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Emmanuelle Vila. Animal sacrifice in Arcadia during the Archaic period. The faunal remains from Agios Elias. Jeannette Forsen. Agios Elias of Asea, Arcadia. From early sanctuary to medieval village. Volume 1, 1, TMG Sthlm AB, pp.127-152, 2021, Agios Elias of Asea, Arcadia. From early sanctuary to medieval village, 978-91-7916-066-1. <halshs-03226757>

HAL Id: halshs-03226757

<https://shs.hal.science/halshs-03226757v1>

Submitted on 1 Sep 2022

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Ritual sacrifice during the Archaic period. The bone remains from Agios Elias.

Emmanuelle Vila

Introduction

The excavation in 1997 of the Archaic temple at Agios Elias in Arcadia (Peloponnese) under the auspices of the Swedish Institute at Athens and under the direction of J. Forsén has yielded a large amount of bone remains¹. The faunal assemblage comes from two excavated trenches, one made south of the temple (A) and one east of the temple (B) (*Fig. 71*). In the latter trench (B) at *c.* 10 m from the eastern end of the temple, an open-air cult place with probably a hearth altar has been recorded, certainly already in use at the very end of the seventh or beginning of the sixth century BC. Most of the bone remains come from this altar only a fraction of which could be excavated. Trench A1, north of the cella wall, contains from locus 10 onwards material dated to the Geometric and Archaic periods with slight emphasis on the Geometric period (900-700 BC). Trenches A2 and A3 were opened south of Trench A1 and of the cella wall. They contain mostly pottery of Medieval date: the late Archaic temple foundation was reused as the setting of a Medieval church and some burials have been entered under the church floor. The cleaning of the rough-cast for the architectural study of the temple, produced very few animal remains whose dating is not clear but according to the archaeological material would date mainly to the Medieval period (J3, J6, LM2, M3 and M4).

Statement of methods

The animal remains have been excavated stratigraphically and collected by trench units using loci and pail numbers². The zooarchaeological study of the animal remains has been carried out during two stays in Arcadia in July 1997 and July 1998. Identification of bone specimen to skeletal element and to species was undertaken in the field using when necessary comparative osteological atlases³. Attempts to distinguish between sheep and goat were made using morphological criteria outlined in various studies⁴. Measurements taken on well-preserved bones of adult specimens follow the zooarchaeological standard protocols⁵.

For estimation of age-at-death, epiphyseal fusions were scored for caprines⁶, pigs and cattle following Silver's data for different skeletal elements⁷. Age estimation was done on caprine

¹ Forsén *et al.* 1999; Vila 2000, 201-202.

² Unfortunately the pails of some loci in Trench B (B2 locus 4, B3 locus 3 and locus 4) have been mixed by accident during the zooarchaeological study.

³ Schmid 1972; Barone 1965.

⁴ Boessneck *et al.* 1964; Payne 1985; Prummel & Frisch 1986.

⁵ von den Driesch 1976.

⁶ The term caprine here is taken in the broad sense of the Caprinae family, which includes sheep and goats species. It is used throughout the text to designate the "sheep and goats" group.

⁷ Silver 1969; see Vila 1998, 23.

teeth, following the method of Vila⁸ and Helmer⁹, which combines visual observations of the occlusal surface according to Payne¹⁰ and, with improvement, a height index according to Ducos¹¹. Sex determination was based on morphological criteria, for caprines on the pelvis and skull¹², for pigs on the canine teeth¹³.

Data are presented here on the basis of the number of identified specimens (NISP) and of the fragments' weight (in grams). Specimens that could not be taxonomically identified but only anatomically distinguished were consequently recorded in size categories: small to medium-sized mammals (SM), large mammals (LM). Small fragments which were neither taxonomically identified nor anatomically distinguished have been classified as unidentified.

Overview of the faunal assemblage

The material recorded includes approximately 10 000 animal remains of which only *c.* 1550 could be identified at the taxonomic level (*Tab. 1*). The animal remains are in a very fragmentary condition and 90% are burnt (*Tab. 2*). Therefore a very large amount of remains could not be securely identified at the species or genus level (*c.* 8700 NISP for a weight of *c.* 6500 g). Most of the animal remains come from Trench B (98 %). Trench A delivered only 187 animal remains (1.7 %), other contexts (locus J3, J6, LM2, M3 and M4) from the temple delivered 32 animal remains (0.3 %) (see Appendix Inventories).

For the largest part, the identified bone remains belong to domestic animals, caprines (*Ovis aries/Capra hircus*), pig (*Sus cf. domesticus*) and cattle (*Bos taurus*); there is, however, an overwhelming predominance of caprine remains (92%) over other species, the frequencies of pigs (3.6%) and cattle (2.9%) being very low (*Fig. 72*). Besides, a small number of bone remains belongs to other mammalian taxon, donkey (*Equus asinus*), hare (*Lepus capensis*), cervid (*Cervidae sp.*), small carnivore, mouse (*Mus sp.*). Among the animal remains, birds, reptilian (tortoise, lizard) and batrachian remains as well as terrestrial and marine molluscs have also been found. At last, the studied assemblage includes also several human bones, mostly from Trench A, a single one from Trench B, which are related to the Medieval tombs found during the excavations.

Depending on the excavation trench, bone preservation differs quite a lot in terms of bone fragmentation and burning traces. Considering the average weight of bone remains (*Fig. 73*), the bone fragmentation is clearly greater in the Trench B assemblage (average weight ± 1 g) than in the Trench A one (average weight ± 2 to 3 g) and other locus assemblages (average weight ± 5.5 g). Bones from Trench A are mostly unburnt, unlike those from Trench B. A

⁸ Vila 1998, 28.

⁹ Helmer *et al.* 2007, 46.

¹⁰ Payne 1973, 294; 1987, 610 and following.

¹¹ Ducos 1968, 10-13.

¹² Boessneck *et al.* 1964.

¹³ Schmid 1972.

high percentage of bone remains from Trench B are heavily burnt/charred - this is especially true for Trenches B1 and B3 (*Tab. 2, Fig. 74*). The burning is too severe to reflect ordinary cooking practices. The strong relationship between the incidence of burning damage and bone fragment length¹⁴ explains that the bones from Trench B are smaller (< 3 cm) in average than the bones from Trench A. Carbonized fragments are the most frequent among the burnt bones. However, various grades of burning are present based on color criteria¹⁵: lightly burnt or half carbonized (brown), fully carbonized (completely black), half calcined (more black than white), more than half calcined (more white than black), fully calcined (completely white). 99% of the bones from Trench B3 located on the ash altar are carbonized or calcined. Very few bones (less than 10%) from Trench A and the other loci present traces of burning. Moreover the burning patterns - surface color and location of burning marks - on most of them might indicate food-processing and cooking activities¹⁶.

Besides burning, some other bone surface modifications referring to butchery and meat processing, and carnivore damage have been recorded in a low frequency on the surface of unburnt bones (*Tab. 3; Figs. 75-77*). Chop marks and cut marks evidence three butchery behaviors: skinning, disarticulation/dismembering and defleshing. They occur on the major joints of the limbs (disarticulation) as well as on the diaphysis of long bones (defleshing) and on the extremity of limbs (skinning). Several butchery marks have been observed on shoulder and elbow joints and hip and knee joints of caprine, pig and cattle. Some have also been recorded on ribs and vertebrae. Other cut marks on cranium bones (nasal and frontal bones) might evidence skinning. A cut mark on a cattle hyoid bone might be the result of tongue processing for consumption. Cut marks are very difficult to detect on the surfaces of burnt bones and to distinguish from heat cracking. Evidence of cut marks on burnt bones has been observed only once on a single caprine patella.

Carnivore damage as gnawing marks and digestion traces have been recorded on various unburnt bones from all body parts, especially on limb extremities. This is an indication that the bones were left exposed and that dogs (or other carnivores) had access to them.

Archaeozoological analysis

Species identification

The assemblage from the temple at Agios Elias consists mostly of remains from the main breeding species, sheep, goat, pig and cattle. Besides, only one phalanx from an equid has been recorded (B1, locus 17). According to its general size, the bone (unburnt) comes from a

¹⁴ Stiner *et al.* 1995, 224-225.

¹⁵ Shipman *et al.* 1984, 312-313, Stiner *et al.* 1995, 226.

¹⁶ When a whole piece of meat is roasted, the bones are usually not burnt, even less carbonized and calcined. Indeed, the flames do not reach the bone unless it is not covered with meat. Only small exposed parts of the bone may exhibit evidence of burning: Kent 1993, 348.

donkey. No remains of dog have been identified although carnivore damage has been observed on the surface of unburnt bones gnawed while they were still out in the open air. Remains of wild animals are very rare (*Tab. 4*). Among the wild animals, hare is the most common animal. Hare remains appear in almost all archaeological contexts from Trenches A and B and do not present any traces of burning. A cut mark on the proximal extremity of a radius evidences meat processing (disarticulation) and consumption of the hare (B1, locus 2). Digestion traces on another hare bone, a calcaneus, is probably due to a carnivore (B3, locus 1).

A single fragment (unburnt maxillar bone) of a small-sized animal could belong to a carnivore (*Mustelidae?*) (B1, locus 18). One of the most widespread mustelids still in Greece today is the marten (*Martes foina*). The pine marten, the weasel and the ferret have also been identified in archaeological contexts, but for zoogeographical reasons, it is likely that the mustelid present in the area of Agios Elias was the marten¹⁷.

Cervidae are represented by two small unburnt fragments of antler (6 x 3 cm: B2, locus 1; 3 x 1 cm: B3, locus 7). Remains of the postcranial skeleton are entirely absent. The larger antler fragment comes from the main beam and exhibits cut marks. The presence of antlers does not mean that deer have been sacrificed and eaten on the site. Antlers represent above all an object, either a trophy or a decoration or raw material for handicraft.

Five bird bones have been found in Trenches A and B (one burnt). The remains of rodent (5), lizard (2), terrestrial gastropods (12) and perhaps of tortoise (5) might represent intrusive animals that used to live in holes or go underground at certain times of the year. The marine remains are negligible: two shells of marine mollusc that could evidence consumption, tool or ornament use (B1, locus 9: *Cardium* sp.; M, locus 1: oyster).

Caprines represent the largest group among the animal remains generally speaking as well as among the domestic species. Considering the very low frequency of pig remains and the absence of dog and of wild mammals, it is likely that most of the bone remains from medium-sized species are related to caprines.

Differentiation between the bones of sheep, goat and pig is particularly difficult when they are highly burnt and fragmented. Therefore the distinction could only be made on a small number of bones especially on unburnt remains. All caprine remains from Trenches A and B that could be surely assigned to species belong to sheep whereas no bone remains could with certainty be attributed to goat. Goat remains (NISP = 3) have only been identified in the rough-cast loci (J3, LM2 and M3) dated to the Middle Ages.

Numerically pigs and cattle are very few, they represent 56 and 45 identified specimens, respectively. Pig remains have been attributed to the domestic form according to the general size of the bones.

Skeletal distribution

¹⁷ Yannouli 2003, 184.

Skeletal distribution of caprine remains indicates that despite the small size of the assemblage all major body parts are present in the faunal assemblage from Trench A (*Fig. 78* and Appendix Skeletal element distribution). However, the faunal assemblage from Trench B presents significant differences among the skeletal distribution of caprines. Remarkable are the very high frequency of hind-limb parts (89 %) and the very low number of remains from the head, fore-limb and distal extremities (less than 3%). In addition, there are remains of the trunk (8%).

Skeletal distribution of pig and cattle has been figured only for the Trench B assemblage (*Fig. 79*) since the NISP of those two species for Trench A is too low to permit interpretation (see Appendix Skeletal element distribution). Unlike the results of caprine skeletal distribution, all major body parts of pig and cattle are present in the Trench B assemblage. Head remains (cranium fragment and single teeth) are definitely common (half of the remains for pig and cattle). Fore- and hind-limbs are well represented. Distal extremities are also present for both species. Very clearly, skeletal representations are rather different among the domestic taxa, especially between caprines and cattle / pigs. Both sides right and left are represented for the three taxa.

Most remains from Trench B are burnt bones from the hind-limb and trunk of small and large mammals (*Tab. 5*). A closer look at the anatomical distribution reveals that the burnt remains are heavily dominated by femur elements (*Figs. 80-81*) and secondly by patellae (*Fig. 82*), sacrum fragments and caudal vertebrae of caprines (*Fig. 83*) with some of cattle. The burnt remains are also concentrated in Trench B3 (*Figs. 84-85*). The estimate of how many individuals are represented in the burnt material has been done based on various bone parts. The Minimum Number of Individuals (MNI) takes into account epiphyseal stages and right and left sides whenever possible. For the small mammals, probably only sheep, patellae give an MNI of 120, proximal femurs give an MNI of 100, distal femurs an MNI of 120 and femurs from neonatal or infantile individuals an MNI of 16. Three patellae from cattle could also be identified and give an MNI of 2. Regarding their thickness some few unidentified bone fragments might originate from cattle femora, however they do not allow an MNI estimate. No single bone in the burnt material could surely be identified to pig. No preference for a side could be noticed on the patellae. Both sides right and left are represented and the difference (right/left = 1:1.3) does not appear meaningful. MNI estimates have also been done for the unburnt bone material on cranial and postcranial elements (caprine MNI = 10; pig MNI = 3; cattle MNI = 2).

Estimation of age-at-death

According to the estimation of age-at-death based on the epiphyseal fusion of postcranial bones, the age analysis for caprines and pigs indicates that all age groups are present (*Tab. 6*). That is true for the burnt bone material from Trench B (caprines) as well as for the unburnt bone material from Trenches A and B (caprines and pigs).

Very young animals (from birth age to few weeks old) are well represented in the burnt bone (25% of the remains) as well as in the unburnt material (10% of the caprine remains, 35% of the pig remains). Nearly 40 diaphysis of burnt femora may have come from infantile or neonate individuals (*Fig. 86*). Identification to the species level is uncertain on such elements.

They might be either piglets (?) or lambs¹⁸. In the burnt assemblage still, half of the bones (52% of the remains) belong to adult animals (sheep?) of more than 4 years of age (epiphyseal fusion of the proximal and distal femur).

Estimation of age-at-death has also been done on unburnt caprine teeth (*Tab. 7*). The mortality profile is marked by a high proportion of young/sub-adult caprines and a culling peak of animals 1-2 years old (*Fig. 87*). Unlike the epiphysis data, the teeth data indicate a selection for tender meat and also provide evidence of the possible exploitation of dairy products¹⁹.

Sex determination

Sex determination could only be carried out on a few bones. In pig, two canine teeth belong to boar (B1, locus 6 – B1, locus 10). In sheep, two pelvic bones (A3, locus 3 – B2, locus 3) come from ewes. Two hornless skulls could also belong to ewes (A2, locus 4). The absence of horns in rams seems to be a character of modern breeds. The two skulls were found in a cavity which should be dated to the Roman or Medieval period. They are almost complete with cranium and mandible. Even the hyoid bone is present. Butchery marks appear on occipital bones (occipital condyle and basilar portion of the occipital) of the two skulls attesting the disarticulation of the head and the separation from the trunk at the first cervical vertebra (atlas) joint. No burnt traces were recorded. According to these two skulls, females of the Medieval sheep breed of Agios Elias are hornless. The very good preservation of the skulls – completely different from the rest of the bone material – indicates that these remains (heads from sacrificed victims) constitute a singular deposit that has probably a symbolic meaning. However, we cannot possibly know whether the deposit is related to the building of the Byzantine church or to the Medieval burials.

Butchery

According to the lack of pelvis fragments in the burnt material and the absence of chop marks on the proximal and distal extremities of femur, the hind-limb might have been separated from the trunk at the pelvis/femur joint and from the extremities at the femur/tibia joint. The removal of the thighbone has probably been done very carefully with a knife that left cut marks on the acetabulum of the pelvis (see *Fig. 75*) and likely left the patella attached to the femur. Therefore regarding the sacred butchery, rather standardized practices seem to have been performed at Agios Elias. Such practices, removal of the thighbones with a knife, have also been noticed in Tegea²⁰ as well as in other sanctuaries such as Miletus²¹, Eretria²², Thasos²³ etc.

¹⁸ The assumption that the burnt femora could also come from piglets is partly weakened by the fact that pigs are rare in the bone assemblage of Agios Elias and also by Reese's remark: when piglets are burnt, they are burnt whole (Reese 2004).

¹⁹ The interpretation of culling profiles is based on the caprine management within present-day herding systems in South-East France, cf. Helmer *et al.* 2007, tab. 1, p. 48.

²⁰ Vila 2014, 551.

²¹ Peters & von den Driesch 1992.

²² Chenal-Velarde & Studer 2003, 217.

²³ Pariente *et al.* 1996, 810.

Discussion

The thysia

The animal remains from the archaic temple at Agios Elias witness animal selection, butchering and processing in a Greek religious and sacred context²⁴. The Agios Elias bone assemblages of Trench B are clearly the remnants of cultic activities related to the sacrifice of animals and evidence, at least in part, the two main events of the Greek ritual, the *thysia* sacrifice and the communal meat consumption, each with its own features. The *thysia*²⁵, called at first "Olympian" sacrifice, has been defined as a ritual slaughter and butchering of carcasses with libations and offerings to the gods that ends with collective meals or general distributions of equal portions of meat to the population²⁶. This ritual is meant to render the gods favorable and make them a part of the process. It constitutes a means of communication from the humans to divinities²⁷. It is probably also a way of dividing meat equally among the people under the auspices of a divinity. Representations of the sacrificial space, actors and victims appear on vase paintings and votive reliefs; in particular the Attic vases offer a rich iconography whose interpretation has brought complementary information to the understanding and knowledge of the animal sacrifice: slaughtering places (bloodstains on the altar), butchering practices (killing of the animal, defleshing of the thighbone), offering of the god's portion to the fire (tail of the victim)²⁸.

One of the most crucial moments of this ritual consists in dedicating to the gods and burning on the altar two very precise defleshed parts (*meria* and *osphys*) of the animal, namely the bones of the thigh (femur and patella) and the caudal spine (sacrum, caudal and coccygeal vertebrae)²⁹. The "god's portion" of the animal burnt on the altar has been the subject of considerable debate. However, some representations clearly figure the tail on the altar, others present thighs hanging in such a way that they might have been boneless³⁰. Some scholars have suggested that according to each sacrifice *meria* may signify either burnt bare bones, fat-wrapped bones or entire back legs with meat³¹. The general opinion is that the bones were bare and the portions would have been wrapped in fat before being placed in the fire on the sacred hearth³². Experimentations done with bare thigh and tail bones wrapped in the

²⁴ We will not discuss here the faunal assemblages of Trench A, which come mostly from more recent levels.

²⁵ The original meaning of the Greek word, *thuein*, 'killing an animal', is 'to make smoke' (Chantraine 1977, 448-449, cf. also Naiden 2015, 79).

²⁶ See Ekroth 2002, 1.4. *Thysia* sacrifices followed by dining, 179 and following; Ekroth 2007, 250-251.

²⁷ The literature on Greek animal sacrifice is extensive and goes back more than a century, see for example, Meuli 1946, Burkert 1972 (chapter 1. Sacrifice as an Act of Killing, p.1-12), Burkert 1977 (chapter II.1. 'Heiliges wirken': das Tieropfer, p.101-121), Détiéne & Vernant 1979, van Straten 1995, Ekroth 2002.

²⁸ See Durand 1987, 1991; van Straten 1995; Gebauer 2002; Ekroth 2009a, 2013 etc.

²⁹ Burkert 1977, 102-3 ; Durand 1987, 61-62; van Straten 1995, 120-130, figs. 129-144 and 157.

Forstenpointner 2003, 203 and 210. It has also been suggested that fully fleshed body parts were burnt (Reese 1989, 64), but this is not documented.

³⁰ van Straten 1995, 133.

³¹ Berthaume 2005, 241 and following.

³² Ekroth 2009b, 127-128.

abdominal net of fat of ruminants and then burnt support this assumption³³. The question as to why the gods, the recipients of the offering, could be satisfied with bare bones (and smoke) has been discussed and analyzed in various ways by many historians³⁴. Greek myths recorded by Hesiod in which Prometheus tricked Zeus for the mortal humans' benefit³⁵ give an etiological explanation to this very special sacrificial ritual that is well known from textual and iconographical sources³⁶.

Body part assortment for burning

Considering the very special moment of the *thysia* ritual at Agios Elias, most of the bones from Trench B, more precisely B 3, represent the body parts offered to the deity in the fire on the altar or on the sacred hearth. They are heavily burnt, carbonized or calcined and shattered into small splinters. All belong to the hind-limb (femur and patella) and the basin, i.e. the tail (last lumbar vertebra, sacrum and caudal vertebrae). A very few other bones from the trunk, the foreleg and the cranium – 0.4% of the total – are also burnt. Given their very low frequency, the bones have probably been burnt by accident and do not belong to the offering as such. Caprines, likely sheep only, and to a much lesser extent cattle, are the favorite species for the burnt offering. The dedicated body parts were mostly the thighbones (*meria*) and tails (*osphys*) as is attested at other sanctuaries. However, also other body parts could be offered. At the temple of Athena Alea at Tegea, where the precise location of the sacred hearth has however not yet been found, all skeleton parts have been identified among the burnt bones³⁷. The same observation has been made at other Greek sanctuaries, for example, the sanctuary of Poseidon at Isthmia in the Peloponnese³⁸ –though foreleg bones were absent among the burnt bones –, the sanctuary of Kommos (temple C) in Crete³⁹ as well as the sanctuary of Apollo Hylates at Kourion in Cyprus⁴⁰. Sacrificial butchery, disarticulation process and meat offering were not practiced at every sanctuary in the same manner⁴¹.

Some scholars have considered the absence or the lack or under-representation of thighbones and of elements of the caudal spine of caprines, cattle and pigs in unburnt leftovers from meals in sanctuaries as a possible indication of *thysia* practices⁴². Such a hypothesis is valuable in cases of large assemblages of common species according to the general skeletal distribution of the bone remains. In the case of rare species, it should be pointed out that the absence of certain bone parts is rather due to conservation chance and excavation bias than to

³³ Forstenpointner 2003, 211; Forstenpointner *et al.* 2013, 238; Ekroth 2013, 20.

³⁴ See Naiden 2015, chapter 1: The invention of a Ritual, p. 1-15 for an in-depth discussion and extensive references.

³⁵ Vernant 1979, 37-45.

³⁶ See van Straten 1995, chapter 4, 115 and following.

³⁷ Vila 2014, 549-550.

³⁸ Gebhard & Reese 2005, 126.

³⁹ Reese *et al.* 2000, 422-453.

⁴⁰ Davis 1996, 181-182.

⁴¹ Ekroth 2013, 17.

⁴² For example at the Late Archaic Artemision of Olympia, see Benecke 2006, 159.

human selection and sacrificial patterns⁴³. The vertebrae of the sacrum that fuse late in the animal's life as well as the vertebrae of the tail are rather small bones, especially in medium-sized animals such as pigs and deer. Unless sieving is systematically performed, it is difficult to identify them during excavation, except in contexts where they occur in high concentrations, as is the case in the areas of sacrificial altars where caprines and cattle caudal vertebrae have often been found.

In other respects, the symbolic value of bone as a material that is unalterable deserves to be highlighted. Indeed, burning the bones makes them even more resistant. Although reduced to very small fragments, bones will keep even if they no longer have their original shape and size. Finally, the 'god portion' is the rotproof part of the animal, which provides a very special dimension (timelessness) to the concept and act of burning bones. The selection of the femur could be determined by its size, it is the largest bone of the skeleton and the one that carries the most meat. The offering of the thighbone may have had a great symbolic value through the amount of meat it carries embodying the best of the animal, a kind of *pars pro toto*.

Victim selection and meat consumption

Regarding the meat consumption at Agios Elias, some of the bone remains from Trench B are probably leftovers from communal meals with ritual dimensions that took place in the sanctuary as part of the worship of the deity. Those bone remains are unburnt, some display butchery marks indicative of dismembering and flesh removal. According to the specific identifications, sheep represent the main sacrificial animal eaten in this context while goats are absent in the bone material. The most represented age groups in the caprine (sheep) group are young and sub-adult animals. This evidences the preference for tender meat. On a much smaller scale, pig and cattle were also consumed. Very young piglets and lambs less than 2 months old belong to the sacred meal as well. Similar observations have been made at Tegea⁴⁴. But it seems that only lambs are part of the burnt ritual.

In general, sheep systematically appear in Greek sacrificial practices while other domestic species such as pigs, cattle or goats are chosen more or less frequently as victims according to sanctuaries, deities or festive occasions⁴⁵. Cattle are generally present in sanctuaries, but their frequencies are still quite low (between 5 and 15% of faunal remains), with some exceptions, especially in the sanctuaries dedicated to Poseidon⁴⁶ and Aphrodite⁴⁷.

Piglet offering and consumption are particularly well attested at sanctuaries of Demeter⁴⁸ and

⁴³ For example, the absence of sacrum bones and tails of deer and wild boars in Kalapodi (Stanzel 1991, 162) does not necessarily indicate that these species were sacrificed just as the domesticated animals were to Artemis (contra Ekroth 2007, 264; Ekroth 2017, 39).

⁴⁴ Vila 2014, 553.

⁴⁵ Burkert 1977, 101. Archaeozoological studies also show the omnipresence of sheep as compared to all other species.

⁴⁶ Around 50% of the faunal remains at Isthmia (Gebhard & Reese 2005); around 60% at Tenos (Leguilloux 1999, 428).

⁴⁷ Around 42% of the faunal remains at Amathonte (Archaic levels of the Ariane-Aphrodite sanctuary) (Columeau 2000, 150).

⁴⁸ At Knossos, most of the assemblages dated to the 5th-3rd centuries BC from the Demeter sanctuary and its vicinity are made up of pig and piglet remains (Jarman 1973, 177-179; Reese 2017); at Messene, pig and piglet remains are also very common in the early Archaic/late Classical assemblage of the Demeter temple (Nobis

Kore. Pigs and piglets are also present in sanctuaries of other deities like Apollon⁴⁹, Artemis⁵⁰ and later Sarapis⁵¹ and play a significant role in the sacrificial rituals⁵². They are theoretically absent from the sanctuaries of Aphrodite⁵³ and Poseidon⁵⁴.

Apart from sheep, cattle and pigs, the remains of a few other animals have been identified in Trench B. They belong to domestic - the donkey - and wild mammals - the hare, the marten (?) and the deer - as well as to birds, reptiles, amphibians and molluscs. It is likely that some of them turned up in the assemblage by chance and have a natural origin, this is probably the case for rodents, lizards, terrestrial gastropods and perhaps also for tortoises. However, the tortoise remains at Agios Elias are only carapace fragments. It is questionable whether they are truly intrusive or whether the presence of tortoiseshell is related to human activities on the site. Perhaps tortoise was consumed, but there are no explicit data to support this hypothesis and tortoise remains are rare in Greek archaeozoological assemblages⁵⁵. On the other hand, it is questionable whether the shell could have had a specific use as an object (as a container or a vessel, for example)⁵⁶. Remains of donkeys (or horses) are often identified in the fauna of sanctuaries. In some cases, their presence may be related to the sacred place and to leftovers from meals⁵⁷, but in other cases, they are probably remains lost out of context. This is presumably the case of the donkey phalanx identified in Agios Elias or of the donkey radius identified at Tegea⁵⁸. Cervid bones sometimes appear in sanctuaries where they have probably been consumed⁵⁹. In the case of antler remains, as in Agios Elias, they are more likely to be seen as raw material or a decorative "object" than as leftovers from meals.

Hares do not belong to current sacrifice species. Few faunal assemblages from sanctuaries contain hare remains⁶⁰. However, cut marks on a bone at Agios Elias indicate that the hare has been consumed. This is also the case at Tegea where the single identified hare bone, a tibia, displays a cut mark.

The remains of small wild carnivores are rare in sanctuaries and it is difficult to interpret their

1997, 97-111) ; at Corinth, burnt pig and piglet bones have been found also in the sanctuary of Demeter and Kore (Bookidis *et al.* 1999, 37).

⁴⁹ Burnt pig bones have been found at the Geometric sanctuary of Apollon Daphneophoros at Eretria (Huber & Meniel 2013, 251).

⁵⁰ Piglets are present at the late Archaic Artemision of Olympia (Benecke 2006) and at the Archaic Altar of Artemis in Ephesos (Forstenpointner 1999, 89-90).

⁵¹ Pig as well as caprine thighbones have been burnt at the Sarapeion of Delos (Brun & Leguilloux 2013, 172).

⁵² Leguilloux 1999, 455; Forstenpointner 1999, 169-173; Vila 2014, 557-559; Ekroth 2017, 42.

⁵³ At Cyprus, pigs have been identified in the faunal remains (about 13%) from the area of the Astarte-Aphrodite altar (Archaic period) in Tamassos (Nobis 1976/77, 278) but they are absent from the sanctuary of Ariane/Aphrodite of Amathonte at all periods (Archaic to Hellenistic) while they were eaten in the Palace (Columbeau 2000, 148, 154).

⁵⁴ The bone assemblages collected near the Isthmia Temple dedicated to Poseidon did not include remains of pigs (Gebhard & Reese 2005, 130, 140 and 149-153).

⁵⁵ A tortoise humerus has been identified at Plakari (Groot 2014, 32).

⁵⁶ Remains of tortoise shells found in the royal tomb of Qatna may be interpreted as objects (containers ?) (Vila 2011, 390).

⁵⁷ In Tamassos, most of the remains are teeth and fragments of donkey and horse skulls (Nobis 1976/77; Reese 2017), suggesting skull deposits.

⁵⁸ Vila 2014, 554.

⁵⁹ Forstenpointner 1999, 89-90, 169-173, 222-227.

⁶⁰ The hare is present at Olympia (Benecke 2006). Depictions of altars and herms on Attic red-figure vases may also include dead hare (Ekroth 2009a, 99).

presence. In several cases, these are cranial remains, as in Agios Elias where a fragment of a marten's jaw has been identified⁶¹. At Tegea a weasel humerus has been found in the *boutros* assemblage⁶².

The variety of species identified in the immediate surroundings of sanctuaries suggest that not all animals have been sacrificed and consumed in ritualized ceremonies. It seems that some of the animals were killed and eaten outside the sacrificial ritual, especially those species that are not among the authorized victims⁶³.

Animal offering and fire rituals

Archaeozoological studies of religious contexts (temples and temple surroundings) have increased in recent decades; they also provide information on animal sacrifices, particularly on the species involved and the cutting of animals⁶⁴. They also make it possible, by revealing the practice of the *thysia*, to get data on its chronological and geographical extent⁶⁵. To date, the oldest archaeological evidences of the *thysia* that really follow the “normative” practice of a burning ritual of a few selected bones are found in Geometric contexts of sanctuaries on Euboea and the Peloponnese. Heavily burnt, carbonized and calcined small bone remains mostly clearly charred remains of femur (or mid-shafts of long bones), patella and caudal vertebra of sheep/goat have been identified at the sacrificial altar near the Temple of Apollo Daphnephoros in Eretria⁶⁶, the hilltop sanctuary of Plakari at Karystos⁶⁷ and the altar area of the temple at Nikoleika⁶⁸. At Tegea, many fragments of heavily charred bones have been found in a *bothros* dated to the Geometric period (beginning of the 9th to the mid-8th centuries BC)⁶⁹. Due to the intense fragmentation, very few remains could be identified anatomically or to species level. However, it was possible to determine in the burnt assemblage bones from all parts of the skeletons of caprines, cattle and pig⁷⁰. Thus the remains of Tegea do not reflect the normative aspect that one would expect in the sacrificial ritual of the *thysia* characterized by a rather strict selection of special body parts. The rigorous ritual of burning the femur (of sheep and pig) is still found during the Hellenistic period in Altar 1 of the Sarapiaion of Delos, which dates from the middle to the end of the 2nd century⁷¹. Then, at the end of the 2nd century (Altar 2), ribs and thoracic and lumbar vertebrae are also burnt in addition to the femur.

⁶¹ At Tamassos, a fox mandible was found in the area of the altar of Aphrodite and considered by the author as being from a sacrificed animal (Nobis 1976-77, 292). At Ephesus, it is a mandible and a young wolf canine that have been identified (Forstenpointner 1999, 232).

⁶² Vila 2014, 554.

⁶³ Scullion 2013, 253; Ekroth 2017, 37-43.

⁶⁴ See Forstenpointner 1999, 68-71 and following, 2003; Leguilloux 1999; Vila 2000, 2014; Kotjabopoulou *et al.* 2003; Trantalidou 2013; see also Ekroth 2007, 2008, 2009b, 2017.

⁶⁵ Ekroth 2009b, 138-139. See also 2017.

⁶⁶ Chenal-Velarde, Studer 2003, 216.

⁶⁷ Groot 2014, 35.

⁶⁸ Psathi 2011, 244.

⁶⁹ Vila 2014, 549.

⁷⁰ Vila 2014, 550.

⁷¹ Brun & Leguilloux 2013, 174.

Differences in the ritual are certainly due to geographical variations and developments over time. This is obvious at Doliche (Dülük Baba Tepesi) where faunal assemblages from the Iron Age temple included more than 32,000 fragments with a high proportion of burnt bones (50%)⁷². The overwhelming majority of the bones, if not all, belonged to sheep and they are mostly (90%) tibias, tarsal bones and metapods⁷³. It is therefore not at all the prestigious thighbones but the less prestigious bones of the lower leg that are offered to the sacred fire. The tradition of burning animal parts dates back to at least the Late Bronze Age. The burnt piglet sacrifices from the Mycenaean sanctuary of Ayios Konstantinos at Methana (LH IIIA–B), in the North-East Peloponnese constitute the first evidence of burnt animal sacrifices⁷⁴. As for the very special offering of the thigh and tail bones to the sacred fire, it is practiced in the wide geographical perimeter of the Greek world as it is found in continental Greece as well as on the Greek islands, on the Turkish coast, and in Cyprus. It has never been recognized in the Levant, although the practice of bone burning is documented in archaeozoological records for the Late Bronze Age: at Tell Haror in the south Levant, burnt bones comprise between 17% and 60% of the animal remains from the ‘enclosed area’⁷⁵. Most of the burnt remains were allocated to medium-sized mammals. It is surprising that there is no evidence of burnt femurs or tail vertebrae in the Levantine archaeological sites, indeed Leviticus, which probably reached its present form during the 5th century in the Persian period, mentions in sacrificial practices the ritual of burning the tail (“the entire fat tail cut off close to the backbone”), and other parts of the animal, to bring a food offering to the Lord that the priest shall burn on the altar (Leviticus 3.9).

Sacrifices at Agios Elias, some comments

The *thysia* burnt remains have clearly been kept on the spot in the direct vicinity of the sacred hearth (Trench B3). On the other hand, part of the bone leftovers of the communal meals were thrown in a separate location (Trenches B2 & B2) distinct from the *thysia* remains and exposed long enough to be gnawed by carnivores. The soil around the fireplace was probably extensively covered with a mixture of soil, ashes and tiny fragments of whitish bones and may in part have resembled Pausanias' descriptions some hundred years later of the Elide ash altars. Pausanias mentions that the altar of Zeus was made from the ash of the thighs of the victims sacrificed to the god and he specifies where the steps leading from the prothesis to the upper part of the altar were made of ashes⁷⁶.

A first estimate of how many individuals contributed to the constitution of the excavated part of the *thysia* waste in Trench B reveals that 138 individuals (136 sheep and 2 cattle) at least have been sacrificed (see the discussion in *Skeletal distribution*). Given that only a part has been excavated, this amount can probably be multiplied by two. This gives a good idea of the importance of the ritual practices held at Agios Elias during the Archaic Period and implies that sacrificial animals could probably provide enough meat for all festival participants. The very little species diversity demonstrates that there was a severe selection of the animals for the deity of the temple: in this case, caprines, probably mostly sheep, and few cattle. Despite this, it is difficult to identify the divinity to whom the temple was dedicated.

⁷² Pöllath & Peters 2011, 48.

⁷³ Pöllath & Peters 2011, 63.

⁷⁴ Hamilakis & Konsolaki 2004, 141.

⁷⁵ Klenck 2002, 54.

⁷⁶ Pausanias 5.13.8.

The position of the temple on top of the mountain at an altitude of 1080 m suggests that the animals were probably driven with the procession from nearby villages. There is no major pass connecting the villages at the foothills of the Agios Elias mountain and the Asea valley with the areas to the north⁷⁷. The path from Athinaio at an altitude of 690m is about 4.5 km long and passes through the modern village of Asea, probably meaning a walk of more than two hours with animals. From Kerastaris (750m), there is a very short path of about 2 km but on this short distance the difference in altitude is significant (about 400m). In order to avoid too steep slopes one must pass through the northwest of the mountain, which extends the distance to the temple to 4.5 km. If one comes from the plain (about 630m of altitude), the way can pass through Athinaio or through a passage west of Kaotasea, and then it is easily a 7 km walk. In short, from the nearest present-day villages at the bottom of the mountain, a procession to the temple with sheep and/or cattle takes at least two hours. Due to the time required for the round trip, the ceremonies at the temple will have taken the entire day. It can be assumed that because of these constraints, ceremonies did not take place often. Instead, it is safer to assume a monthly rhythm or ceremonies organized in connection with certain festivals or commemorations. Although the writings of Pausanias' "Description of Greece" are much later, it is interesting to note that he reports that the Eleans sacrifice once each month on all the altars he has enumerated and that they sacrifice according to an "ancient manner"⁷⁸.

Conclusion

The excavated bone assemblage from Agios Elias provides a unique insight into temple organization and animal processing in ritual context. The burnt bone material from Trench B indicates exactly the location of the sacred hearth which was in front of the entrance on the east side of the temple. This corroborates perfectly the historical and archaeological data. Waste disposals of the *thysia* burnt remains and of communal meal leftovers were not completely mixed. *Thysia* waste remains in the direct vicinity of the sacred hearth in front of the temple (B3) whereas meal leftovers were discarded at various places. Without excavating the northern and western areas, it is not possible to know about the existence of other waste disposals around the temple.

⁷⁷ Forsèn 2003, 68.

⁷⁸ Pausanias 5.15.10.

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