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## **How and Where did the Inhabitants of Shawbak Castle live? The Faunal Remains\***

### **Abstract**

We present the results of a preliminary zooarchaeological analysis of the Crusader period faunal remains from Shawbak Castle. The investigation revealed a clear dominance of Caprinae. Worth noting, because of its cultural implications, is the presence of *Sus scrofa* / *Sus domesticus*. A wealth of skeletal elements of a king-size Parrotfish, *Scarus* sp., as well as rarer remains of other sea creatures raises the question of how such rapidly decaying food items could be transported long distances inland from the Red Sea coast. Analysis of the fauna of such a historically and strategically significant site is expected not only to generate important information on the subsistence strategies of the castle's inhabitants, but also to provide information on **climatic conditions** at the time.

### **Introduction**

Since 1987 an archaeological team from the University of Florence, under the supervision of Prof. Guido Vannini, has been conducting a stratigraphic survey aimed at studying the 12th century Crusader fortifications located in the territories of the former **Seigniory** of Trans-Jordan. Researchers also intend to compare Crusader and Ayyubid constructions (see the project website: [www.shawbak.net](http://www.shawbak.net)). The authors are responsible for palaeoenvironmental and zooarchaeological research at Shawbak and in the Petra valley.

Mons Regalis / Shawbak is located some 2km north of Petra, between the Dead Sea, Red Sea and Arabian Peninsula. The castle lies on a hilltop whose strategic position attracted the Byzantines and perhaps also earlier populations. By the time of

Crusader rule and of the creation of the **Seigniory** of Trans-Jordan, the site had attained the monumental appearance it has today.

The following occupations and structural modifications have complicated our reconstructions. Shawbak was in fact inhabited until about fifty years ago. The animal bones analysed here were recovered during the 2005 and 2006 excavation seasons (FIG. 1). The bones have yielded a UtC 776 two sigma radiocarbon date of 1075-1150 AD (one sigma ranges 1086-1122 AD) which falls within the period of Crusader rule. Samples were also collected to be sieved for small mammal remains and for future palynological analyses.

This is the zooarchaeological component of a much larger project aimed at improving our knowledge of the Shawbak area and gaining a better understanding of the impact of the castle's inhabitants on local environments. The results of our study feed into the rich database already established by the ongoing "Mediaeval Petra: Archaeology of Crusader and Ayyubid settlements in Trans-Jordan" project (Vannini 2007).

### **Methods**

The faunal remains were identified according to published criteria (Barone 1976; Boessneck, Müller and Teichert 1964; Cohen and Serjeantson 1986; Halstead, Collins and Isaakidou 2002; Prummel and Frisch 1986; Schmid 1972; Tomek and Bocheński 2000) and photographs of specimens in the Borzatti Collection of the University of Florence.

NISP (Number of Identified SPECimens) counts were used to assess the relative proportions of taxa and skeletal elements. All bone-surface alteration

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1. 2005 excavation area.

was recorded, including weathering (Behrensmeier 1978), trampling, root and humic-acid etching, abrasion / polishing, carnivore activity (bites, gnawing, gastric corrosion), pathological alteration and anthropogenic modification. The latter includes evidence for carcass processing, such as intentional fracturing, skinning, defleshing or butchery, as well as thermal modification

The ontogenetic age of several specimens were assessed on the basis of long bone epiphyseal fusion, degree of ossification (Reitz and Wing 1999; Speth 2000) and Hillson's (1986) tooth eruption and wear criteria.

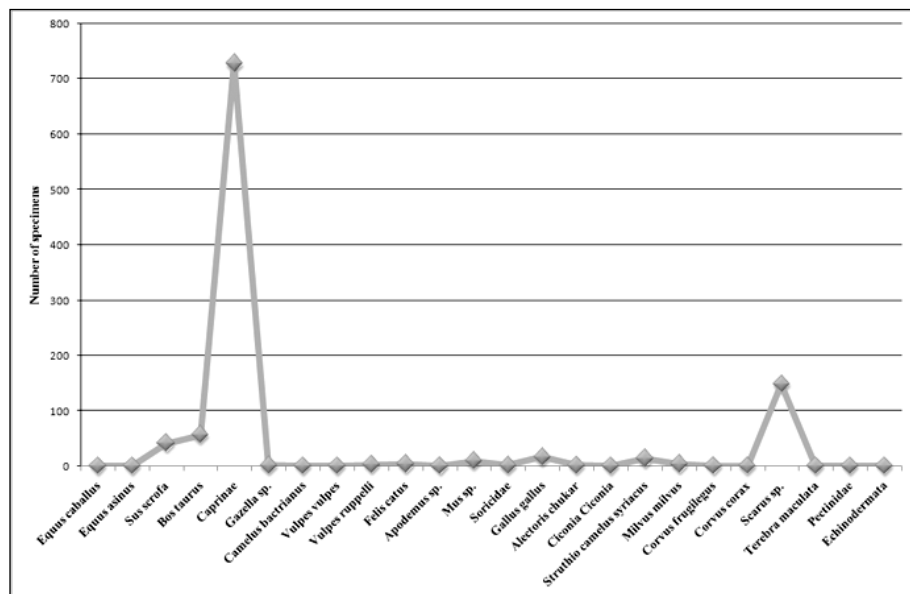
### Analysis and Results

The range of taxa represented is relatively diverse. The assemblage includes horse (*Equus caballus*) and ass (*E. asinus*), swine (*Sus scrofa* / *Sus domesticus*), ox (*Bos taurus*), sheep and goat (*Caprinae*: *Ovis* and *Capra*), gazelle (*Gazella* sp.), camel (*Camelus bactrianus*), fox (*Vulpes vulpes*) and **sand** fox (*Vulpes ruppelii*), cat (*Felis catus*), rodents (*Apodemus* sp., *Mus* sp.), shrew (*Sorex* sp.), domesticated chicken (*Gallus gallus*), stork (*Ciconia ciconia*), ostrich (*Struthio camelus syriacus*), chukar (*Alectoris chukar*), red kite (*Milvus milvus*), rook (*Corvus frugilegus*), common raven (*Corvus corax*), parrotfish (*Scarus* sp.), *Terebra maculata* (a Red Sea gastropod), a scallop bivalve (*Pectinidae*) and a few fragments of sea urchin (*Echinodermata*).

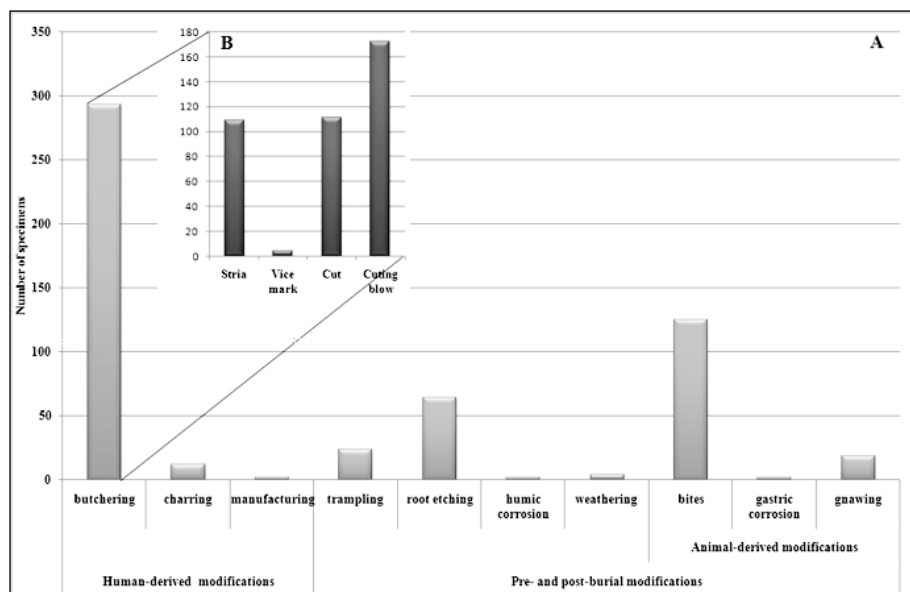
Figure 2 shows the relative proportions of taxa in the assemblage (FIG. 2), which is dominated by *Caprinae*. The second most abundant taxon is Parrotfish. The presence of *Sus scrofa* / *Sus domesticus* is worth noting for the subsequent historical and ecological implications of the presence of this animal in the area. The small mammals include two rodents, *Apodemus* sp. and *Mus* sp., and a shrew, *Sorex* sp., but of these only one *Mus* sp. specimen was patinated, suggesting that the other small mammal remains are modern intrusions.

Bones modification consists primarily of root etching and trampling. Very few specimens show evidence for humic corrosion and exposure to **weathering** (FIG. 3A). Numerous specimens show evidence for animal activity, e.g. bites and gnaw marks, the later most frequently by rodents. Gastric corrosion is very rare. The great majority of the bones from Shawbak have been butchered, but very few are charred. A sharpened bone point and as a pierced *Terebra* sp. shell represent the only manufactured artefacts in the assemblage. The carcasses appear to have been processed by skilled butchers who used a variety of knives, particular a heavy blade, possibly an axe (FIG. 3B). The vertebrae are largely cut in half sagittally, but there are also vertebrae and ribs cut transversely. There is also occasional evidence to suggest that some skeletal elements were held tight in some sort of vice. Frequent striations are suggestive of defleshing before cook-

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2. Relative **taxonomic abundance** based on NISP counts.



3A. Frequency of bone modification: overall.

3B. Frequency of bone modification: butchery only.

ing. We are still unable to comment on the cooking methods used at the castle.

The mortality profile in Figure 4 reveals high proportions of juvenile Caprinae, with a peak in the 12-24 month age class and an extended right ‘tail’, and swine (FIG. 4). The opposite occurs in ox, but this taxon is too rare to give reliable results.

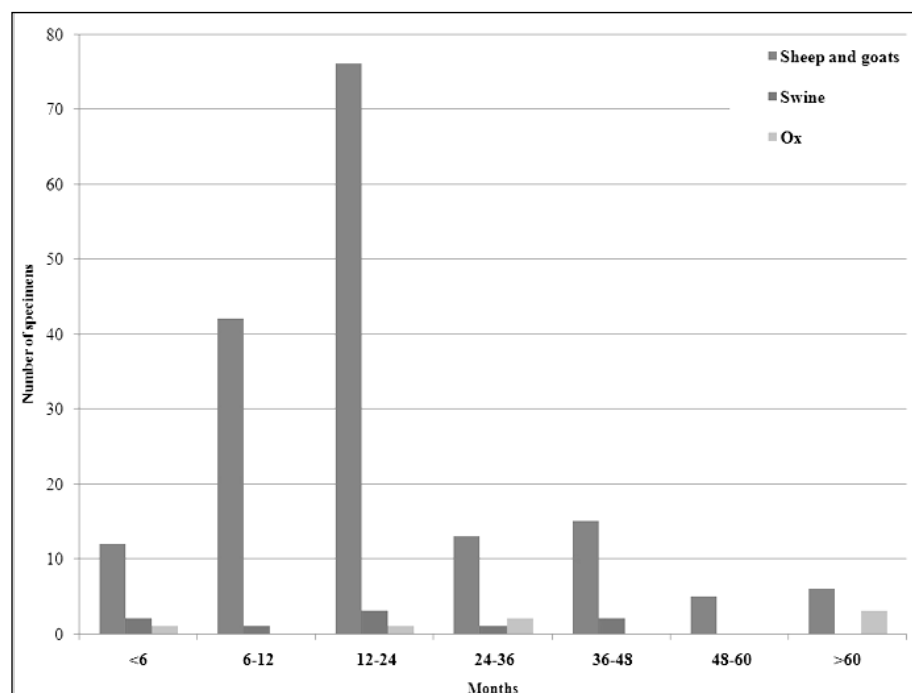
### Discussion and Conclusions

Because of the castle’s importance and the control it exerted over the surrounding region, the data obtained from the Shawbak animal bones not only improves **our knowledge of subsistence strategies and climatic and environmental change during**

**the period of the castle’s occupation**, it also adds significantly to our knowledge of commerce and trade routes in this part of the Near East.

### Subsistence Strategies

The mortality profiles have been our primary source of information on the subsistence strategies of the castle’s inhabitants. These seem to have been based principally on the exploitation of domestic animals, in particular sheep / goat, swine and ox — in order of decreasing importance. Our results suggest that the Caprinae were exploited for primarily for **meat**, as **most** were slaughtered just after puberty which typically occurs between 10 and 25 months of age.



4. Mortality profiles for sheep / goat, swine and ox.

However, the extended right ‘tail’ of the mortality profile suggests that **at least some animals survived for long enough to provide other products, such as milk and / or wool. Swine would also most likely have exploited for meat.** However, because the *Sus* sp. skeletal elements recovered from Shawbak cannot reliably be attributed to either wild boar or pig, it has not been ascertained whether or not these animals were hunted, bred in the castle or brought in from some nearby village. Yearlings are quite rare, perhaps reflecting the relative fragility of deciduous cheek teeth and immature bones, or perhaps the fact that juveniles of this age can be completely consumed by man or scavengers. Bites and gnawing marks by dogs / pigs and rodents have been observed, as have bones showing evidence of digestive corrosion.

The recovery of numerous Scaridae remains, sea urchin shell fragments and mollusc shells such a long distance from the sea is indicative of the existence of trade routes with the Red Sea. The presence of such rapidly-decaying food items at Shawbak raises the question of how they were transported. Parrotfish could have been dried and salted or smoked, however these methods do not seem to be the most appropriate way of preserving this fish and were certainly not applicable to sea urchins and molluscs. Parrotfish may not have been the only sea fish traded throughout Jordan,

but since Byzantine times it had certainly been the most popular (Brown and Rielly, submitted).

Not all sea creatures represented at Shawbak were eaten. A *Terebra* sp. shell found at the castle shows the typical polishing of shells cast upon the seashore and had therefore probably been collected from a Red Sea beach. Moreover, this specimen has a worn piercing which indicates that it had been used as an ornament, most probably a pendant.

The provision of food may not only have yielded sustenance; it might also have been a means of amusement. The remains of red kite suggest that falconry might have been practiced by the higher-ranked inhabitants of the castle, as indeed it was throughout the Arab world. Birds of prey were first used for hunting in Asia. Falconry was unknown to the Greek and Romans. It was introduced to Europe by Germanic tribes who most likely learned of it from Turkish and Mongolian nomads (Galloni 2000). Ostrich hunting may have been another means of entertainment; the long tradition of ostrich hunting in Jordan is attested to by rock engravings of the 4<sup>th</sup> millennium BC in the deserts of Wādī Rum.

#### *Environment*

Over the past few decades, analyses of climatic data such as tree rings, **pollen cores**, marine and fluvial sediments, coral, ice cores and glacial deposits, have provided evidence for two climatic

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events within the past 1,000 years. One is the so-called Medieval Warm Epoch (ca. 800-1200AD) during which the temperature was warmer than that of the 20th century in many regions of the world. The other is the so-called Little Ice Age (ca. 1300-1900 AD). At the beginning of the Medieval Warm Epoch, southern Jordan enjoyed relatively moist conditions which encouraged the growth of relatively widespread deciduous and evergreen woodland (Brown and Rielly, submitted), the remnants of which still persist along some wadis. In fact, Mediaeval Arab chroniclers describe not only the presence of a second fortified settlement, larger than the castle itself, on the eastern slope of the hill of Shawbak, but also luxuriant gardens that rivalled those of Damascus (Faucherre 2004). Unlike today, in Mediaeval times Shawbak abounded in water and rich vegetation.

In their study of the nearby Wādī Faynān area, McLaren et al. (2004) found that the youngest fluvial deposits in this area are the Faynān and Upper and Lower Ḍanā wadi members, **which formed between 15,800 and 100 years ago under similar or slightly wetter conditions than today's**. On the basis of data from Tall Ḥisbān, a citadel-town located in the al-Balqā' region, Driesch and Boessneck (1995) reconstruct Ayyubid and Mamluk woodlands inhabited by a wide range of animals, including deer, wild boar, wolf, fox, and leopard.

Conditions then grew gradually drier towards the end of the Medieval Warm Epoch. **The sediments that had accumulated at the foot of the hill and in the surrounding wadis during this relatively moist period therefore started to be eroded, as were the palaeosols that had formed at the same time.** According to McLaren et al. (2004), the **presence of** aeolian deposits of mid-Holocene date could reflect either increasing aridity at this time and / or an increasing impact of humans on the landscape. The Shawbak sample analysed here encompasses this transitional phase. **The majority of faunal remains recovered during the 2005 and 2006 excavations are derived from taxa that typically prefer relatively dry and open environments.** These include horse, ass, goat, gazelle, camel, **sand** fox, ostrich, chukar, rook and common raven. Woodland or more water-dependent taxa include swine, sheep, fox and stork. Others, such as ox, cat and shrew, are ubiquitous. Today, the Trans-Jordan highlands are located in a semi-arid Mediterranean environmental zone in which precipita-

tion decreases markedly from north to south and from west to east.

These preliminary zooarchaeological analyses from Shawbak have been **informative**. We plan to extend our research and methodologies both vertically, throughout the castle's different phases of occupation, and horizontally, by conducting comparative analyses of faunal assemblages from other castles in the region, in order to reconstruct the economies and environments of this important part of the Near East.

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