundance they range from cattle (*Bos primigenius* f. *taurus*), pig (*Sus scrofa* f. *domestica*) and sheep or goat (*Ovis ammon* f. *aries* / *Capra aegagrus* f. *hircus*).

All different body regions are represented within the 26 cattle bones (table 2). Except for two distal phalanges, no bone was sufficiently complete to take measurements on so that size estimations could not be made for these animals. Five bones provided epiphyseal age data: a fused distal humerus, a fused proximal radius and an ulna articulating to it were from at least 12–15 month old individuals, a fused

⁹ Bischof 2005, 68; 2008, 162; 2009a, 70; 2009b; 2011

¹⁰ Bischof 2004a; 2004b; 2005, 70–74, Abb. 5, 6.1, 6.3, 8–11; 2008, 166–172, Abb. 6, 8.1, 8.3, 9; 2009a, 71.

¹¹ Bischof 2005, 67, 70, 72; 2008, 162.

¹² Bischof 2004a; 2004b; 2005, 67, 69, Abb. 3.1–4; 2008, 162.

¹³ Reichstein 1991, 22, Abb. 6; Zawotka – Reichstein 1977, 86.

¹⁴ Driesch 1976

¹⁵ Morales – Rosenlund 1979

¹⁶ Nickel et al. 1992; Lepiksaar 1994

¹⁷ Number of identified specimen.

¹⁸ The fish bones of this site have been mentioned cursorily in Galik – Küchelmann 2008, 219.

Table 1: Species composition of animal remains from the site Bremen – 214-Altstadt, Schlachte 36–38, ash layer from the wooden building (feature 11), excavation 2003–2004.

species		number of bones	relative no. %		MNI	bone weight g	relative weight %	
			relative to N	relative to NISP			relative to N	relative to NISP
Domestic mammals	Mammalia							
cattle	<i>Bos primigenius</i> f. taurus	26	5,3	17,1	1	657,9	52,1	66,2
sheep / goat	<i>Ovis / Capra</i>	3	0,6	2,0	1	38,5	3,0	3,9
pig	<i>Sus scrofa</i> f. domestica	15	3,0	9,9	1	285,2	22,6	28,7
total domestic mammals	Mammalia	44	8,9	28,9	3	981,6	77,7	98,8
unidentified mammals	Mammalia indet.	58	11,8	–	–	264,9	21,0	–
total mammals	Mammalia	102	20,7	28,9	3	1 246,5	98,7	98,8
birds	Aves							
domestic fowl	<i>Gallus gallus</i> f. gallus	1	0,2	0,7	1	4,3	0,3	0,4
geese	Anserinae indet.	1	0,2	0,7	1	0,6	0,05	0,06
ducks	Anatinae indet.	1	0,2	0,7	1	2,0	0,2	0,2
unidentified birds	Aves indet.	1	0,2	–	–	0,4	0,03	–
total birds	Aves	4	0,8	2,0	3	7,3	0,6	0,7
fish	Pisces							
herring	<i>Clupea harengus</i>	34	6,9	22,4	1	0,3	0,02	0,03
perch	<i>Perca fluviatilis</i>	1	0,2	0,7	1	0,0 ⁴	–	–
ruffe	<i>Gymnocephalus cernuus</i>	2	0,4	1,3	1	0,0 ⁴	–	–
eel	<i>Anguilla anguilla</i>	17	3,4	11,2	1	0,1	0,01	0,01
burbot	<i>Lota lota</i>	2	0,4	1,3	1	2,7	0,2	0,3
gadids	Gadidae	2	0,4	1,3	–	0,5	0,04	0,05
cyprinids	Cyprinidae	46	9,3	30,3	2 ¹	0,9	0,07	0,1
unidentified fish ³	Pisces indet.	277	56,2	–	–	4,6	0,4	–
total fish	Pisces	381	77,3	68,4	7	9,1	0,7	0,5
amphibians	Amphibia							
frog	<i>Rana spec.</i>	1	0,2	0,7	1	0,1	0,01	0,01
total amphibians	Amphibia	1	0,2	0,7	1	0,1	0,01	0,01
unidentified		5	1,0	–	–	0,3	0,02	–
number of identified specimen (NISP) ²		152	30,8	100,0	14	993,1	78,6	100,0
total number of bones (N)		493	100,0		14	1 263,3	100,0	

1: Minimum number of individuals (MNI) of 2 Cyprinidae are evidenced by 2 right praeoperculare and 2 right articulare

2: without Mammalia indet., Aves indet., Pisces indet.

3: without fish scales

4: less than 0,05 g

Table 2: Cattle (*Bos primigenius* f. taurus), skeletal element representation, site Bremen 214-Altstadt, Schlachte 36–38, ash layer wooden building (feature 11).

Skeletal element	Number of bones
Cranium	1
Hyoid	1
Dens	1
Atlas	1
Vertebrae	3
Costae	8
Scapula	1
Humerus	2
Radius	1
Ulna	1
Femur	1
Tibia	1
Astragalus	1
Calcaneus	1
Phalanx III.	2
Total	26

tibia came from an individual older than 3,5 years and a completely fused lumbar vertebra came from an adult individual older than 4 years.

The 15 pig bones come from all body regions as well (table 3). Apart from a neonate humerus all the pig bones were fragmented, thus size estimations were not possible. Four bones yielded age data: two bones – a humerus and an atlas – came from neonate individuals, one mandible came from an individual which was killed around 10–12 months, while an unfused distal metapodium came from an individual of less than two years. The shape of a canine alveolar cave indicates the presence of at least one boar in this faunal assemblage.

Only three bones could be assigned to sheep or goat, including one fused proximal radius from an individual older than 3 months.

Table 3: Pig (*Sus scrofa* f. domestica), skeletal element representation, site Bremen 214-Altstadt, Schlachte 36–38, ash layer wooden building (feature 11).

Skeletal element	Number of bones
Cranium	4
Mandibula	3
Atlas	1
Vertebrae	1
Scapula	1
Humerus	1
Ulna	1
Tibia	2
Metapodium	1
Total	15

Class Aves – birds

The analysed material contained four bird bone fragments: one sternum of an adult domestic fowl (*Gallus gallus* f. *gallus*), one radius from a juvenile goose (sub-family Anserinae), one humerus from an adult duck (sub-family Anatinae) and one unidentifiable juvenile radius diaphysis.

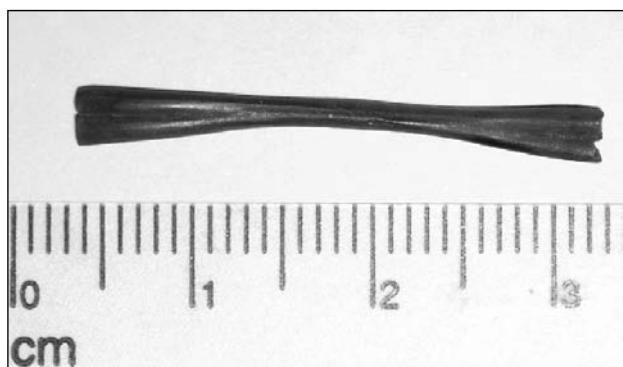


Fig. 4: Tibiofibula from a green frog (*Rana* spec.).

Class Amphibia – amphibians

One tibiofibula of a true frog (genus *Rana*; fig. 4) demonstrates the presence of tail-less amphibians (order Anura) within the archaeological context, a fact that is not surprising given the proximity of the site to the River Weser. The bone belongs to a green frog of the so-called water frog group consisting of the marsh frog (*Rana ridibunda*), the pool frog (*Rana lessonae*) and the common water frog (*Rana esculenta*), the latter being a fertile hybrid of the former two species.

These species are so closely related that a morphological identification to species level would not be reliable. All three species occur in the region of Bremen, however, the total length of the bone of 29 mm suggests this was a relatively large individual arguing against this bone coming from *Rana lessonae*, the smallest of the three species. Green frogs were regu-

larly exploited for their legs in former times, not only in France where they are still a delicacy with an association with social elites.¹⁹ The consumption of frog legs seems plausible for instance in a wealthy household in seventeenth century Hörter, located approximately 200 kilometres upstream of the Weser, where an unusually high amount of hind leg bones from green frogs was found.²⁰ A similar overrepresentation of hind leg remains of frogs was found at the twelfth – thirteenth century site of Paderborn-Kolpinghaus.²¹ However, using a single leg bone as evidence for frog leg consumption would be an unsound over-interpretation.



Fig. 5: Fish remains from the site Bremen 214-Altstadt, Schlachte 36–38, ash layer from the wooden building (feature 11).

Class Pisces – fish

Fish remains comprise the major part of the bones (fig. 5). Altogether 104 of the 381 fish bones could be identified, the remaining 277 bones were mainly ribs and heavily fragmented pieces. Most important are species of the carp family (Cyprinidae) comprising 46 specimens, mainly vertebrae ($n = 17$) and ribs ($n = 14$) as well as cranial and shoulder girdle elements.

Cyprinidae are fresh water species inhabiting lacustrine and fluvial habitats although several species also tolerate brackish waters. Numerous species of the carp family live in the region of Bremen, such as common bream (*Abramis brama*), roach (*Rutilus rutilus*), common rudd (*Scardinius erythrophthalmus*) or tench (*Tinca tinca*), to name just the most common species. Unfortunately, the species are anatomically so closely related that species identification is possible only with a few cranial bones.²² None of the bones in the sample permitted identification to species level. One can assume that these cyprinids were caught in water bodies around Bremen. Cyprinidae are economically marginal today, but that this was not necessarily the case in former times is evident from the large numbers of cyprinid remains at numerous

¹⁹ See e. g. Krünitz 1778–1854, 15, 168–178; Rumpolt 1581, 137.

²⁰ Heinrich 1995, 394–396.

²¹ Küchelmann in press.

²² Lepiksaar – Heinrich 1977, 56.

archaeological sites, e. g. Haithabu,²³ Bremen – market place,²⁴ Einbeck and Hörter.²⁵

Numerically the second most important species is the herring (*Clupea harengus*) with 34 specimens, mainly represented by vertebrae (n = 27).²⁶ The herring is a marine species living in large schools which can be caught in great numbers relatively easy. Further, herring can be preserved in various ways (see below) making this fish species an economically very important food fish and a major protein source for large parts of the European population in medieval and Early Modern times. Herrings live in shallow coastal waters and do invade the estuaries of rivers but they do not reach Bremen situated ca. 60 kilometres upstream.²⁷ From this it follows that the herrings cannot be caught in local riverine habitats and must have reached Bremen as a trade item from marine catches instead – either from regional southern North Sea fishing or as an international long-distance trade good. Although comprising a small number of bones, the herring remains from this precisely dateable feature show that herring was a trade item in late twelfth century Bremen.

The first historical evidence for herring fishing seems to be in an AD 709 account from an English chronicle. From the eleventh century onwards it is historically documented in Norway and from the twelfth century in the Netherlands²⁸ and the Baltic Sea.²⁹ Substantial amounts of herring bones from archaeozoological assemblages from Haithabu (9th–11th century), Menzlin (9th–10th century), Roskilde (10th–11th century) and Simrishamm (11th–13th century) point towards a slightly earlier development.³⁰ The earliest historical evidence for herring fishery in the German North Sea region I have so far found is 1425 around Helgoland and 1552 at Emden.³¹ Before the invention of deep freezing methods and uninterrupted cold chains during food transport, the preservation of fish meant to be consumed over long periods of time posed a severe obstacle for the fish trade. Some fish species like cod can be air-dried to make stockfish. They are then usable for up to several years. Fish species with high levels of fatty tissue such as herring are not suitable, however, for this mode of preservation. The main preservation method for herring in medieval times was packing the decapitated and gutted herrings in wooden barrels

with alternating layers of fish and salt. Trade in salted herring becomes archaeologically visible from late early medieval times onwards via standardized size classes and inverse patterns of skeletal element representations in producer and consumer sites³² for instance in Eketorp-III (10th–13th century) or Menzlin (9th–10th century).³³

An alternative preservation method should be mentioned here that results in a different pattern in the archaeozoological record: The Dutch term “kaken” describes a method in which parts of the inner organs (gills, heart, stomach, liver, parts of the intestines) are removed with a throat cut behind the gills. The herrings are then packed as complete fish with a salt solution in barrels and left to ripen as the enzymes from the remaining intestines result in self fermentation. Remains of herrings processed and transported in this way will, thus, contain cranial as well as postcranial elements, but the elements of the shoulder girdle, particularly the cleithra, display regular patterns of destruction caused by the knives. The resulting product, “Maatjesharing” in Dutch or “Matjeshering” in German is frequently claimed to be a Dutch invention from the fourteenth century, but finds from Selsø show that the method was known already in twelfth century Denmark.³⁴

In the German North Sea area, herring seems to have been first and foremost a trade commodity, or at least the available historical evidence predates the evidence for commercial herring fishing. Historical documents demonstrate that there was a herring trade in twelfth century Hamburg for instance.³⁵ Apparently, such documents do not exist for the same period in Bremen. Thus, the physical herring remains from the Schlachte 36–38 seem to be the first evidence at present for herring trade in the twelfth century in Bremen. Additionally, three single herring bones (1 maxillare, 1 articulare, 1 vertebra) have been found at the twelfth - thirteenth century site Langenstraße / Fangturm (site Bremen 209-Altstadt), located less than 100 m north of the site Schlachte 36–38.³⁶ The question if either one of the preservation methods was applied or if the herrings were from fresh North Sea catches cannot be answered morphologically from these few bones, but future biomolecular studies may provide clues in this regard. The third species that is relatively abundant in this

²³ Lepiksaar – Heinrich 1977, 56–74.

²⁴ Galik – Küchelmann 2008, 217–219; Küchelmann 2014, 29.

²⁵ Heinrich 1995, 392.

²⁶ The remaining skeletal elements are 1 hyomandibulare, 2 ceratohyale, 1 urohyale, 1 operculum, 1 cleithrum.

²⁷ Muus – Nielsen 1999, 87–90; Radtke 1977

²⁸ Schubert 1975, 192; unfortunately Schubert does not quote particular historic sources.

²⁹ Benecke 1982, 283; Enghoff 1996; Lampen 2000a, 149–171.

³⁰ Benecke 1982, 286–287; Enghoff 1996; Lampen 2000a, 161–162; Lepiksaar – Heinrich 1977, 24–36, 113–114.

³¹ Schubert 1975, 192; without precise documents stated.

³² Producer sites are characterized by over-representation of cranial elements as a result of mass decapitation and an under-representation of post cranial elements traded off-site, while consumer sites show the inverse pattern (Benecke 1982).

³³ Benecke 1982; Lampen 2000a, 159–163, 188–202.

³⁴ Enghoff 1996; Lampen 2000a, 162–163; Lauwerier – Laarman 2008

³⁵ Lampen 2000a, 188; Schubert 1975, 192. Other early historic sources documenting herring trade are available for Lübeck (1201, 1224), Köln (before 1232), Wismar (1250), Hildesheim (1278) and Rostock (1278–1284) (Lampen 2000a, 188–194; 2000b, 294, 297, 302).

³⁶ Küchelmann 2004, 2–4; Galik – Küchelmann 2008, 221, 225, Tab. 3.

assemblage is the eel (*Anguilla anguilla*) represented by 16 vertebrae and one frontale. The remaining three fish species are represented by single finds only. The burbot (*Lota lota*) is evidenced by one articulare and one ceratohyale. The burbot is the only fresh water species of the family Gadidae. It is a carnivorous fish living in middle and northern European rivers and lakes with clear water and gravel bottoms.³⁷ Burbot was common in the Weser in historical times,³⁸ although today it is an endangered species in Germany.³⁹ Historical cookbooks give the impression that burbot was a favoured food fish in former times.⁴⁰ An operculum of a burbot has also been found in the already mentioned nearby site Langenstraße / Fangturm.⁴¹ Two fragmented vertebrae of Gadidae could not be assigned to a species.

Finally, the family Percidae is evidenced by three bone specimens representing two species: One typical comb-shaped scale stems from a European perch (*Perca fluviatilis*), one praeoperculare and one finray of the anal fin derive from the Eurasian ruffe (*Gymnocephalus cernuus*). Perches are carnivorous fish living in fresh and brackish waters. Both species are common in the Weser. While the European perch is a favoured and expensive food fish today, the smaller ruffe characterized by many small bones is less favoured. As in the case of the Cyprinidae, archaeological finds from the Middle Ages suggest that ruffe was more important as a food fish in the Middle Ages and Early Modern times. Ruffes are reported to have been major ingredients in fish soups.⁴²

Taphonomy

The general preservation condition of the sample is good. The fragmentation index is with 96,6% very high. Only four mammal bones and 12 fish bones were complete. A total of 22 bones display tool marks reflecting the butchery process. Apart from

two cut marks the butchery marks were all chop marks found on 20 cattle and two pig bones. Four cattle bones (3 ribs, 1 thoracic vertebra) are charred and one cattle calcaneus and four unidentifiable mammal bone fragments are calcined. Eight mammal bones bear traces of carnivore bite marks.

Summary

Although this is a small sample, the species spectrum clearly reflects the food species exploited within a medieval town. These include domestic mammals (cattle, pig and sheep / goat), domestic birds (fowl, goose and duck) and fish. Wild animals are rare in comparable contexts and in the analysed sample they are completely absent. The mammal bones display traces of tool marks and exposure to fire connected to slaughtering and consumption processes.

The fish remains comprise mainly limnic species which could have been caught in the vicinity of the town. The only exception is the herring, a marine species for which trade in the preserved form of salted herring is clear at least since the twelfth century. The finds from a chronologically well-defined and short-term context from the final decades of the twelfth century are strong evidence that Bremen merchants were already involved in the herring trade in this early period.

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³⁷ Meßtorff 1975, 435; Muus – Dahlström 1974, 154–155.

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⁴⁰ See e. g. Davidis – Holle 1892, 291.

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Hogyan lett egy nyomdászból miniszter és korának meghatározó tudósa? Matolcsi János (1923–1983) nyomdász, politikus, földművelésügyi miniszter, a régészeti állattan nemzetközileg elismert kutatója és a Magyar Mezőgazdasági Múzeum főigazgatója, majd tudományos munkatársa volt. A magyar háziállat-történeti és archaeozoológiai kutatásokat meghatározó tudós előtt tisztelgünk ezzel a kötettel, melyben háziállataink, történelmi állatfajtáink és a régészeti állattan legújabb hazai és nemzetközi eredményei mellett állattenyésztés- és állatgyógyászat-történeti kutatásokat is ismertetünk.

How did a printer become a minister and one of the most outstanding scientists of his era? János Matolcsi (1923–1983) was a printer, politician, minister of agriculture, a world-renowned researcher of archaeozoology, director-general and later curator of the Museum of Hungarian Agriculture. We honour the memory of the academic who played a definitive role in Hungarian animal domestication history and archaeozoology research with this volume, which contains the latest national and international research results concerning traditional Hungarian domestic breeds, archaeozoology and veterinary science.

