ARCHAEOZOOLOGICAL EVIDENCE FROM THE PADISE MONASTERY

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INTRODUCTION

During the excavations in 2010 and 2011 in Padise monastery (see Kadakas, this volume) it was also possible to collect archaeozoological material. Bone material from monasteries has not been analyzed in Estonia before. Therefore the bone material from Padise, especially from the monastic period deserves special attention.

Preliminary results of osteological studies are presented by L. Maldre (mammals), T. Tomek (birds), and L. Lõugas (fish). Find context and period associations are presented by V. Kadakas, head of the excavations.

MAMMALS

The archaeozoological material collected from the area of Padise monastery comes from three different periods: most of the mammal and bird bones were from the 14th and 15th century layers and these are connected with the monastic period. Much less material came from the Livonian War (1558–1583) period and very little was gathered from the deposits of the private manor of the 17th and 18th centuries. During all the periods domestic animals dominated – very few game bones were found. Horse bones were discovered only from the Livonian War period, cat bones from the medieval layer. Among the game, hare was represented in all periods, elk in medieval, squirrel and rat in the Livonian War period material (Fig. 1). No big differences in the relative percentage between different species were noticed in all periods: 50–60% of the specified material belonged to cattle, sheep made up 1/4–1/3 and the percentage of pigs was between 16–20% (Fig. 2). As the Cistercians were known for their special dietary restrictions, corresponding results were expected. Although originally the Cistercians were not allowed to eat meat, the restriction was gradually softened – first, the guests of the monastery were offered meat and by the 14th century meat could be served in the infirmary and also at the abbot's table. In 1439 it was ruled that each monk could eat meat once or twice a week (Burton & Kerr 2011, 113).

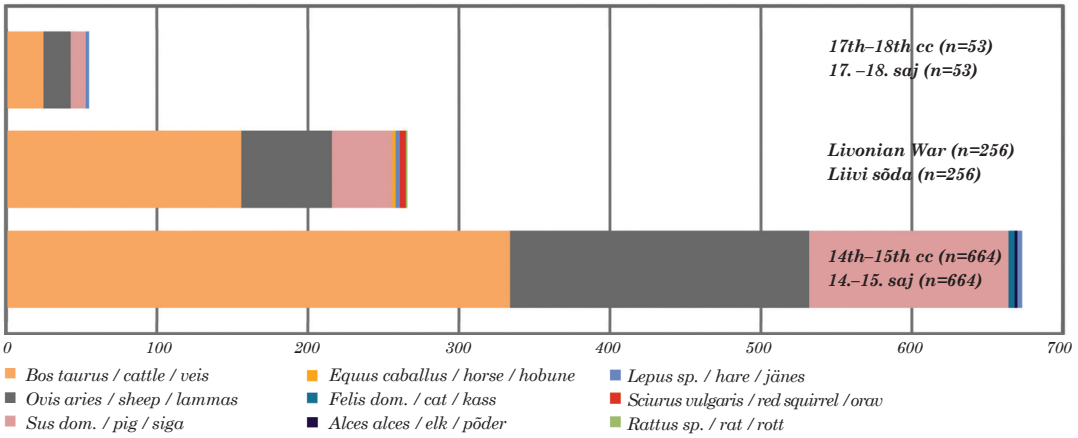

Fig. 1. Number of mammal bones and species composition by periods.
Jn 1. Imetajaluude arv ja liigiline koostis perioodide kaupa.
Drawing / Joonis: Liina Maldre

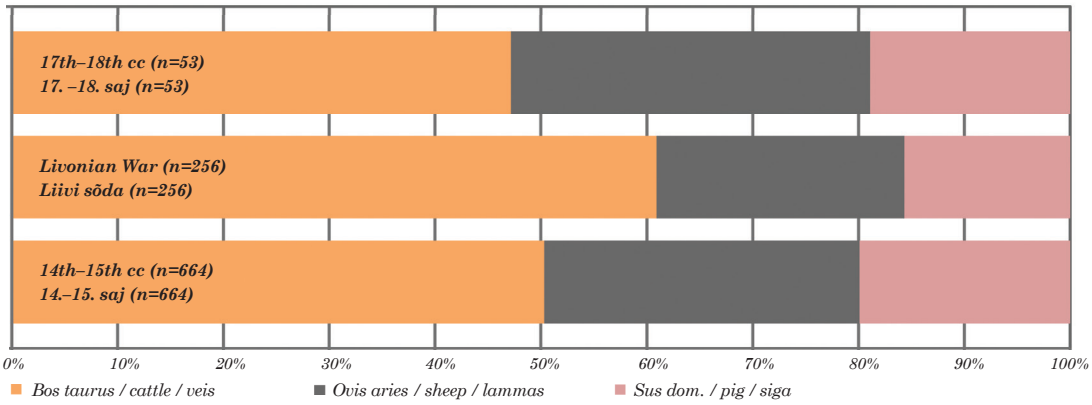

Fig. 2. Percentage of domestic animal bones by periods.
Jn 2. Koduloomaliikide luude protsentuaalne jagunemine perioodide kaupa.
Drawing / Joonis: Liina Maldre

Respectively, as the Padise abbey had been established only in the beginning of the 14th century, the similar percentage of species in different periods is not surprising.

The anatomical composition of the material indicates that animals were butchered in the monastic estate. More or less all body areas are represented, only the horn cores of cattle and sheep are missing, which have obviously been dumped somewhere else (Fig. 3). Underrepresented are most parts of cranium and mandibles as well. There are relatively large numbers of vertebrae and rib fragments, also shoulder and pelvis area fragments. As these are typically the richest meatbearing bones, it indicates consumption of quality meat. The bones have been intensively fragmented, very many showing marks of both hacking and cutting. Chop marks occur mostly on the diaphysis near the joints, on scapula, hipbones and vertebrae, also the ribs have been cut into pieces of suitable size.

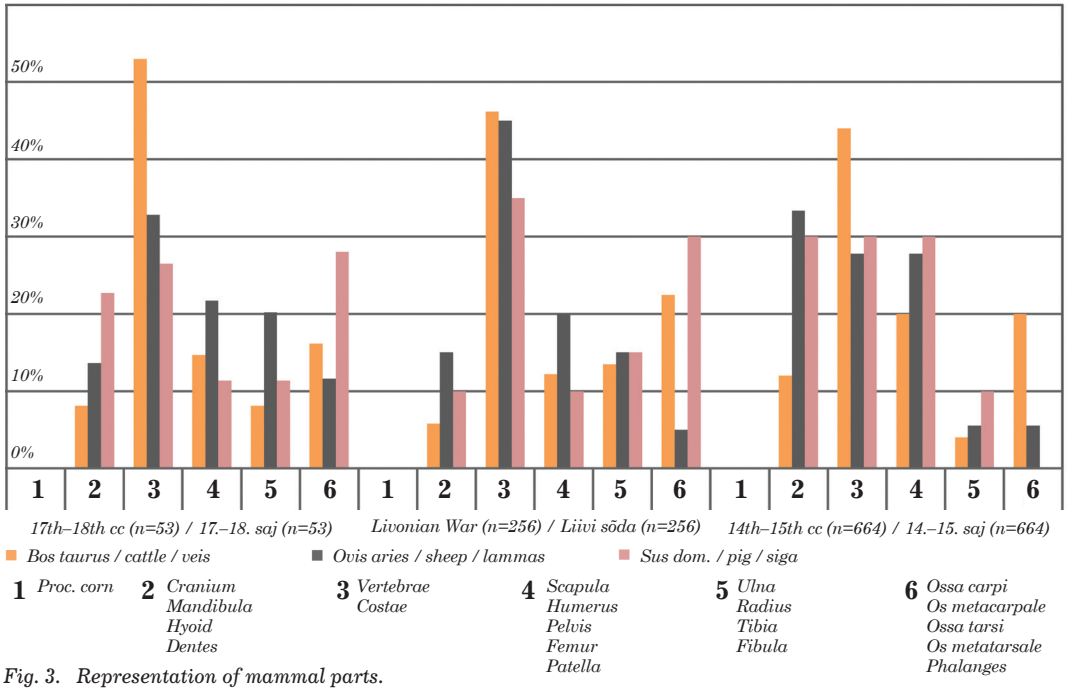

Fig. 3. Representation of mammal parts.
Jn 3. Imetajate skeletielementide esindatus.
Drawing / Joonis: Liina Maldre

Therefore the marks represent the primary disarticulation of the carcass, but also the secondary breakage of bones during food preparation. Knife marks are often on the insides of ribs, on the attaching points of the diaphysis' ligaments and close to the articular capsule and have been made while removing meat from bones. It is notable from the cranium fragments of cattle that there are relatively many fragments of incisive bones, which can indicate usage of lips for food, and also many hyoid bone fragments, which also represent areas of plentiful meat. Cistercian monks were accustomed to eat vegetable stew – such fragmentation of bones indicates that they also rather preferred to stew than roast the meat (Ryder 1959, 2). There were very few fragments of metacarpal and metatarsal bones. On the pieces connected to the monastic period no marks of cutting and hacking could be noticed, one metacarpal bone had been preserved intact, the rest as fragments, but it remains unclear if these had been broken deliberately. In the material of the Livonian War period there were some fragments which could indicate usage of the distal ends of the limbs for food. There were rather many phalanges, without any crushing, cutting or skinning (except one phalanx of cattle, which had been hacked with an axe). As metapodial bones are suitable for bone working, it is possible that most of them have been taken for the craftsmen. But in this case it is difficult to explain the abundance of phalanges. Therefore the material of both the monastic and Livonian War periods is quite similar in terms of anatomic composition. At least during preliminary study no important differences regarding butchery of the bones could be noticed. It seems that also the soldiers were not offered roasted meat, but they had to be satisfied with stews and soups. Unfortunately

most of the Livonian War period bones come from isolated contexts and therefore the results must be considered preliminary. As there were too few private manor period bones, their study results could be random and therefore are not discussed here.

There was rather little material for specifying the age at slaughter. Presented is data based on epiphyseal fusion. Most of the consumed beef seems to come from adult animals, both in monastic and Livonian War periods. There were too few private manor period bones to make any conclusions of the age at slaughter. Bones with pathological changes refer to the usage of older cattle, especially among the monastic period bones. The sheep bones from the monastic period indicate that about half of sheep meat could have been from juvenile animals butchered in their first autumn. There were few fragments among the later sheep bones enabling to determine the age at slaughter, although there were also remains of both juvenile and older animals. It was not possible to specify according to epiphyseal fusion if piglet meat had been consumed in any period, although it can be supposed on the basis of bone structure and size that also piglet and juvenile pig meat was eaten. Up to 80% of pigs have been butchered before their second year. No bones of over 3.5 year old pigs were found at all. There are yet two bones among the monastic period material testifying that those animals had been butchered approximately at the age of 3.5 years.

BIRDS

Bird bones were discovered from all periods and these made up 11–13% of the determined bone material of bird vs. mammal fauna (Fig. 4). The distribution of species in different periods is depicted on figure 5. The total number of bones is 173 (whole and fragmented bones), 34 of which are indeterminable fragments, and only 139 were possible to identify up to species, genus or family level. Identifiable bones represent 12 taxa (Table 1). Because of the fragmentation of geese bones and the similarity of remains from three species of *Anser genus*, i.e. bean goose (*A. fabalis*), greater white-fronted goose (*A. albifrons*), greylag goose (*A. anser*), it was impossible to identify the species of geese.

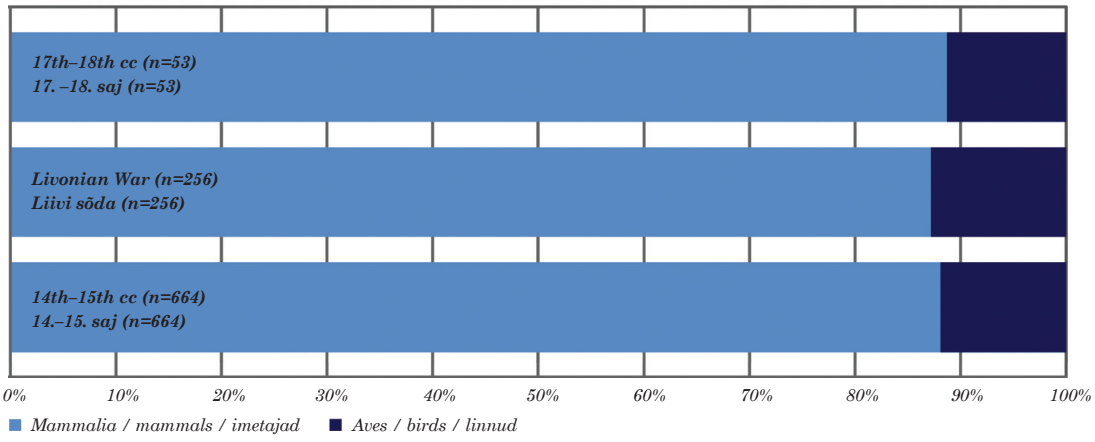

Fig. 4. Representation of skeletal parts.
Jn 4. Skeletielementide esindatus.
Drawing / Joonis: Liina Maldre

Table 1. Bird bones. List of species. NISP = number of identified specimen; MNI = minimum number of individuals.
Tabel 1. Linnuluud. Liikide nimekiri. NISP = määratud eksemplaride hulk; MNI = indiviidide miinimumarv.
Compiled by / Koostanud: Teresa Tomek

Taxon / Liik			***NISP***	***MNI***	***Remarks / Märkused***
Cygnus cygnus	whooper swan	laululuik	1	1	
Anser sp.	goose	hani	17	3	
Branta leucopsis	bernacle goose	valgepõsk-lagle	1+1cf	1	
Anas platyrhynchos	mallard	sinikael-part	1	1	Probable male
Clangula hyemalis	longed-tailed duck	aul	1+1cf	1	
Anatidae (small size)	anatids – small size	väike partlane	3	1	Size of *Mergellus albellus* (smew, väikekoskel)
Tetrao tetrix	black grouse	teder	4	2	
Tetrastes bonasia	hazel grouse	laanepüü	1	1	
Coturnix coturnix	common quail	põldvutt	1	1	
Gallus gallus	hen	kana	99+3cf	9	
Tringa totanus	redshank	punajalg-tilder	1	1	
Columba livia domestica	domestic pigeon	kodutuvi	1+1cf	1	
Corvus monedula	jackdaw	hakk	1	1	Juvenile, size of *Corvus monedula*
Corvidae indet. (small size)	corvids – small size	väike vareslane	1	1	
Aves indet.	unidentified birds	linnud – määramata	34		
Total / Kokku			***173***	***25***	

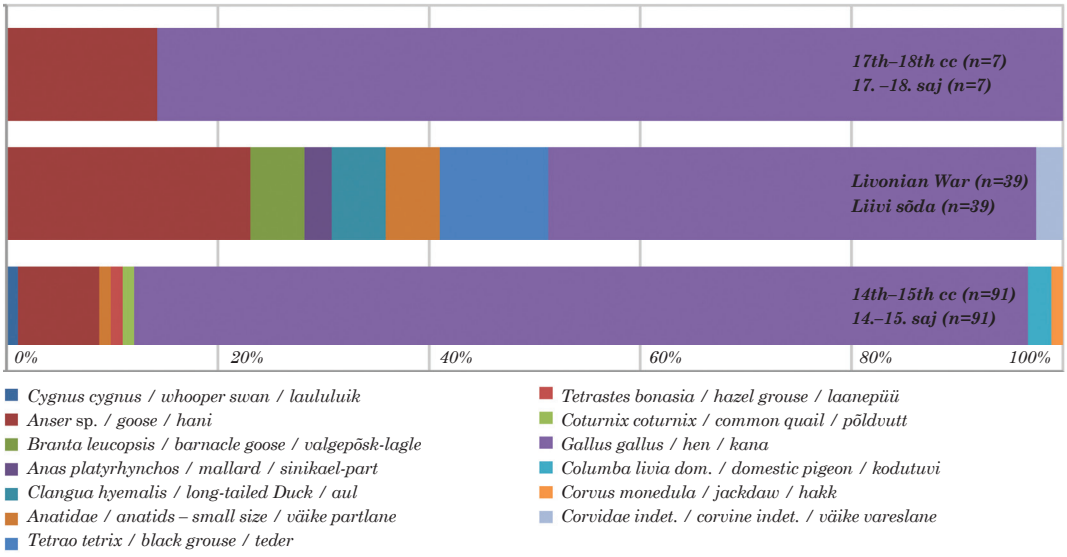

Fig. 5. Percentage of bird bones of different species by periods.
Jn 5. Linnuliikide luude osatähtsus perioodide kaupa.
Drawing / Joonis: Liina Maldre

96% of the identifiable bones represented only 2 orders: *Galliformes* and *Anseriformes* (including 89% of bones which represented only two taxa: hen – 76% and goose – 13%). The latter were most probably domesticated birds, bred in the monastery area or its nearest vicinity. The notion of breeding of hen in the area is supported by a relatively large number of bones originating from young or very young birds (25 bones) and from females which were laying eggs (two femurs with medullary bone structure).

Two further taxa, domestic pigeon (this species was identified as domestic form of *Columba livia* since wild form does not distribute as far north as Estonia) and jackdaw, also probably lived in the vicinity of the monastery as synantropic species. These species nest in tree hollows as well as in recesses and fissures within walls. The pigeon might have even been a breed species. Nesting in the monastery itself is probable because of the presence of a few incompletely ossified bones which originated from young birds.

One bone of mallard was found. It could have been a domesticated duck, bred by inhabitants of the monastery or surrounding populations. But it is more probable that this bone represents a wild game bird, because if ducks had been bred in the monastery, there would have been a bigger number of their remains.

The rest of the bird remains represent wild species: traditionally hunted (black grouse, hazel grouse, common quail, barnacle goose) and possibly hunted (whooper swan, long-tailed duck and redshank).

Wild birds came from such environments as mixed forest (black grouse, hazel grouse), bodies of water (whooper swan, long-tailed duck) and wet meadows (barnacle goose, redshank and common quail). One species (common quail) inhabits also open terrains such as drier meadows and agricultural fields. Nowadays, all these environments are present in the vicinity of Padise. Most of the bones of game birds came from the Livonian War period. Bird bones from the monastic period came primely from the breed species (hen), whereas the wild-living species (common quail, hazel grouse, and anatids of small size) are represented only by single bones.

The damages to bones include cutting off the carpometacarpus, tibiotarsus, tarsometatarsus, sternum of hen, vertebra of goose, nicks on tibiotarsus of black grouse, traces of burning/scorching: tibiotarsus and femur of hen. These indicate that breeding species as

Table 2. Bird bones. Distribution of skeletal elements.
Tabel 2. Linnuluud. Skeleti osade jaotus.
Compiled by / Koostanud: Teresa Tomek

Bone / Luu	***Total / Kokku***	***Frequently represented species / enamesindatud liigid***	
		Gallus gallus / hen / kana	***Anser sp. / goose / hani***
Cranium	1		
Mandibula	2	2	
Vertebra	3	4	1
Sternum	8	6	1
Costa	10		2
Coracoid	9	7	1
Scapula	9	4	1
Furcula	1		
Humerus	23	18	
Ulna	11	6	2
Radius	12	5	1
Carpometacarpus	4	3	1
Pelvis	7	4	
Femur	10	10	
Tibiotarsus	22	14	3
Fibula	2	2	
Tarsometatarsus	18	14	2
Phalanx digiti pedis	10		2
Fragment *indet.*	8		
Total / Kokku	***173***	***99***	***17***

well as hunted ones were used as a food. This conclusion is also supported by the fact that particular parts of skeletons have not been represented equally. The most numerous bones are from the 'meaty' parts of birds, i.e. proximal parts of wing (humerus, ulna, radius) and leg (tibiotarsus, femur) (Table 2).

An unusual find was a cock spur's tip, which was cut off (probe 36.1, 14th–15th cc). It is not really probable that such cut was done for consumption purposes, because if so, the whole spur should have probably been cut off. Thus, this cut could have been made with some purpose, perhaps for 'disarming' of a too fierce male.

FISH

Fish bones were gathered from the soil during the excavations as well as from the fraction of watersieved soil (1 mm mesh). Thus many very small bones of fish were also collected. Such collection contains a lot of pinnae and rib fragments, but more valuable information is obtained from the vertebrae and skull bones, which are easier to identify (Figs 6 and 7).

The collected fish bones can be divided into three different sets, according to different periods (Table 3). Most variable is the material from a deposit with well preserved organic material next to the pedestrians' gate in the northern courtyard, from approximately the time of the Livonian War, the second half of the 16th century. There the highest number of fish species was recorded. 1494 bones and bone fragments are divided as follows: cod (60 specimen), burbot (16), eel (25), pike (53), flounder (174), turbot (15), perch (193), pikeperch (1), indeterminate cyprinids (195), bream (4), roach (5), vimba (5), dace (3), ide (22), European whitefish (20), vendace (65), trout (1) and Baltic herring (637).

Also, many fish bones were recovered from the medieval occupation layers, from *ca.* 14th–15th centuries, of the northern courtyard. As only 3–5 litres of soil were taken there, the number of bones as well as identified species was lower: cod (15), burbot (1), eel (3), pike (4), flounder (13),

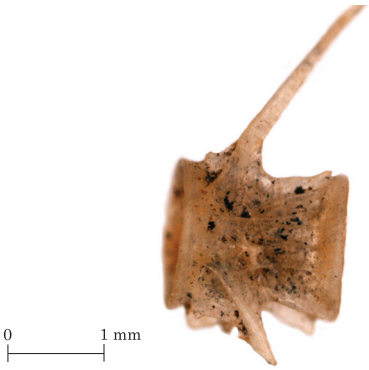

Fig. 6. Less than 1 mm vertebra of vendace, Coregonus albula *from a specimen of* ca. *8 cm.*
Jn 6. Pisut alla 1 mm suurune rääbise selgroolüli (võimalik isendi suurus u 8 cm).
Photo / Foto: Lembi Lõugas

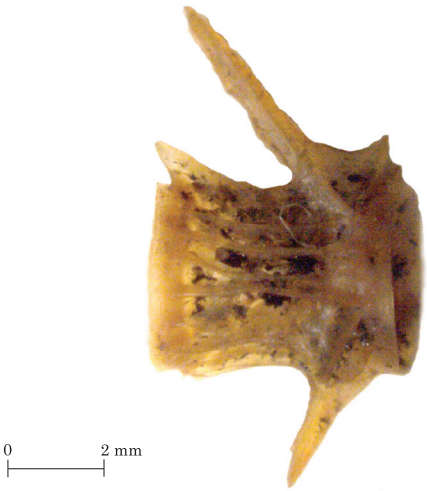

Fig. 7. Over 2 mm vertebra of vendace, Coregonus albula *from a specimen of* ca. *13 cm.*
Jn 7. Üle 2 mm rääbise selgroolüli (võimalik isendi suurus u 13 cm).
Photo / Foto: Lembi Lõugas

Table 3. Number of identified bone specimens by find context and fish species.
Tabel 3. Identifitseeritud luud leiukontekstide ja kalaliikide kaupa.
Compiled by / Koostanud: Lembi Lõugas

Taxon / Liik			***14th–15th cc / 14.–15. saj***	***Second half of the 16th c. / 16. saj teine pool***	***ca. 17th–18th cc / u 17.–18. saj***
Clupea harengus membras	baltic herring	räim	149	637	62
Gadus morhua	cod	tursk	15	60	2
Pleuronectes flesus	flounder	lest	13	174	3
Scophthalmus maximus	turbot	kammeljas		15	
Anguilla anguilla	eel	angerjas	3	25	
Salmo trutta	trout	(meri)forell		1	
Coregonus lavaretus	European whitefish	siig	2	20	
Coregonus albula	vendace	rääbis		65	
Lota lota	burbot	luts	1	16	
Esox lucius	pike	haug	4	53	1
Perca fluviatilis	perch	ahven	13	193	7
Lucioperca lucioperca	pikeperch	koha		1	
Cyprinidae	cyprinids indet.	karplased	19	195	4
Abramis brama	bream	latikas	1	4	
Vimba vimba	vimba	vimb		5	1
Rutilus rutilus	roach	särg		5	
Leuciscus leuciscus	dace	teib	2	3	
Leuciscus idus	ide	säinas		22	
Total / Kokku			***224***	***1494***	***80***

perch (13), indeterminate cyprinids (19), bream (1), dace (2), European whitefish (2), Baltic herring (149) and a few scales of perch and cyprinids. At the same time, samples taken outside of the monastic quadrangle were practically empty of fish bones. Additionally, two ventral shield fragments of the sturgeon were gathered from the inner courtyard.

Inside the monastic quadrangle two pits offered fish bones from an occupation layer on the floors of two basement rooms of the southern range, probably from *ca.* the 17th–18th centuries. The Baltic herring was represented by 62 fragments, but also perch (7), flounder (3), cod (2), bream (1), pike (1) and cyprinids (4) occurred. In addition a large amount of scales, mainly from the cyprinids, but also from perch were collected.

The identified fish remains allow to make some conclusions:
1) The taxonomy of fish species does not suggest any fish farming by monastery habitants, i.e. typical farm species like the carp and gibel carp (or crucian carp) are absent.
2) An interesting find is the vendace in the material: this fish is imported from Finland or from the basin of Lake Peipsi, eastern Estonia.
3) The absence of sprat (*Sprattus sprattus*) indicates the limitations of fishing technology. As the sprat inhabits the deeper parts of the sea, capture of this fish needs a more sophisticated trawling technique.
4) Most of the material is characterised by the occurrence of very small fish. This is especially noticeable in the set from the second half of the 16th century. It is probable that undersized fish were disposed off. For instance, the Baltic herring was about 10–12 cm long (i.e. the size of sprat), some pike were only 25–35 cm long, flounders 10–15 cm and the perch about 10–12 cm.

5) The absence of salmon in the deposits of all periods, especially the monastic one, is surprising. According to written sources salmon is known to have been brought to the monastery at least from the rivers of southern Finland where the monastery had fishing rights during a certain period (Salminen 2011). Perhaps this absence was due to incidental properties and short duration of deposition of the few spots of the medieval occupation layer where the material was gathered.

CONCLUSIONS

Considering the intense fragmentation of the osteological material, the amount of mammal bones is still too small to make thorough conclusions on stock-raising in the monastery. For the same reasons it is not yet possible to determine why the material from different periods is so similar regarding its anatomic and species composition and fragmentation. The article outlines some more important trends which can be preliminarily drawn based on recent osteological material, but it also offers a basis for studies in several directions, including traditions of raising domestic animals, farming and fishing, as well as nutrition habits, which all had their special characteristics in Cistercian monasteries.

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PADISE KLOOSTRIST KOGUTUD ARHEOZOOLOOGILINE MATERJAL

Lembi Lõugas, Liina Maldre, Teresa Tomek ja Villu Kadakas

2010. ja 2011. a arheoloogilistel kaevamistel Padise kloostris (vt Kadakas, käesolev kogumik) koguti ka arheozooloogilist materjali. Materjali teeb eelkõige huvitavaks see, et Eestis ei ole varem olnud võimalust kloostritest pärit luuainest uurida.

Imetajate luid koguti kõige enam kloostriaegsetest (14.–15. saj) kihtidest, mõnevõrra vähem Liivi sõja perioodist (s.o 16. saj II pool) ning tühises koguses mõisa perioodist (17.–18. saj). Kuigi tsistertslaste ordus oli lihasöömine alguses keelatud, olid reeglid hiliskeskajaks e Padise kloostri eksisteerimise ajaks järk-järgult leevenenud ning ka mungad võisid mõni kord nädalas liha süüa. Leitud luud kuulusid väikeste eranditega koduloomadele (jn 1). Väga suuri erinevusi lihaloomaliikide luude suhtelises osatähtsuses perioodide lõikes ei täheldatud (jn 2). Padise materjali anatoomiline koostis viitab kloostri majapidamises tapetud loomadele – rohkemal või vähemal määral on esindatud kõik kerepiirkonnad (jn 3). Suhteliselt palju oli selgroolülide ja roiete fragmente ning õla- ja vaagnavöötme luude katkeid, mis viitab kvaliteetse liha tarbimisele. Luudel on nii lihakeha esmase tükeldamise kui ka toiduvalmistamise käigus luude sekundaarse purustamise jälgi. Nii kloostri kui ka Liivi sõja aegne luumaterjal on anatoomilise koostise osas küllaltki sarnane. Esialgse analüüsi käigus ei ilmnenud ka mingeid olulisi erinevusi luude purustatuse osas. Enamik tarbitud veiselihast näib olevat pärit täiskasvanud loomadelt nii kloostri perioodil kui ka Liivi sõja aegses materjalis. Kloostri ajast pärit lambaluud näitavad, et ligikaudu pool lambalihast võis olla pärit esimesel sügisel tapetud noorloomadelt. Sealuude puhul ei olnud kummaski perioodis toruluude epifüüside põhjal võimalik tuvastada põrsaliha tarbimist, kuigi luu struktuuri ja suuruse järgi võib oletada, et söödi ka põrsa- ja kesikuliha. Enne 2-aastaseks saamist on tapetud kuni 80% ning üle 3,5-aastaste sigade luid ei esinenud üldse.

Linnuluid saadi kõigist perioodidest (jn 4–5). 173 luust on 34 määramatud ning 139 oli võimalik määrata liigi, perekonna või sugukonna tasemel. Esindatud on 12 liiki (tabel 1). Näiteks oli liigini määramine võimatu haneliste perekonna puhul. 96% luudest esindasid vaid kahte seltsi: kanalised (*Galliformes*) ja hanelised (*Anseriformes*). Sealhulgas 89% esindasid vaid kaht taksonit – kana (76%) ja hani (13%), mis arvatavasti olid kodulinnud. Sellele viitab suhteliselt suur noorte või väga noorte lindude hulk (25 luud). Kaks liiki, kodutuvi ja hakk, pesitsesid tõenäoliselt kloostri lähedal puuõõnsustes või kloostrimüürides olevates pragudes või aukudes, viimasele võimalusele viitavad ka vähesed noorte lindude luud. Sinikaelpardi luid oli materjalis ainult üks ning tõenäoliselt on tegemist metsikult elava isendi luuga, kuna kodupartide pidamise puhul peaks see liik olema arvukamalt materjalis esindatud.

Ülejäänud esindatud liigid (teder, laanepüü, põldvutt, valgepõsk-lagle) kuuluvad traditsiooniliste jahilindude hulka, küttida võidi ka laululuike. Teder ja laanepüü elavad segametsades, laululuik ja aul veekogude ääres, valgepõsk-lagle, punajalg-tilder ja põldvutt niisketel luhtadel, põldvutti võib kohata ka avamaastikul kuivematel niitudel ja kultuurmaastikul. Kõik need biotoobid on esindatud ka tänapäeval Padise ümbruses.

Lõike- ja põlemisjäljed luudel viitavad, et nii kodu- kui uluklindude liha on tarvitatud toiduks, seda oletust kinnitab ka asjaolu, et enam on esindatud liharohkete kerepiirkondade luud (tabel 3). Huvitavaks leiuks on kuke kannuse tipp, mis on maha lõigatud (proov 36.1, 14.–15. saj) – seda võib seostada agressiivse kuke „relvituks" tegemisega. Laululuige liha võidi samuti kasutada toiduks, kuid luiki võidi lasta ka näiteks sulgede saamise eesmärgil.

Kalade luid koguti nii kaevamiste käigus otse pinnasest kui ka 1 mm silmaga vesisõelalt. Viimase meetodi puhul oli võimalik tuvastada ka väga väikeste kalade luid (jn 5, 6). Kokku oli esindatud 18 kalaliiki, mille hulgas on nii mere-, magevee- kui ka siirdekalu (tabel 3). Samas puuduvad tüüpilised kasvanduskalad nagu karp, hõbekoger ja koger, mille puhul saaks järeldada kalakasvanduse kui kloostri munkade ühe tegevusala võimalikku esinemist Padisel. Rääbise leidumine materjalis viitab kontaktidele (kala sissetoomine) kas Soomega või Peipsi-äärsete piirkondadega. Mõneti üllatav on lõhe puudumine (leidus vaid üks meriforelli luu), mida saaks seletada pigem juhuslikkusega kalaluude kogumisel kui selle liigi täieliku puudumisega.

Arvestades luuainese tugevat fragmenteeritust, on imetajaluude osas materjali kogus esialgu siiski liiga väike, et teha põhjalikumaid järeldusi loomakasvatuse kohta kloostris. Samadel põhjustel ei ole momendil võimalik ka öelda, miks on erinevatest perioodidest pärit materjal nii liigilise kui anatoomilise koostise ja fragmenteerituse poolest üsna sarnane. Artikkel annab ülevaate mõnedest olulisematest järeldustest, mida on esialgselt võimalik luumaterjali põhjal teha. Siiski on võimalik selle alusel jätkata uuringuid erinevates suundades: koduloomade kasvatamise traditsioonid, kalakasvatus ja -püük, samuti toitumistavad, millel kõigil on tsistertslaste kloostrites olnud oma eripärad.