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‘When elephants battle, the grass suffers.’
Power, ivory and the Syrian elephant

Canan Çakırlar¹ and Salima Ikram²

The craftsmanship of the ivory objects in Late Bronze Age and Iron Age Eastern Mediterranean leave no doubt as to their intention to impress. Elephant teeth are an important raw material for the manufacture of these objects. Zooarchaeological research shows that cranial, dental, and postcranial remains of Asian elephants (Elephas maximus) are nearly as ubiquitous as worked ivory across Southwest Asia. This paper attempts to reconstruct the origins, habitat, range, lifestyle and the end of the Syrian elephant. It discusses recent bone and tooth finds of this animal from Kinet Höyük and Tell Atchana in the Hatay in Turkey against the background of previous research on the ‘Syrian elephant’ and ivory production in the Levant. It confirms the proposal that Asian elephants were not endemic to the region and that their arrival was anthropogenic. The Syrian elephant was the product of the power-hungry Bronze Age elite in the region. Having become an ‘evolutionarily significant unit’ for centuries, these elephants died out in the 8th or 7th century BC. Present evidence, including off-site evidence, suggests that while their local extinction was also anthropogenic, elephants themselves were not merely passive victims in the process; they have made an already difficult and degraded environment even more unsustainable for themselves and the human communities in the region. The immense demand for ivory and competition among first commercial, then territorial powers of the Bronze Age Levant, who symbolically associated themselves with elephants, caused the birth of the ‘Syrian elephant’. In their demise, not only the elites, but also non-elite herders and agriculturalists were probably responsible.

Keywords Syrian elephant, Elephas maximus, ivory, Bronze Age, Turkey, Southwest Asia

Introduction
Exquisite objects, ranging from personal ornaments to decoration, made of elephant and hippopotamus ivory are one of the hallmarks of the Bronze Age (BA) and Iron Age (IA) in Southwest Asia (Barnett 1982; Cauvet and Poplin 1987; 2010; Collon 1977; Liebowitz 1997; Wicke 2013; Winter 1976; Woolley 1955: 289, plate LXXV). The craftsmanship necessary for the production of these artefacts achieves the level of fine art, demonstrating the enormous amount of time invested in feeding the elite demand for luxury, as well as honing the necessary skills for the work. Thus, it is hardly surprising that art historical analyses of such attractive objects features prominently in the scholarship of the area (e.g. Bourgeois 1992; Kantor 1956). Embodying much that is fundamental to the vibrant political and economic environment of the Bronze and Iron Ages, the wide circulation of raw and finished ivory has been central to investigations of emerging regional powers and their economic relationships (Barnett 1956; Pulak 1998; 2001; Sherratt and Sherratt 1991). In this paper, we try to understand the emergence, life, cultural meaning and extinction of one of the possible and most likely sources of elephant ivory in the Eastern Mediterranean, the so-called ‘Syrian elephant’.

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elephant, using information from texts, pictorial representations and actual finds of elephant remains. Our attempt relies partly on previous considerations of the first two categories of information, discussed in meticulous detail (e.g. Becker 1994; 2005; Pfälzner 2013), with the focus on the evidence of actual elephant bone and elephant ivory waste remains from (supposedly) non-anthropogenic deposits, as well as from the recent excavations of Kinet Höyük, Late Bronze Age Izziai (Gates 1999; 2013), and Tell Atchana, ancient Alalakh (Woolley 1950; 1955; Yener 2013), both located in the Hatay province of modern Turkey.

**Background and biology**

It has always been clear that Bronze and Iron Age ivory objects found in the Eastern Mediterranean and Southwest Asia could have been produced from both elephant and hippopotamus ivory. Although it has been increasing common to differentiate between the two, mostly following the works of Caubet and Poplin (1987) and Krzyszkowska (1988), the source and species of the elephant has remained under discussion. Both African and Asian sources for ivory in Anatolia and Southwestern Asia are possible via trade. However, in addition to these, there is the so-called Syrian elephant. This was first evoked by Assyrian and Egyptian textual references (Hatt 1959; van Buren 1939), as a potential source of elephant ivory, and appears to have confused most scholars, leading to vague references and disagreements about its taxonomy, as well as the diverse sources of ivory in general. Liebowitz, for example, presents rather contradictory evidence. In the 1997 edition of the *Oxford Encyclopedia of Archaeology in the Near East*, he wrote first that the Syrian elephant could be related to both the African or the Indian ‘form’, and second that it could have evolved separately, and third, that it was the ‘African elephants that roamed northern Syria in the second and first millennia’. There was no concrete evidence provided for any of these three conclusions.

The ‘forms’ that he is referring to comprise the three extant species of the family Elephantidae (elephants and mammoths): the two African elephants, *Loxodonta africana* (African savannah or bush elephant) and slightly smaller *Loxodonta cyclotis* (African forest elephant), and the Asian or Asiatic elephant, *Elephas maximus*. The two genera, *Loxodonta* and *Elephas*, have evolved separately since some five to eight million years ago (Roca et al. 2015). There are several differences between these two genera. For our purposes, the most important of these are: in the Asian elephant, only males have tusks (incisors), while both male and female African elephants carry tusks; the lamella profile on the molars of each are distinct, with the *Loxodonta* having wider and diamond shaped ridges than those found on the *Elephas*; *Loxodonta* are much bigger and heavier than *Elephas*; and Asian elephants have a longer history of being tamed and trained than their African counterparts, although they too can be tamed, as seen in the Belgian Congo (Bannikov and Popov 2014; Bennet 1957).

While some scholars (e.g. Dodge 1955) believed that the Syrian elephant descended from a local Pleistocene ancestor, others (e.g. Gunter 2002: 85) have concluded that ivory must have come from places further away from the Levant, completely dismissing any evidence for the Syrian elephant. The ancestor that Dodge (1955) refers to is the Pleistocene *Elephas* sp. known from archaeological deposits and fossil beds. It is now clear that the Pleistocene *Elephas* sp. did not survive into the Holocene (Albayrak 2009; Lister et al. 2013), thus any elephant that might have existed in the area beyond that time was not indigenous.

Some scholars, especially zooarchaeologists with backgrounds in veterinary science and biology (e.g. Boessneck and Peters 1988), who identified the on-site finds to *Elephas maximus asurus*, seem to have had little doubt about the taxonomic identity of the Syrian elephant as a subspecies of the Asian elephant (i.e. a population geographically isolated from, but able to interbreed with the Asian elephant). However, these scholars have expressed surprisingly little curiosity about how the Syrian elephant might have evolved into a subspecies. This implies that they found the existence of a relict population plausible, possibly following contemporary biological views on the geographic range of the Asian elephant during the Holocene (e.g. Olivier 1978). Some scholars have surmised that the range of the Asian elephant extended all the way west into Syria in historic times (e.g. Hooijer 1978b), although we dispute this, as have others (Caubet and Poplin 2010; Lister et al. 2013; Vila 2014). Still other scholars have adopted safer and more conservative approaches when referring to the Syrian elephant. Moorey, for example, referred to it only as the ‘Asian elephant… known in Western Asia’ (1994: 116), and Krzyszkowska chose to call it ‘the elephant which lived in Syria’ (1988). For our paper, we will refer to it as the ‘Syrian elephant’, for convenience, with a discussion about its origins presented further along in this paper.

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1 For the sake of brevity, we will use this term throughout the paper to denote the elephant sub-population under discussion.
The evidence

Textual and pictorial evidence

The quest for identifying the Syrian elephant was initially invoked by references to elephants in the textual and artistic remains dating to the Bronze and Iron Ages. Notwithstanding their intrinsic limitations, these references outline the evolution of the relationship between the peoples of Southwest Asia and elephants from the 3rd millennium BC to the end of the 1st millennium BC, with important implications about the Syrian elephant’s distribution, use as raw material, and socio-political significance.

In Southwest Asia, the earliest representations of elephants appear in art and mythological literature, originating from eastern Lower Mesopotamia, and date to the end of the 3rd millennium BC (Potts 1997: 260–61). The style of depiction, though, seems to derive from that of the Indus Valley (Salonen 1976: 146–47). This strongly suggests a second-hand knowledge of elephants, rather than first-hand, real-life experience. From Greece to Arabia, no single reference to, or depiction of, an elephant or elephant parts, ante-dates these first finds from the end of the 3rd millennium BC. This consolidates other evidence that shows that the Holocene elephants of Southwest Asia were not endemic to the region and that the Early Bronze Age peoples of the region knew about them only through their contact with India, or possibly Egypt. The latter is less likely as these animals were no longer indigenous there by that time, although remembered (Osborn and Osbornová 1998: 125–31).

It is interesting that raw ivory, rather than finished objects of elephant ivory, make their appearance in Lower Mesopotamia at around this time (Potts 1997: 261). This adds to the plentiful archaeological evidence for intensifying relations between Southwest Asia and the Indus Valley and implies greater control by humans over Asian elephant populations in South-east Asia. When and where the Asian elephants became ‘tamed captives’ (sensu Zeder 2012) has not been investigated zooarchaeologically, but pictorial depictions point at a date around the mid-3rd millennium BC, occurring somewhere in India (Clutton-Brock 2012: 88).

Later textual and artistic evidence, dating primarily between the 15th and 8th centuries BC, fits well with the archaeological evidence of elephant bones found in Syria. Not only does this evidence attest to the presence of local populations and provides clues about their physical characteristics, but it also demonstrates that the goal of importing, possibly keeping, and hunting elephants during the Late Bronze Age and Early Iron Age in Southwest Asia went well beyond the desire only to acquire ivory. Since the examples of such accounts have been listed exhaustively elsewhere (e.g. Barnett 1957: 166; 1982: 5–7; Becker 1994; Brentjes 1961; Caubet and Poplin 1987; Collon 1977: 220; Hatt 1959; Mallowan 1966: 479; Trautmann 2015), in this article we will focus on what these depictions indicate about the physical appearance, geographic range, population structure, socio-political meaning, and disappearance of the elephants that lived in Syria.

First of all, the depictions show that the species in question is either Elephas maximus or is very closely related to it. The lack of large ears in pictorial representations, as in the Theban tomb of Rekhmire in Egypt, (TT 100) c. 1430 BC, or the Black Obelisk from Nimrud in Iraq, c. 830 BC — not only the imagery but also the context — rules out the possibility of identifying them as Loxodonta sp. of Africa (Collon 1977; Davies 1943). In the tomb of Rekhmire, the elephant is clearly part of the tribute being brought by Syrians, as is attested by the costume of the tribute-bearers and the relevant texts (Burchardt 1913: 106, pl. vi; Davies 1943: 29; 1935: pl. XII).

Secondly, ancient accounts indicate that live elephants roamed and were hunted in the Orontes Valley, the Upper Euphrates Valley and the Middle Euphrates Valley around modern Ana in Iraq, at least between the end of the 16th and 9th centuries BC, possibly into the 8th century BC (Breasted 1906–07; Gardiner 1964: 179, 201; Moorey 1994: 117; Scullard 1974: 28). The core of this region comprises the area of influence of the Mitanni Kingdom, the main local political player in LBA northern Syria with strong, but not always friendly, ties to Assyria in the east, Egypt in the south, and the Hittites in the north.2

Thirdly, the images imply that juvenile individuals were probably present in the available population; if we accept that the small elephant brought by the Syrians on the Rekhmire wall painting represents a young individual (Trautmann 2015: 73, fig. 2.3). A

2It is noteworthy that while the Hittite rulers were never involved with the elephants of Syria, which they probably encountered during the short intervals in the Late Bronze Age when they dominated the Mitanni (Yener 2013), the majority of the finished ivory products found at Hittite centres in Anatolia were manufactured in a clear Anatolian artistic style, suggesting that raw ivory must have been worked there locally, though no raw ivory has been discovered in the Hittite heartland yet (Kozal and Novák 2007).

3It should be noted that in the Egyptian images, the conventions of art are such that size is not a reliable indicator of age, although it is possible that a younger and more easily transportable animal was favoured as tribute over an adult male.
juvenile elephant should not have such large tusks yet, but, within the canon of Egyptian art, they might have served to identify the animal, and explain its significance and inclusion in the tribute. Furthermore, accounts of hunting elephants in Syria in huge quantities, as well as lists of tribute of live elephants being brought from there to both Assyrian and Egyptian rulers during the Late Bronze Age, and to Neo-Assyrians in the Iron Age, show that herds of Syrian elephants existed and were a political symbol that helped consolidate ruling power at home and negotiate power in the international arena (Caubet and Poplin 2010; Pfälzner 2013).

Additionally, depictions as well as texts give us a final date for the occurrence of elephants in Syria. Although accounts of live elephants decrease toward the end of the 9th century BC, mentions of hides and ivory from Syria as items of exchange and/or tribute continue into the 8th century BC (Collon 1977: 220; Mallowan 1966: 447; Scullard 1974: 29). After the 7th century however, no mention of live elephants in Syria is known until the late 4th century BC (Strabo, Geography, XVI.2.10).

**Archaeological remains**

The corpus of archaeological remains of elephants from the eastern Mediterranean and Southwest Asia supports the pictorial and textual evidence concerning the Syrian elephant (Fig. 1). However, as with these, the archaeological remains also have limitations, which are important to recognize. Firstly, despite their number, the quantity and the preservation of specimens are insufficient to allow us to make solid, population-level inferences, such as reconstructing population-wide variation in body size based on osteological measurements, as is common in zooarchaeology. Secondly, while the hard bones are often the results of different post-mortem histories, such as reconstituting population-wide variation in body size based on osteological measurements, as is common in zooarchaeology. Secondly, while the hard bones are often the results of different post-mortem histories, such as reconstituting population-wide variation in body size based on osteological measurements, as is common in zooarchaeology. Secondly, while the hard bones are often the results of different post-mortem histories, such as reconstituting population-wide variation in body size based on osteological measurements, as is common in zooarchaeology.

Moreover, different body parts enable identifications at different taxonomic levels when macroscopic observation is the only method used. One should bear in mind that non-metric osteomorphological differences between African and Asian elephants have not been studied: even if they had been, these differences would not be evident in the fragmented archaeological specimens. Distinguishing species based on tusk morphology is not possible (Hooijer 1978a). Because of the size differences between the two species, tusks, and cranial and postcranial bones can be identified to species only when they are complete enough to be measured and when the measurements show that they are too large or too small for one or the other species. However, identifications based on size can be problematic: although adult African elephants usually exceed the size of their Asian counterparts, there is a significant overlap in size between the two genera (Vila 2014). In contrast, molars with preserved chewing surfaces are readily identifiable to Asian or African elephants, as the enamel folding pattern of Loxodonta forms distinct diamonds, whereas that of Elephas consists of narrow loops (Sterndale 1884: 380). Finally, different body parts often represent the results of different human activities and are likely to have had entirely different post-mortem histories. For this reason, we will discuss the archaeological remains of tusks, molars, cranial bones, and postcranial bones of elephants separately.

**Tusks**

Elephants’ incisors, or tusks, are almost entirely composed of dentine with a small enamel cap, which makes them the most suitable material to fashion ivory objects, small and large, and the quintessential element that identifies an elephant. One must remember that Asian elephant females, unlike their African counterparts, do not carry tusks. Elephant tusks have been recovered in four forms in the archaeological contexts of Southwest Asia: unworked and complete tusks, traces of nearly complete tusks, unworked but segmented tusks, and tusks worked into ivory objects. Here, we concentrate on the first three forms.

Perhaps one of the finest examples of the first category, unworked and complete tusks, are the in situ Asian elephant tusks, identified as such due to their proximity to molars of Asian elephants (see below), found in one of the MBA palaces of Alalakh (Level VII palace, Woolley 1955: 102, plate XVIb). The accompanying bone and molar finds from this site (see below) suggest that the tusks belonged to animals who may have been killed by the residents of Alalakh’s MBA palace, perhaps in the vicinity of the city. As they were found intact, in an elite
context, it is possible that they were never meant to be fashioned into objects. Rather, they may have been publicly displayed on occasion, as is seen even with relatively contemporary gifts of elephant tusks to heads of state, that can now be seen in palace museums in Egypt, Sudan, Turkey, the UK and elsewhere. They might have been thrust into the ground as a display of power, or served as supports for a vessel to signal the supremacy of Alalakh’s Level VII rulers. The tusks may have originally been decorated with gold or other precious metals, in a manner similar to the decorated horn-shaped tusk from LBA Megiddo (Barnett 1982: plate 17) or from one of Qatna’s royal tombs (Rossberger 2012). The latter, in fact, is the only identified trace (imprint) of a nearly complete elephant tusk in LBA Syria. Due to the dampness of the tomb chambers at Qatna, most organic materials, including the tusk, have dissolved, leaving only precious metals and stones behind (Rossberger 2012). The tusk (a tip) from Megiddo and the tusk trace from Qatna have not been identified to species.

Finds of the second category, unworked but segmented tusks, are fairly common across Southwest Asia, the Eastern Mediterranean, and beyond. The earliest finds of unworked elephant ivory appear in the MBA and quickly travel as far north as Acemhöyük in Cappadocia (Deniz et al. 1991) to be utilized in the ivory industry in Anatolia, which was at the time largely in the service of Assyrian colonies (Yener 2007). The LBA finds of this category are widely distributed across the region in question, from Chagar Bazar in north-eastern Syria (Barnett 1982: 6) to Mycenae on mainland Greece (Krzyszowska 1988). As mentioned above, fragmentary tusks are not possible to identify at the species level based on macroscopic observations alone. Therefore, there is no basis to identify these fragments as being from Asian elephants, much less Syrian elephants.

While recent work indicates that microscopic and isotopic techniques can expand our understanding of the circulation of raw ivory of the Asian elephant, both in terms of time and space (Nocete et al. 2013), the results of such studies still need to be verified by multiple laboratories and research teams. The recently excavated bowl from Iron Age Tell es-Safi is thought to belong to the African elephant, based on its large size. However, its microstructure and chemical composition have provided no conclusive evidence as to its species (Maeir et al. 2015). Bronze Age ivory from Africa must have reached the Levant from Sudan or other sub-Saharan countries, travelling via Egypt, since elephants were extinct in Egypt by the end of the Predynastic Period (c. 3000 BC), (van Neer et al. 2004; contra Butzer 1959: 26; Osborn and Osbornová 1998: 125–31, who state that the elephant
existed in southern Egypt until the start of the Old Kingdom, c. 2700 BC).

**Molars**

Although attention is generally only paid to the tusks (i.e. upper incisors), most of the teeth that elephants have are molars. An individual can have up to 24 molars in a lifetime, but only carries four at any given time. As a molar wears out, another pushes forward from behind the mouth and replaces it. An elephant molar can weigh up to 3 kg. Despite their mass, most of which is filled with dentine, molars are considered less valuable than tusks for use in ivory manufacture because the dentine they contain is interrupted by enamel (Penniman 1952, cited in MacGregor 1985: 17). Most researchers (e.g. Linseele 2008; Reese and Krzyszkowska 1996) view them as having, at best, served as curiosa. However, as Gündem and Uerpmann (2003) have suggested, molar dentine can be used to produce small objects (such as buttons, pins, beads, cylinder seals, or small panels used in inlays or as parts of boxes). The abundance and nature of on-site archaeological evidence for elephant molars in the Levant contradicts Penniman’s (1952) dismissal of elephant molars as suitable material for artefact production and favours Gündem and Uerpmann’s (2003) view.

Archaeological molar remains are distributed along the epi-coastal and coastal parts of the Levant, more specifically the areas between Kinet Höyük and Ugarit, the Upper Euphrates, and the Lower Orontes Valley.4 It may be appropriate to include the molar find from LBA Kition (Reese 1985) in this group, as that site is situated on the south-eastern coast of Cyprus — only around 110 nautical miles west of Ugarit. The northernmost molar find comes from LBA Arslantepe (Bökönyi 1985) located in the Upper Euphrates Valley, while the southernmost finds were found in Ugarit on the northern Levant coast and Emar on the Upper Euphrates. Ugarit and its harbour, Minet el Beidha, are among those Late Bronze Age sites with numerous ivory objects and molars (Caubet and Poplin 1987).

Two well-preserved molars from Izzaya, Kinet Höyük, located on the eastern coast of the Iskenderun Bay, north-west of the Amanos Mountains, make important additions to the corpus of archaeological molars in Southwest Asia. Like all other elephant molars found in the region, these are easily recognizable as belonging to Asian elephants.

A complete molar (Fig. 2a) was found embedded in a wall (Wall 49 in Operation L) stratified within the LBA–IA transition at the site (local Level 12). The find is not a singular find, but is associated with postcranial elephant bones in adjacent Early Iron Age (EIA) pits (see below). Kinet’s second elephant molar was also found in an EIA deposit, but in a later phase of it (Local Period 10 or 9, in Operation EH) (Fig. 2b). No other elephant remains were recovered in nearby loci.

Further additions to archaeological elephant molars come from renewed excavations at Alalakh, the main LBA centre of the Amuq Plain and adjacent territories (Yener 2013). These are not the first molars to have been recovered at Alalakh, as previous specimens come from deposits assigned to the MBA (Woolley’s Level VII of the site; D. Reese, pers. comm.; also see Caubet and Poplin 1987 and Pfälzner 2013 for further discussion). They may or may not be associated with the tusks from the same level of the site (see above). At least two of these are near complete

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4We could not verify the molar finds from Zincirli, el Qitar and Emar listed by Lister et al. 2013.
specimens with partly preserved chewing (occlusal) surfaces. They are currently housed in the Antakya Museum where one of us (SI) examined them. The three specimens found in the new excavations at Alalakh consist of cut-off roots, missing the crown completely (Fig. 3, Supplementary Material Table 3). The crowns have presumably been exhausted to manufacture small-sized objects. These molars add to the ‘scant evidence for ivory workshops, except for Qatna’ (Caubet 2013).

While the ‘curiosa’ hypothesis (Linseele 2008) cannot be ruled out for clearly unused molars, such as those found at Kinet Höyük (below), finds of molar roots, such as those attached to the examples from Alalakh, leave little doubt as to the use of these teeth as raw material. Producers of ivory objects may have resorted to using molars to manufacture relatively small, and especially thin, objects such as panels. This practice would have allowed the use of the teeth of tusk-less female Asian elephants, so that they played a greater role in the production of ivory beyond serving as breeders, and would also have made better use of the males who have both tusks and molars.

**Cranial bones**

Two almost complete, deliberately cut jaw (mandibular) fragments from Emar on the Upper Euphrates (Gündem 2010; Gündem and Uerpmann 2003), are probably an example of what is left when molars are forcefully extracted for use in ivory production. Also, ‘an elephant’s jaw-bone was found above the ruins of the palace of Ilim-Ilimma’ of Alalakh (Woolley 1955: 288). Woolley must be referring to a LBA deposit. At least one other jaw fragment was found in the new excavations at Alalakh (Supplementary Material, Table 2). These finds and the jaw fragments from Emar can also be interpreted as waste from molar use in ivory manufacture. The geographical range of these two finds from Emar and Alalakh corresponds to the distribution of used and unused molars discussed above, further supporting the view that they may be waste products of ivory production. The outlier in this small group is the mandibular bones of the elephant ‘skeleton’ reported from Haft Tepe, located in south-eastern Iran (Negahban 1979: 25; 1991: 10, 18).

**Postcranial bones**

As mentioned above, the taxonomic identification of postcranial elephant bones cannot be considered definitive without further, molecular analyses. However, given that all molars found so far have been securely identified to the Asian elephant, there is no reason to suspect that the postcranial bones belong to the African elephant. Furthermore, if African imports were involved they would be tusks, as the molars, and the rest of the animal, were not particularly esteemed.

The earliest postcranial elephant bone find in Southwest Asia is probably a ‘leg bone’ (anatomical element unspecified) from Babylon, dating to c. 1800 BC (Reuther 1926). A bone with saw marks found in Level VIII at Alalakh (Woolley 1955: 288) is more or less contemporary with the Babylon find. Although a leg bone and a pelvis found at Tell Munbaqa in the Middle Euphrates (Boessneck and von den Driesch 1986: 15) has been dated to 2200–1900 BC (Fischer 2007: 76, table 5a), since Boessneck and Peters (1988: 53–57) report horse bones from the same deposits where this elephant bone was recovered, it is more plausible to think that these specimens date to the 2nd millennium BC, when horses started appearing in Southwest Asia. Although the number of postcranial elephant bone specimens seem to increase during the LBA, as Caubet (2013) suggests, this apparent trend in absolute numbers cannot be confirmed statistically due to the small sample. The most recent finds are dated to the 7th century BC and come from the lower city of Tell Seh Hamad (Becker 1994; 2005; 2008).

In the LBA, the remains are ubiquitous and widespread, mostly coming from palatial or elite contexts. One should bear in mind that most Bronze Age excavations in the region target elite contexts on the so-called acropolis, or the centres of tells, thereby creating
an in-built bias in terms of find spots. In addition to the published corpus of specimens from northern Mesopotamia, most recently brought to scholarly attention again due to the finds from Qatna (Pfälzner 2013; Vila 2014), we may now add several fragmented bones from Alalakh and Kinet Höyük (Supplementary Material Tables 2 and 3). All the postcranial bones from Alalakh come from the LBA deposits from the new excavations, whereas the postcranial specimens from Kinet are associated with the LBA–IA deposits where the molars (see above) were also recovered. At Kinet they include limb bones, ribs and bones of the autopodia (i.e. hands and feet); at Tell Atchana, where the sample is larger, the specimens consist of various parts of the postcranial skeleton from the scapula to the phalanges. Unfused specimens attest to the presence of young individuals at Tell Atchana. Despite the large amount of zooarchaeological material that has been studied from the non-palatial areas of the Alalakh (Çakırlar et al. 2014), no elephant remains have so far been identified from the securely dated phases excavated in these areas, such as the so-called ‘Southern Fortress’.

The postcranial finds from Kinet Höyük, together with those from Sirkeli, located in the Ceyhan-Seyhan Basin (Vogler 1997; von den Driesch 1996), extend the geographical range of the Syrian elephant northwards and westwards, well into Anatolia. If we accept that postcranial bones are unequivocal evidence for live individuals, we can now draw the borders of the distribution map of the Syrian elephant to include a large area that extends from the southern foothills of the eastern Taurus, the Levantine coastal plain, the Orontes Valley, the Beqaa Valley, the Euphrates Basin, and — perhaps — the Lower Mesopotamian Plain. The presence of biologically immature individuals (Bökönyi 1985; Vila 2014), from Maras in the Upper Euphrates to the Beqaa Valley, indicates the presence of breeding populations, and thus, proper herds.

The fragmentation (rarely modification) state and context of the postcranial elephant bones are varied and provide clues as to their function. There can be little doubt that near complete and intact finds such as those found in situ at the palace at Qatna were meant to be displayed publicly to signal power by association, as suggested by Pfälzner (2013). Most other postcranial elephant bones in Southwest Asia, however, are either more fragmented (e.g. those from Alalakh and el Qitar; Buitenhuis (1988: 181)), or, the deposits where they have been recovered are indistinguishable from the usual refuse in pits (e.g. Kinet Höyük) or middens (e.g. Alalakh, Munbaqa; (Boessneck and Peters 1988)). Although it can be argued that some of these bones have been subject to post-depositional fragmentation through re-building and trampling activities, some, such as a limb bone with repetitive cut marks from a recently excavated LBA deposit at Alalakh (Fig. 4), suggests that large and thick elephant bones were cut into smaller pieces and served an unknown but visible function in the palatial area — perhaps this was a result of butchered meat for a feast of some sort. Still others are not only fragmentary but they also belong to juvenile, hence small, individuals (e.g. Kamid el-Loz; (Bökönyi 1990: 71–72)). It is unlikely that these bones were meant for display as status markers, because control over, or hunting of, young animals is rarely associated with high status (Reitz and Wing 2008: 280–85). Fragmented or complete, the majority of the postcranial bones found in archaeological contexts seems to represent large body parts, such as femora (the largest bone in the mammal skeleton) and scapulae. It is likely that these body parts were chosen specifically, to awe and impress the viewer, and also because they provided large, solid osseous material.
Both complete and fragmented bone remains of elephants have been interpreted as vestiges of hunting activities conducted exclusively by the elite (most recently by Caubet 2013; Pfälzner 2013). But, how likely is it that all of these bones were trophies? The display of large bones of massive, extinct animals in sacred and/or public places is a practice known from the early 1st millennium BC Greece (Mayor 2011: 185–88). Indeed, ‘natural’ deposits of elephant bones were available in the LBA and IA landscape.

**Natural finds**

Evidence of unworked Holocene elephant remains in Syria and adjacent areas is often neglected in the discussions of Syrian elephants (but see Lister et al. 2013). However, they add a significant new dimension to the corpus of evidence, because they possibly represent ‘natural’ populations and provide information about the geographic range, mortality profiles, and most importantly on how Syrian elephants lived and died. Off-site evidence for Syrian elephants is also admittedly very fragmentary and scarce.

The evidence comes from two locations. The first is the type locality (a place where a biological taxon was first described) of the *Elephas maximus asurus*, i.e. the Assyrian elephant. This is the Habbaniyah swamp west of Baghdad where the subspecies was first described by Deraniyagala ((1955); cited in Hatt 1959) based on the discovery of a molar in the natural deposits of the swamp. Habbaniyah is located about 250 km distant from the region of Ana, where Assyrian kings reportedly hunted elephants in the 9th century BC. Although we cannot rule out that the Habbaniyah molar was indeed an isolated specimen, perhaps of a single individual who did not make the passage from India to Syria, the find compels us to include the wetlands around the Middle Euphrates, within the southern border of the ‘natural’ geographic range of the Syrian elephant. It must be noted, however, because the Habbaniyah molar has not been dated, its chronological position is not clear.

Interestingly, perhaps coincidentally, the northern fringes of the heartland of the Bronze Age elephant bones from Southwest Asia provide the only other ‘natural’ deposit of Holocene elephant finds in the region. This is a much larger-scale find, or rather find-group, than that from the Habbaniyah swamp, as it consists of several molars and bones that emerged from the peat deposits of the Gavur Gölü (Lake) near the city of Maraş (Albayrak and Lister 2012; Garrard et al. 1996). In the Late Bronze Age, the area around the lake was part of a buffer zone between the Hittites in the north and the Mitanni in the south (Yener 2013). The only site where elephant bones were recovered north of this lake is Arslantepe at some 250 km distance (Bökönyi 1985). Elephant remains were recovered from Gavur Gölü when the lake was drained in 1952 in order to fight malaria and to win agricultural land (Albayrak 2009: 92–93). People inhabiting the shores of the lake discovered the bones, which they dubbed ‘white coal’ because of their colour, and because they could burn them as fuel along with the exposed peat (Albayrak 2009: 93).

Because no systematic investigation of the deposit was undertaken, and the population around the lake has already used an unknown amount of the specimens, and complete bones are scattered across various museums in Turkey (representing at least six individuals, CC’s observation at the MTA Ankara and Gaziantep Museums), reconstructing the Gavur Gölü population or populations and how they accumulated is a challenge. However, a recent study on the dental remains from the deposit (Albayrak 2009; Albayrak and Lister 2012) presents some useful clues.

Firstly, the molars have been positively identified to the Asian elephant (Albayrak and Lister 2012). Curiously, no tusks have been reported so far. Secondly, observations on the wear pattern and height of four molars provide an estimated range of age-at-death between five and 33 years (Albayrak 2009: 92). Thirdly, two radiocarbon dates from two individuals provide very close dates in the late 16th–early 15th century BC (Albayrak 2009: 127). Finally, no butchery marks or any other anthropogenic markers have been reported from the deposit. Intact postcranial elements are present (personal observation, Gaziantep and Ankara MTA museums).

These data are sadly patchy and limited. It is clear, for example, that a mortality profile cannot be based on four individuals. But the data allow for some empirical rather than speculative considerations. The absence of tusks, the mortality profiles, the surprisingly close dates of the two randomly chosen specimens, suggest that the Gavur Gölü deposits may represent a typical calf-cow family unit as they occur in nature (Douglas-Hamilton et al. 2007), which had a catastrophic end as a result of a non-selective, or partly selective, single
event that targeted free-ranging Asian elephants. If induced by humans — though the lack of butchery marks speaks against it — such a death assemblage may have resulted from driving and trapping rather than active hunting with spears.

Several methods of capturing Asian elephants are known, one of which is to drive herds into swamps, killing the calves and taking young into captivity (Baker and Manwell 1983). The Gavur Gölü assemblage might be evidence for such a drive, which may have gone wrong, at least in part. The absence of tusks may be due to the fact that they were extracted from the males by the killers, rather than stemming from the absence of males in the available population. Male individuals may also have been driven to the lake, not to be killed, but rather to be trapped and captured for export as tribute, or for local royal mageries. Large male Asian elephants were used for this purpose in the more recent past (Baker and Manwell 1983). Such a scenario would also be in agreement with the written record concerning the Syrian elephant (see above). The radiocarbon dates invoke a scenario in which it is not entirely impossible that ‘the killers’ were Thutmose I or III, who report hunting a huge number of elephants in the area of ancient Ny (later Apamea) in the Orontes Valley, some 150 km to the south, at the end of the 16th and the very beginning of the 15th century BC, (Redford 2003: 116, 171, 225, 226; Trautmann 2015: 72). Alternatively, the assemblage may represent an ‘elephant graveyard’. However, only old elephants are known to gather along water sources and spend their last days feeding on subtle vegetation (Douglas-Hamilton et al. 2007), which makes such an identification unlikely. All other non-archaeological elephant finds in Southwest Asia come from pre-Late Pleistocene deposits (Albayrak 2012; Lister et al. 2013).

**The origins, habitat, range, life-styles, and demise of the Syrian elephant**

Based on all the evidence presented above, which establishes the presence of elephant herds in the Levant from the 1800 to the 1st millennium BC, we will address questions about the origins, habitat, range, life styles, and the demise of the Syrian elephant.

**When and how did the elephant arrive in Southwest Asia?**

Scholars have been divided over the origin of the Syrian elephant. While some (e.g. Barnett 1957: 164–65; Pfälzner 2013; Tchernov 1981: 74; Uerpmann 1987: 100) considered them to be direct descendants of the relict Pleistocene species, others (e.g. Collon 1977; Winter 1973: 267–68) suggested that the Syrian elephant represented an import from further east. The main argument of archaeologists for the latter has been the absence of any archaeological elephant remains in Southwest Asia prior to the end of the 3rd millennium BC, apart from finished ivory objects (Caubet and Poplin 2010; Miller 1986; Potts 1997: 261). Palaeontologists too have been unable to find a continuum between the Pleistocene and the Holocene elephants of Southwest Asia (Lister et al. 2013).

Based on all the evidence reviewed above, and in the absence of fossil evidence, we also support the hypothesis that the Syrian elephant was not endemic, but arrived in Southwest Asia later in the mid-Holocene as an import from Southeast Asia that took hold locally. This view is substantiated by the fact that elephants are absent from the vast number of zooarchaeological taxonomic lists from the region dating to the Early and earlier mid-Holocene (e.g. Arbuckle and Erek 2010; Kansa et al. 2009). Moreover, except for one unsubstantiated interpretation of the late 3rd millennium BC for a single specimen from Munbaqa (Fischer 2007: 76, table 5a), all archaeological and ‘off-site’ postcranial bones of elephants in Southwest Asia are either directly, or relatively, dated to the 2nd or 1st millennium BC. An interesting phenomenon, beyond the scope of this article, is the lack of any zooarchaeological material that can be related to the later, e.g. Seleucid (4th–1st century BC), mentions of elephants in Southwest Asia (Trautmann 2015), suggesting an earlier terminus for herds that flourished locally.

Although none of the postcranial bones mentioned above has been identified to species level with absolute confidence, the evidence indicates that the elephant remains in Southwest Asia are not derived from African elephants. This includes the total absence of molars of African elephants among the identified specimens, the fact that there are no records of African elephants being herded long-distances as captive animals, and finally, the absence of African elephants in mid-Holocene Egypt (van Neer et al. 2004); the closest source for African elephants to Southwest Asia. All these factors support the idea that the entire population of the Syrian elephant is almost certainly an outpost of the Asian elephant.

So far, only Miller (1986: n. 1) has explicitly questioned how the Asian elephant may have arrived physically in Southwest Asia in the 2nd millennium BC, and has considered maritime transportation as an option. At the moment, there is no fresh evidence to discuss this possibility further. However, if one accepts that tamed elephants were known in the
Indus Valley around 2500 BC (Clutton-Brock 2012: 88), and considers the ethnographic record of elephant herding over long distances (Baker and Manwell 1983), for which the Asian elephants are naturally suited due to their natural migratory behaviour, together with the regular contacts between Southwest Asia and the Indus Valley starting in the 3rd millennium BC (Potts 2012), it is feasible to suggest that small groups of Asian elephants were transported to Southwest Asia as part of the long-distance overland exchange. The presence of juvenile postcranial bones in the archaeological record (Bökönyi 1985; 1990) and ‘natural’ deposits of elephant remains (Albayrak 2009) indicates that these imports led to the establishment of breeding populations in Southwest Asia. Careful planning to maintain breeding populations would have required repetitive introductions in order to prevent inbreeding among introduced herds. As Collon (1977) suggested, political stability in the region would have been a prerequisite for the frequent imports of Asian elephants from long distances.

**Where and how did they live?**

There are divergent opinions about the lifestyle, habits and habitats of the Syrian elephant, and the ways in which they were kept in the Levant. One scenario has Syrian elephants living in ‘confinement’ or ‘captivity’ (Potts 1997: 261; 2012: 218), often under some form of elite control in royal menageries (Caubet 2013) or hunting parks (van Buren 1939: 177). This latter idea is borne out by textual sources (Smith 1949: 9; cited in Bökönyi 1985; Woolley 1953: 75, 125) that refer to elephant hunts in the land of Niya (also mentioned in Egyptian texts as the land of Ny, see above), and suggest the existence of game reserves, which served the double purpose of sites for ivory extraction and hunting for elite sport, in the areas along the banks of the Euphrates.

Although Asian elephants can live under captivity today, rearing them in small enclosures in zoos is a recent phenomenon due to the difficulties associated with their reproduction in confinement (Hildebrandt et al. 2006). Cows often reject their offspring due to the stress caused by confinement in a limited space. However, when the space is even marginally larger, individuals within small herds perform better. Nonetheless, managing such populations requires specialized conservation knowledge and technology (Taylor and Poole 1998). Indeed, there are a few historical accounts from Southeast Asia (15th–18th centuries AD) that mention elephants being bred in royal zoos, but references to captive elephants breeding with their forest dwelling counterparts, and then returning to captivity are far more frequent (Baker and Manwell 1983). Such accounts highlight the essential roles of large space and low levels of confinement to sustain breeding populations. If herds had been established for hunting and their ivory, and these escaped and bred unchecked, they could survive, but at a cost to both themselves and the human inhabitants of the area.

The other scenario has elephant populations (introduced or endemic) living freely in the wilderness (Bökönyi 1985; Pfälzner 2013). Asian elephants require wide areas for ranging and large amounts of protein-rich grass to survive. Although woodland areas, rather than marshland, are their preferred habitat (Miller 1986), they can inhabit scrublands, grassy plains and wetlands adjacent to rivers, as long as sufficient fodder is available (Nowak 1991: 1278–82). Thus, the ‘marginal areas’ (Smith 1949) at the edge of the gallery forest along the Orontes and Euphrates and the remaining plains could easily have supported elephant herds, particularly in the absence of hunters or human competition for space. Fallow fields or pastures that became ‘no man’s land’ as a result of warfare or political instability, might have been ideal areas in which elephant herds could have rapidly become established (Miller 1986, based on Douglas-Hamilton and Douglas-Hamilton 1975: 78–81).

The Gavur Gölü evidence (see above) shows that populations also exploited the marsh that formed around lakes, which would have been visited by humans for fishing and other activities relating to aquatic resources, but avoided for permanent occupation due to the risk of malaria and the general dampness of the area. As seasonal migrations are part of elephants’ ranging behaviour (Zeuner 1963: 277), it is likely that herds would have roamed between forests at the edge of plains, marshland and gallery forests — if permitted by human occupation.

Although competing interests in cultivated land would generally require human and elephant habitats to remain separate, they do not have to be mutually exclusive. Humans have also used elephants’ formidable ability to shape vegetation for their own benefit, notably for cultivation or logging (Delort 1992; Douglas-Hamilton et al. 2007), so one should not always assume that elephants are incompatible with human settlements and anthropogenic landscapes. In the long run, however, or when unmonitored, such practices are not sustainable and will cause serious environmental degradation.

Thus, it would seem that imported elephants were introduced into a landscape, which, during the MBA...
and LBA, was punctuated by densely populated urban centres. Although indigenous populations made ivory production more economically feasible, and this may have been the initial goal of transplanting herds into Southwest Asia, the absence of tusks in females and the negative effects of inbreeding may have forced people to continue to trade in live elephants from Southeast Asia, albeit in a limited manner. Under these conditions, elephant populations may have multiplied rapidly, to the extent that there was no choice for the herds but to roam freely and perhaps even migrate from one area to another along river basins, regardless of human territorial boundaries, and thus moving between political units.

Not all of these areas would have consisted of fallow land. On the contrary, the Asian elephant is drawn to cultivated land that contains protein-rich grass (Sukumar 1990). Elephants would have walked across cultivated fields and pastures, which would have made human–elephant conflict unavoidable. Today, one of the major causes of conflict between human groups and Asian elephants is crop and property damage, another is fear (Zhang and Wang 2003). One additional factor is competition for water (Sukumar 1990). These three factors would have been a part of the Syrian elephant’s interactions in the anthropogenic landscapes of LBA Southwest Asia.

**When and how did they die out?**

Evidence for the Syrian elephant ceased to exist during the 1st millennium BC as textual, pictorial and physical evidence for these animals stops during the second quarter of the 1st millennium BC (Barnett 1982: 74, n. 35; Collon 1977; Miller 1986; Moorey 1994: 119). A few scholars (e.g. Scullard 1974) argue that they survived into the 3rd century BC, possibly by considering the Syrian elephant and the Seleucid war elephants as the same population. However, the combined osteoarchaeological and historical evidence suggests that an 8th century BC date is most plausible for the extinction. Just as there is no osteoarchaeological evidence for the Seleucid elephants, no elephant remains dating to the period between the 8th and 3rd centuries BC have yet been reported from Southwest Asia.

Detailed considerations of how, rather than when, the Syrian elephant died off are limited. One of the favourite hypotheses for extinction is overhunting (starting with e.g. Dodge 1955). Liebowitz (1997) for example, claims that the Syrian elephant was hunted to extinction in the Late Bronze Age. Scholars posit that hunters, consisting exclusively of regional royalty and the elite (Caubet and Poplin 2010; Feldman 2014; Lane 2015), hunted the animals to extinction in a mixture of displays of prowess, power and strength, and as entertainment. Pfälzner (2013) also suggests that ‘commercial and ideological interests’ brought about their end, referring to royal hunts and the exploitation of the animals for ivory production.

Other common hypotheses regarding the extinction of elephants in Southwest Asia combine the idea of environmental change with over-exploitation as a possible cause. R. Miller (1986) has put forward the most detailed argument along this line. His theory, based on several lines of data from palynology to survey results, was as follows: population decline and a decrease in settlement density at the end of the LBA and beginning of the IA led to forest regrowth, while the increase in woody vegetation allowed the Syrian elephant to thrive in Southwest Asia. Once the landscape was more densely settled again, around the 8th century BC, forests were felled to produce charcoal for iron working and the resulting deforestation caused elephant herds to die off. Over the past 30 years several scholars have concurred with Miller’s views (Lane 2015; Moorey 1994: 117–18; Caubet and Poplin 1987: 300–01).

In itself, the combined environmental change and over-exploitation hypothesis is logical. However, following a further 30 years of research in Southwest Asia, there is a slightly more nuanced understanding of the anthropogenic landscape during the LBA–IA transition in Southwest Asia and in the Middle Iron Age. Thus, the idea of a dichotomous change in social and ‘natural’ environment that took place between LBA and IA no longer really holds. First of all, studies of pollen, charcoal and isotopic compositions of crop macro remains from different parts of Southwest Asia show a high degree of regional variability in the timing and scale of aridification and deforestation during this period (Kürschner 2008; Riehl 2012; Riehl et al. 2012). Even those who argue that a global climate change triggered all of these negative changes to the landscape admit regional variability (Drake 2012; Kaniewski et al. 2010; 2013). There is no indication, as Miller (1986) suggested, that these changes in the environment were caused by the sudden increase in iron production and working, although these might have played a role.

Interestingly, although factors mentioned, other than climate change, include felling trees for fuel, crop cultivation and overgrazing, they do not include the elephants themselves as serious ecological modifiers. Research leaves no doubt as to the impact of
Asian elephants on vegetation and landscape. The elephants eat and drink a lot (between 90 to 272 kg a day, and drink up to 200 l of water a day), move constantly across landscapes, and like cultivated plants better than plants in ‘natural’ areas, thereby causing conflict with humans (Zhang and Wang 2003). Indeed, some conservationists have recommended that the negative impact of Asian elephants on vegetation should be reduced through managed culling (Sukumar 1991), a strategy frequently applied to African elephants (Guldemond and Aarde 2008). Secondly, according to recent archaeological surveys, which record the changes in settlement patterns, it is increasingly clear that the most condensed settlements of the Bronze Age, became more dispersed in the Iron Age (Bonacossi 2008; Sader 2014; Wilkinson 2000; Wilkinson et al. 2004; Casana 2009; 2010). Many Bronze Age settlements continued to be occupied during the Iron Age, and were added to, thus doubling (and even further increasing) the number of settlements in some areas (Harrison 2009). Furthermore, thanks to more extended irrigation works, people were able to settle in previously uninhabitable areas (Bonacossi 2008).

Thus, despite the increase in settlements, there is no solid proof for the increase or decrease of the population; it is nearly impossible to estimate the number of nomadic and semi-nomadic pastoralists operating in landscapes, which are so well known from texts. However, it is clear that human exploitation of the landscape and its subsequent alteration had changed drastically in the Iron Age, and can be clearly documented, even more so than the level of population in the entire region. When it comes to human–elephant interactions, the former certainly matters (Hoare and Du Toit 1999), especially if one accepts that the Syrian elephant was not an endemic part of the landscape, but an invasive species, whose negative impact on any environment, even its own, can be catastrophic.

The presence of, as well as an increase in, the elephant population would have intensified the direct encounters between ‘ordinary’ people and elephants. Conflict would have been unavoidable, and elephants were not passive actors in these encounters. As mentioned above, Asian elephants eat up to 150 kg of plant matter and need 80 to 200 l of water per day, resources that could easily be used to support cattle, sheep and goats, let alone people, thus bringing elephants into direct competition with humans. In the case of dispersed settlement and an increase in nomadism, which seem to be the case in the Iron Age, humans would increasingly have come into conflict with wild elephant herds. Thus, it is plausible that ‘ordinary’ people rather than the elite culled elephants on massive scales, to combat the destruction that the elephants were causing in cultivated areas, as well as those landscapes that offered grazing for the domestic animals that provided food, clothing and a variety of raw materials that served the population to a greater extent than anything derived from elephants. One final aspect, overlooked in earlier discussions about the demise of the Syrian elephant, is related to the economic changes that took place outside of Southwest Asia, but had a fundamental impact on the regional trade networks: the introduction of the domestic camel (Bactrian, dromedary and their hybrid). This super-vehicle, made long-distance trade suddenly much cheaper and more flexible. With the rise of caravan trade, the import of a range of goods from east Asia, including ivory, would have become easier (Bulliet 1990). This new development would have made the Syrian elephant less valuable, especially if, as proposed above, it had become a serious threat to agriculture and herding by this time.

Conclusions

An elite desire for (and ability to access) luxury materials is obvious from the finds of elephant ivory artefacts and unworked tusks found in late 3rd and early 2nd millennium BC Southwest Asia. The growing appetite for such objects could have been fed easily by the MBA merchant class, which was engaged in an active inter-regional trade in raw materials including elephant ivory. Ultimately, this could be turned into finished products by local craftsmen, and eventually exported further to the west via the many harbours that dotted the Levantine coast (Akar 2009). To make their trade more sustainable, the craftsmen of MBA Southwest Asia needed to turn the source of imported ivory into a local resource, as it is always more profitable to have unlimited and local access to raw material than to import it. This is why, quite possibly, the first Asian elephants were imported into the Levant in the Middle Bronze Age (c. 19th–18th centuries BC), although the ivory industries in Anatolia, Syria and Palestine continued to be supplied by raw ivory from Southeast Asia, as well as Africa, via Egypt. It would not take long for the ruling class to see additional pleasures and benefits in owning these majestic creatures — the source of the much-coveted ivory. They were a suitable animal for royal and elite hunts, provided hide and hair in addition to ivory, might have been trained as they were on the Indian subcontinent, and could serve as royalty gifts in and of themselves. While a few animals may have been kept in captivity at first, breeding
through new individuals brought from the east could have led to a marked increase in numbers. At times of political stability, these herds could be managed ensuring that they would not interfere with cultivated fields, pastures and settlements, and be kept, for example, in wetlands that were uninhabited and unfrequented by city dwellers, and which were used mainly for fowling and gaming.

However, it is difficult to keep viable populations under confinement. Frequent disruptions to the political mechanisms that controlled the herds through hunting or some form of management, could have set the stage for free-roaming herds. The hunting of elephants by local Syrian elites, visiting Egyptians, Assyrians and later neo-Assyrians might have helped the Syrian rulers to successfully manage these herds, rather than catastrophically driving them to extinction, while exploiting the ivory. Eventually, as socio-political changes led to variations in settlement patterns from urbanized to dispersed groups, possible variations in population and changes in land use, elephant herds turned from being a source of wealth for the elite, to a menace to the fields and pastures on which the majority of the population depended.

Thus while the separate species argument for the Syrian elephant can be ruled out, the subspecies description of the *Elephas maximus asurus* should also be considered erroneous, because the Syrian elephant was not endemic. The Syrian elephant was a breeding population in Southwest Asia and should actually be considered an ‘Evolutionarily Significant Unit’ (ESU) (*Ryder 1986*); that is, a geographically separated, genetically restricted and possibly phenotypically distinct population. This population ranged across a large area between Baghdad in the southeast and Maraş in the north-west, between c. 1800 and 800/700 BC.

Elephants would have found themselves at home in the numerous well-watered areas of the region, along the Orontes Valley for example, and the many lakes surrounding such river valleys, such as the Gavur Gölü. They could move, with no major obstacles at all, along the river valleys north and south; reproducing healthily in a highly anthropogenic landscape. Indeed, initially they could have contributed to the anthropogenizing of the landscape, perhaps more than any other herbivore under human control. Finally, however, they could have become one of the causes of the environmental degradation that took effect at the end of the LBA, rather than just having been its victim. As the landscape became more of an ecumenopolis during the Iron Age, negative encounters between humans and elephants must have been inevitable due to conflict for space and nourishment, which might have led to deliberate culling of the elephant herds in order to eradicate the threat to space and resources. Not only the ruling class, but also non-elite herders and agriculturalists may have played an important part in this process. In addition, disease and inbreeding resulting from habitat fragmentation, could also have contributed to the eventual extinction of the Syrian elephant.

Thus, the introduction of the elephant into Southwest Asia can be seen as a prime early example of human impact on animal life in the age of Anthropocene, and, in turn, elephants can even be viewed as probable actors in the construction and degradation of eastern Mediterranean environments. A deeper understanding of these animals and their role in the region, will no doubt be developed in the future when more evidence comes to light, or new analytical methods (such as stable isotopic analysis, *Coutu 2011*) can be brought to bear on the materials available for study.

### Supplementary material

Supplementary material for this article can be accessed online at [http://dx.doi.org/10.1080/00758914.2016.1198068](http://dx.doi.org/10.1080/00758914.2016.1198068).

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When elephants battle, the grass suffers.

Power, ivory and the Syrian elephant

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