

Chapter 2

Vertebrates of Upper Mesopotamia: Present Evidence and Archaeological Data



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2.1 Introduction

The late Hellenistic king Antiochos I (69–34 B.C.)—who reigned over the kingdom of Commagene, founded north of Syria after the breakup of Alexander’s empire—built his mausoleum on the top of the Nemrut Dağ, one of the highest peaks of the Eastern Taurus mountains in southeastern Anatolia (Fig. 2.1). Looking down from its privileged geographical location, this monument surveys the underlying progression of the sleepy floodplain of the large water bodies of northern Mesopotamia, term that means the “land between the rivers” in ancient Greek. These “rivers” referred to the Tigris and the Euphrates, locating the well-known Near Eastern alluvial plain which, since ancient times, had enlivened the desertic geography of the eastern Fertile Crescent, supporting the development of millenary civilizations, such as Sumerians, Akkadian, Babylonian, Assyrian, Parthians, Romans, and Muslims (Fig. 2.2). As far as is presently known, Mesopotamia also hosted the oldest permanent human settlements and the first evidence of the domestication of ungulates. The latter phenomenon seems, in fact, to have started in a few PPNB (Pre-Pottery Neolithic B) sites of southern Turkey, such as Nevali Çori, Göbekli Tepe, and Gürkütepe (Peters et al. 1999, 2005; cf. Schmidt 1999).

Medieval Muslim geographers (seventh to twelfth centuries AD) traditionally divided Mesopotamia into two areas. *Al-Sawad*, the “dark, black land,” was the name used for southern Iraq, and refers to the strong contrast between the alluvial plain and the Arabian desert. In the middle and lower basin of the Tigris and Euphrates, the Iraqi marshlands are the most extensive wetland ecosystems in the

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Fig. 2.1 Partial view of the mausoleum of King Antiochos I (69–34 B.C.) of Commagene, on the top of the Nemrut Dağ, one of the highest peaks of the Eastern Taurus mountain range in southeastern Anatolia (photo by Marco Masseti)



Fig. 2.2 The lost Islamic city of Rasafa, the ancient Sergiopolis of the Romans, lies in the Syrian desert, south of the town of Raqqa, and the right bank of the Euphrates (photo by Marco Masseti)

Near East (Bedair et al. 2006). The *Jazīra* (“the island”), instead, coincides with the province of Upper Mesopotamia, geographically distributed throughout the territories of south-eastern Turkey, eastern Syria and northwestern Iraq. Its principal towns are Al Hasakah, Qamishli, Raqqa, Deir ez-Zor and Harrân in the Syrian Arab

Republic, Sanlurfa, Mardin, and Diyarbakir in Turkey, and Mosul in Iraq. The Jazīra takes its name from the fact that the two main rivers, the Euphrates and Tigris, transform this part of Mesopotamia into almost an island (Hillenbrand 1985), as their sources in eastern Turkey are in close proximity. Upper Mesopotamia corresponds approximately to the territorial extension of what was the kingdom of Assyria, one of the main Near Eastern state, which lasted from perhaps as early as the twenty-fifth century B.C. up to 612–609 B.C. (Lloyd 1984).

2.2 Biogeographical Features

The geographic position of Upper Mesopotamia, in the land bridge between Eurasia and Africa, gives rise to a remarkable variety of bioclimatic and biogeographical conditions throughout its territory, permitting the coexistence of biological elements from the Mediterranean and Boreal regions with Irano-Turanian and Saharo-Sindian species (Guest 1966; Atallah 1977, 1978). As in other Near Eastern countries with ancient civilizations, the natural environment of this region and its vegetation have been degraded for at least several thousand years by fire, overgrazing, extensive cultivations, and the continuous development and transformation of human settlements (cf. Wirth 1971; Zohary 1973; Rösner and Schäbitz 1991). Thus, the distribution of biological elements has undergone since prehistorical times a process of redefinition of the natural resources and environment. The present study aims to give a review of the available knowledge of Upper Mesopotamian vertebrates, which is of even greater significance today in view of the situation of civil unrest that broke out in this Near Eastern region in the last years. In fact, as it is well known, very recently, almost the totality of the Jazīra has been dramatically upset by the civil war. Because of such a fact, all the data presented in this work were collected prior to the occurrence of recent local conflicts.

The natural environment of the Jazīra is characterized by a fertile steppe which, from northeastern Syria, extends east of the Euphrates beyond the Turkish border and to the south to Iraq, overcoming the isolated hill range of *Jabal Abdul Aziz*, toward and beyond the river Tigris. The southern boundary marks the traditional limit of rain-fed cultivation. There is a network of springs that feed the Euphrates through the Khabur river and other freshwater bodies of the area, such as the Balik and the Jaghjagha. Also, the Tigris is fed by several affluents such as the Ambar and the Oymataş, in Turkey, and the Great and Little Zab, in Iraq. This ecoregion is characterized by occasional smaller lakes, but not by extensive marsh-lake habitats. The summers are very hot with daily mean temperatures of about 40 °C in July and August. The subtropical climate is of the Mediterranean type, with an average annual precipitation between 250 and 500 mm (Evans 1994), and cold winters. The steppe vegetation includes *Pistacia*, *Prunus*, and *Rhamnus* scrub, with *Artemisia*, *Atriplex*, *Helianthemum*, and *Teucrium*. Many botanical endemics are confined to the isolated hills and *wadies* of the Upper Mesopotamian steppe. Several of the zoological species that inhabited this region were exterminated in recent historical times,



Fig. 2.3 Artistic reconstruction of an aspect of the *Jazīra*, which extends on the territories of Upper Mesopotamia, including the eastern territories of Syria, the southeastern edges of Anatolia, and northwestern Iraq. In the background of a *tell*, an artificial hill resulted from the repeated stratification of human settlements, a herd of the extinct Syrian onager, *Equus hemionus hemippus* (Geoffroy, 1855), is grazing together with few goitered gazelles, *Gazella subgutturosa* (Güldenstädt, 1780). A flock of pin-tailed sandgrouses, *Pterocles alchata* (L., 1766) is flying in the sky (drawing by Alessandro Mangione)

including the Syrian onager, *Equus hemionus hemippus* (Geoffroy, 1855), on Jabal Abdul Aziz in the 1930s (Misonne 1957; Harrison 1972) (Fig. 2.3). The Arabian or white oryx, *Oryx leucoryx* (Pallas, 1777), the species perhaps at the origin of the mythical unicorn, may have persisted in the most remote desert *wadies* until very recent times (Mountfort 1965; Masseti 2004) (Fig. 2.4). During the last decades, a program of reintroduction of this ungulate has been carried out in several of the countries of its ancient diffusion, such as Syria, Jordan, Israel, Saudi Arabia, the United Arab Emirates, and Oman (Jones 1988; Fletcher 2000; Serra et al. 2003a; Shalmon 2004; IUCN SSC Antelope Specialist Group 2017).

2.3 A Vanished World

Until relatively recent times, Upper Mesopotamia has been characterized by the occurrence of a very peculiar fauna, in many cases today extinct. Osteological data confirm the former occurrence of many of the zoological species represented in the ancient artistic productions, although many of them are no longer part of the extant local fauna.



Fig. 2.4 During the last decades, a program of reintroduction of the Arabian or white oryx, *Oryx leucoryx* (Pallas, 1777), has been carried out in several of the countries of its ancient diffusion, such as Syria, Jordan, Israel, Saudi Arabia, United Arab Emirates, and Oman (photo by Marco Masseti)

The archaeozoological and paleobotanic finds from the excavation of sites, such as Tell Abu Hureyra (Raqqā), Tell Hadidi (Tabqā), or Umm Dabaghiyah (Nineveh), allow reconstructing what had to be the natural characters of the Upper Mesopotamia floodplain, bordered by an environment of steppe vegetation. During the Epipaleolithic and early Neolithic of Tell Abu Hureyra (9000–7000 B.C.) the fauna was dominated by steppe herbivores, with abundant goitred gazelles, *Gazella subgutturosa* (Güldenstädt, 1780), onagers, the Arabian hare, *Lepus capensis* L., 1758, and rather rare mouflons, *Ovis orientalis* Gmelin, 1774, and wild goats, *Capra aegagrus* Erxleben, 1777 (see Legge and Rowley-Conwy 1986). Only in the later Neolithic do domestic sheep and goat become common, effectively replacing the gazelles (Legge 1975, 1977). In the Syrian Jazīra, the mammals of the river valley were represented at Tell Assouad (first half of the seventh millennium B.C.), by the bones of wild boar, *Sus scrofa* L., 1758, Mesopotamian fallow deer, *Dama dama mesopotamica* (Brooke, 1875), and red deer, *Cervus elaphus* L., 1758 (Helmer 1985) (Fig. 2.5). Also, the beaver, *Castor fiber* L., 1758, was a component of the floodplain fauna, apparently reaching in Upper Mesopotamia the southern limits of its Palearctic geographic range.

Large carnivores were not uncommon in the region up to very recent historic times. The Asian or Indian lion, *Panthera leo persica* (Meyer, 1826), for example, survived in the gallery forests along the Upper Euphrates at least until the mid-nineteenth century (Masseti 2000, 2009a), as well as in southern and south-western Anatolia (Fellows 1841; Danford and Alston 1880; Kinnear 1920; Kumerloeve 1967; Kasperek 1986a; Kasperek and Kasperek 1990; Masseti and Mazza 2013) (Fig. 2.6). Remnant populations were reported from the region of Fethiye, in southern Turkey (Fellows 1841), on the southern bank of the river Esen (Koca Çay, south-western Anatolia) (Kasperek 1986a, b; Kasperek and Kasperek



Fig. 2.5 Stag, *Cervus elaphus* L., 1758, licking salt or drinking at a stream in an ivory bas-relief (c. 750–700 B.C.) from Khadatu (Arslan Tash), in the province of Aleppo about 30 km east of the Euphrates (photo by Marco Masseti)



Fig. 2.6 The Asian lion, *Panthera leo persica* (Meyer, 1826), survived in the gallery forests of Mesopotamia, at least, until the first half of the twentieth century (photo by Marco Masseti)

1990), as well as from the Euphrates valley (Danford and Alston 1880; Kinnear 1920; Kumerloeve 1967; Masseti 2000). Kasperek (1986a, b) noted that a small population of lions surely survived in southern Turkey at least until the mid-nineteenth century. It could still be found along the Tigris until 1918, and in Iran until 1957 (Schnitzler 2011; Masseti and Mazza 2013). According instead to Al-Sheikhly et al. (2015), the last representatives of the species were killed at the



Fig. 2.7 The so-called *Dying Lion*, wall relief from the palace of the Assyrian king Ashurbanipal which ruled Mesopotamian from 668 to 627 B.C. (photo by the British Museum, courtesy of the Trustees of the British Museum, London)

time of the military actions of the British forces (1916–1918). Among other things, the former occurrence of lions in Upper Mesopotamia is sumptuously testified by the subjects portrayed in the stone reliefs from the palace of the king Ashurbanipal, at Nineveh (about 645 B.C.) (Strommenger and Hirmer 1963; Reade 1983; Masseti 2003) (Fig. 2.7). The latter represents the Assyrian monarch's hunts of his favorite prey. Among them lions are the most frequent subjects because at this time only royalty was allowed to kill this animal, considered as one of the greatest symbols of the hostile wildlife from which a Mesopotamian ruler was obliged to protect his land (Reade 1983). Mainly for this reason, killing lions was a meritorious activity. The former distribution of *P. leo* certainly included Greece, Asia Minor, the northern Arabian Peninsula, and Persia (Kinnear 1920; Harrison 1972; Masseti 2012; Masseti and Mazza 2013). Like other species, such as the wild ox, *Bos primigenius* Bojanus, 1827, which were employed in Assyrian royal hunts, even lions were not necessarily wild. Often they were brought to the hunting-grounds in cages, from which they were conveniently released one by one (Masseti 2003). There is a written document, for example, in which the writer asked anxiously what he should do about a lion trapped in his house: the lion was eventually caught in a cage and sent by boat to the town where the king was residing (Reade 1983).

Asiatic cheetahs, *Acinonyx jubatus venaticus* (Griffith, 1921), became apparently extinct in historical times too (Masseti 2009a) (Fig. 2.8). If any of these felids still survive in the western Near East, the area where they are most likely to be found probably coincides with the remote desert tracks where the frontiers of Jordan, Iraq and Saudi Arabia meet (Corkill 1929; Harrison 1968; see also Masseti 1990). Its last report from the southern Iraqi desert is from near Busaiya (W Basra) (Al-Sheikhly et al. 2015). No recent record of the species exists from Anatolia. Yet there was a



Fig. 2.8 Asiatic cheetahs, *Acinonyx jubatus* (Schreber, 1775), probably still survive in remote desert tracks of the western Near East where the frontiers of Jordan, Iraq, and Saudi Arabia meet (photo by Anna M. De Marinis)



Fig. 2.9 Cheetah mandible found in the Early Bronze Age levels of Arslantepe (Malatya, southern Turkey) (photo by Giovanni Siracusano)

time when the felid was anything but rare in Mesopotamia, even in its northern parts, so much so that its bone remains were even found in proto-historic human settlements. In this regard, we can remember the discovery of a cheetah mandible in the Early Bronze Age levels of the archaeological site of Arslantepe (Malatya, southern Turkey) (Siracusano and Carlini 2010; Siracusano 2012) (Fig. 2.9). This finding is important both for zoological and for cultural reasons. Cheetahs have been used for hunting in the Near East and the Indian subcontinent since very ancient times. As far as is presently known, however, the oldest indirect evidence of the association between these felids and human beings comes from Italy, and more in particular from, the Etruscan tomb *Campana* (sixth century B.C.) of the necropolis of Veio



Fig. 2.10 Detail of the hunt of the wild horses, *Equus przewalskii* Poliakov, 1881, from the relief panels decorating the walls in the palace of Ashurbanipal (c. 645–635 B.C.) at Nineveh (photo by the British Museum, courtesy of the Trustees of the British Museum, London)

(Rome). In the latter artistic contest, ritual customs of oriental origin were apparently evoked.

It cannot be excluded that a wild—or feral—population of horses, *Equus przewalskii* Poliakov, 1881, survived in Upper Mesopotamia until fairly recent times, as it would be testified by some bas-reliefs still from the Ashurbanipal palace at Nineveh (Masseti 2003, 2018) (Fig. 2.10). In them, the depiction of some moments of hunting of perissodactyls, that are identical to *E. przewalskii* (Fig. 2.11), led to suppose an extension of the species distribution, still in the seventh century B.C., in today's northern Iraq. In any case, like the lions and the wild oxen employed in royal hunts, even the wild horses could not necessarily be wild, but imported alive for the king's amusements also from very far afield. Another representative of the Equidae family, eventually vanished from the land of Mesopotamia in very recent historical times, is the already mentioned Syrian onager which disappeared from its final refuge in the region of Jabal Abdul Aziz, in 1930s (Harrison 1972), the last herd being reported from the area of Jabal Sinjar in 1927 (Raswan 1935; Hatt 1959). Apropos this, Hatt (1959) observed that: “Unfortunately, except for Xenophon’s account of wild asses on the plains of the Euphrates during the campaign of 401 B.C., there are, so far as I know, no records of animals from about 500 B.C. to the middle of the nineteenth century A.D., when the reports of the Euphrates expedition (Ainsworth; Chesney), the archeologist Layard, and the travels of Lady Anne Blunt ushered in an era of new interest in this area and its animal life.” The representation of Asian wild asses is, however, almost frequent in the artistic production of the geographic area comprised between the Levant and Mesopotamia at least since prehistory (see Masseti 2002). Hunting scenes involving



Fig. 2.11 The general description of the morphology of the equids portrayed in Ashurbanipal's hunt at Nineveh do not resemble asses (Masseti 2003): their limbs and ears are short like horses, while the tails are tufted just like those of the individuals of *E. przewalskii* shown in this photograph (photo by Ferdinando Ciani)

these equids are, for example, evoked in the wall paintings of Umm Dabaghiyah, in Iraq, dated to the seventh millennium B.C. (Cauvin 2000), and in the decoration of several western Near Eastern palaces and churches, as in the cases of the seventh-century mosaics from Dayr al-'Adas of the Bursa castle, south of Damascus, or the frescoes from Qaṣr al-Hayr al-Gharbi, also in Syria (Schlumberger 1948; Schlumberger and Le Berre 1986; Fowden 2004). Other ancient artistic representations of Asian wild asses are known from the fifth century mosaic of the “personification of Ktisis” at the Beiteddine Palace (Lebanon), and the floor mosaics in the Byzantine church of Petra (Jordan) (Studer 2001), referred to the sixth century. Furthermore, the early Umayyad Qaṣr al-Amra (Hashemite Kingdom of Jordan), of the eighth century AD, is decorated with a magnificent scene in which onagers are being hunted being corralled in nests (Masseti 2015) (Fig. 2.12). Broadly speaking, it can be observed that osteological finds and archaeological documents place emphasis on Upper Mesopotamia, and more specifically the Jazīra, as a geographical area particularly congenial to onager hunting.

As already seen, also deer roamed once freely in the low Mesopotamian lands. Among them there was a peculiar form, the Persian fallow deer, *Dama dama mesopotamica* (Brooke, 1875), exclusive of the eastern Near East (Harrison and Bates 1991; Shalmon 2004; Masseti 2002), where its original range is reported east of the *Nur Dağları*, the ancient *Amanus*; a mountain range of south-eastern Turkey which divides the coastal region of Cilicia from inland Syria, also apparently marking a biogeographic barrier (Masseti and Vernesi 2015) (Fig. 2.13). The other variety of fallow deer, the common fallow deer, *D. dama dama* (L., 1758), is instead traditionally regarded as naturally dispersed in the Mediterranean territories west of



Fig. 2.12 Detail of the onager hunt on the western wall of the great hall of Qasr al-Amra, located in the vicinity of the village of Azraq, in the desert of eastern Jordan (photo by Fabio Vianello)



Fig. 2.13 The Persian or Mesopotamian fallow deer, *Dama mesopotamica* (Brooke, 1875), is a subspecies exclusive of the eastern Near East, where its original range is reported east of the *Nur Dağları*, a mountain range of south-eastern Turkey which divides the coastal region of Cilicia from inland Syria, also apparently marking a biogeographic barrier (photo by Marco Masseti)

the biogeographic barrier represented by the Amanus mountain (Masetti 2002; Masetti and Vernesi 2015). It has been artificially introduced, however, in many eastern areas, since very ancient times. A pair of cranial appendices of the latter subspecies have been discovered during the excavation of the Late Bronze Age site

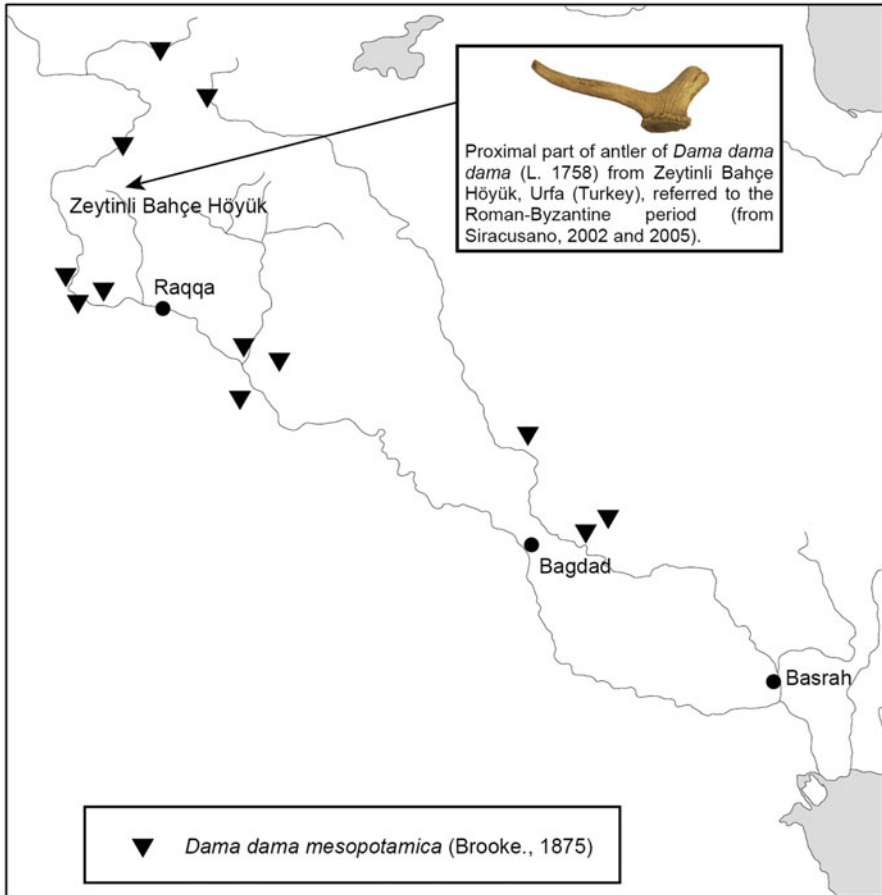


Fig. 2.14 Black triangles indicate the past and present distribution of the Mesopotamian fallow deer based on Masseti and Vernesi (2014&&). The documented ancient introduction of common fallow deer, *D. dama* (L., 1758) in the natural distributional range of *D. dama mesopotamica* is also indicated. A proximal portion of an antler of the latter deer from Zeytinli Bahçe Höyük (Urfa/Adiyaman, southern Turkey) was referred to the Roman-Byzantine period (photo by Giovanni Siracusano)

of Tel Efsar, in Israel (Fergusson et al. 1985), while the proximal part of another antler was referred to the Roman-Byzantine period, from Zeytinli Bahçe Höyük, on the Euphrates left bank, south of the Taurus mountain chain, in the region of Şanlıurfa/Adiyaman, in southern Turkey (Siracusano 2002, 2005) (Fig. 2.14). The Persian fallow deer has become comparatively rare throughout its range. Today, according to Werner et al. (2015), the total wild population does not exceed 250 adults, including wild living reintroduced individuals, such as those of the Judean Hills, in Israel. It is not known whether any individuals are remaining in the indigenous wild populations in the Iranian wildlife refuges of Dez and Karkeh.

2.4 The Beavers in the Khabur-Euphrates Basin

Up to 4000–5000 years ago, Eurasian beavers lived in the rivers from the mountain ranges of Eastern Anatolia reached the alluvial plains of Mesopotamia (Siracusano *in press*), allowing the diffusion of one of the southernmost population of the species in the whole Palaearctic biogeography up to very recent historical time.

The species was officially discovered by the British Expedition in Euphrates and Khabur of 1835. Ainsworth (1838), who was the surgeon of the expedition, reported the occurrence of these aquatic rodents where the route touched the already mentioned two rivers in modern Syria, not far from the Iraqi border. The occurrence of osteological remains of beavers in southern Anatolia and Upper Mesopotamia is documented by archeological evidence since, at least, the Paleolithic deposits of Shanidar Cave, in the Zagros Mountains (Iraq), that have been dated by radioactive carbon as 12,000 + 400 years old (Solecki 1957; Hatt 1959). Several authors, such as Patterson (1937) and Buitenhuis (1979), have reported bone fragments of this rodent from protohistoric and historical sites of this broad portion of the Near East, where the former distribution of the species was reviewed by Legge and Rowley-Conwy (1986). More recently, new data have further enriched our knowledge on the spread of beavers in Mesopotamia (Buitenhuis 1988, 1999; Becker 2005; Siracusano 2010), revealing the main concentration of their findings in the Near Eastern steppe between Turkey, Syria, and western Iran (Fig. 2.15). To these must also be added the most recent report of two osteological fragments of *C. fiber* (1 humerus and 1 mandible) which have been provided by the archaeological exploration of the Turkish site of Hirbemerdon Tepe (near Bismil) on the banks of the Tigris, and referred to the ancient Bronze Age (end of fourth—beginning of third millennium B.C.) (Remi Berton 2017, pers. com.) (Fig. 2.16). Thus, it is possible to track the past distribution of beaver in Mesopotamia from late Pleistocene onward (Table 2.1). The species may have continued to exist until the late nineteenth century in Anatolia and Syria if the reports of Danford and Alston (1880) are to be credited. It may have disappeared from Iraq much earlier as the result of deforestation and the general pressure of human population (Hatt 1959). Among the European travellers who occasionally reported the occurrence of beavers living in the Tigris–Euphrates basin during the nineteenth century, Legge and Rowley-Conwy (1986) recall Chesney and Ainsworth (1837), Byerly and Timbs (1838), Layard (1853), Hanney (1975), Helfer (1878), and Ainsworth (1888). According in particular to the last author, the rodents were found at Karkisha, near the confluence of the Khabur and the Euphrates: “*The Arabs brought us [. . .] the skin of a beaver for sale. They said that this animal, so valuable for its fur, was met with on the Khabur.*” Earlier literary sources have also been taken to suggest that these rodents lived in the Tigris–Euphrates basin into the historic period by Campbell Thompson (1926) and Brentjes (1964); a zoomorphic depiction on an orthostat from the site of Tell Halaf dated between 1000 and 800 B.C. gives a good representation of a beaver (Fig. 2.17) (von Oppenheim and Moortgat 1955; Brentjes 1964; see also Becker 2005). For the record, however, in his extensive survey of Near Eastern mammals, Harrison (1972) regards the majority

Fig. 2.15 Humerus of Eurasian beaver from the Ubaid-Chalcolithic levels of the site of Değirmentepe, Malatya (south-eastern Turkey) (photo by Giovanni Siracusano)



of these reports as “*far from satisfactory*,” suggesting that otters were misidentified as beavers. Also according to Hatt (1959), several of the Mesopotamian beavers may possibly have been otters. In the last century, however, claims for the survival of the rodents were already restricted to the drainage of the river Ceyhan in southern Turkey (Kumerloeve 1967).

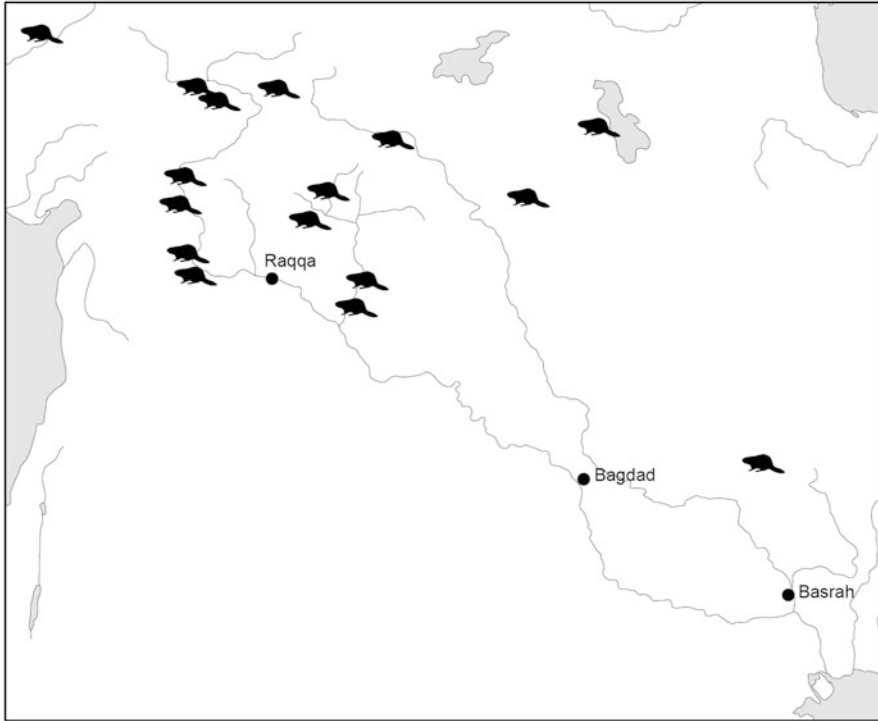


Fig. 2.16 Former occurrence of the Eurasian beaver, *Castor fiber* L., 1758, in Mesopotamia (data from Patterson 1937; Solecki 1957; Hatt 1959; Buitenhuis 1979; Legge and Rowley-Conwy 1986; Buitenhuis 1988, 1999; Becker 2005; Siracusano 2010, and Remi Berton, *in verbis*)

2.5 Extant Fauna. Mammals

Today the fauna of the Jazīra, even though it is very impoverished compared to the past both in the taxa and in the number of individuals, is still made up of numerous interesting species.

More than twenty species of Chiroptera have been recorded to date from Upper Mesopotamia (see Table 2.2). Among them, the occurrence of *Taphozous nudiventris magnus* Wettstein 1913, on the Syrian Euphrates is part of a northwestern dispersion of the Iraqi population, extending into southern Turkey (Shehab et al. 2004). The social vole, *Microtus socialis* Pallas, 1773) and the problematic *Microtus philistinus* Thomas, 1917—also considered in synonymy with *M. guentheri* (Danford and Alston 1880)—the Persian squirrel, *Sciurus anomalus* Gmelin, 1778, and the Indian crested porcupine, *Hystrix indica* Kerr, 1792, figure among the numerous rodents reported from the region (Hatt 1959; Shehab et al. 2004; Masseti 2016). The reporting, in particular, of a population of Persian squirrels in the surroundings of Deir ez-Zor raises interesting questions about the distribution of this species in eastern Syria, mainly associated with mixed and deciduous forests,

Table 2.1 Archaeological sites that provided osteological remains of Eurasian beaver, *Castor fiber* L., 1758, in Upper Mesopotamia and surrounding areas

Site	Chronology	Country	References
Cave Bisitun and Tepe Sarab	>35,000 years bp	Western Iran	Coon (1951)
Cave of Tamtama	Stone implements with no typical forms	Western Iran (Lake Urmia)	Coon (1951)
Shanidar Cave	12,000 ± 400 years bp (Palaeolithic deposits) and 10,600 ± 300 bp	North-eastern Iraq	Solecki (1957); Hatt (1959); Braidwood and Howe (1960); Perkins (1964)
Mureybet	Natufian (11000–10500 B.C.), Khiamian, (10500–9800 B.C.), and Pre Pottery Neolithic A (9800–8800 B.C.)	Syria, west bank of the river Euphrates	Cauvin (1977); Gourichon and Helmer (2004)
Jerf el Ahmar	Pre Pottery Neolithic A (PPNA)	Syria (Halula)	Stordeur (2000); Stordeur and Abbès (2002); Gourichon and Helmer (2004)
Belt cave	Uppermost Neolithic level	Northern Iran, southern shore of the Caspian Sea	Coon (1951)
Tell Abu Hureyra	7500–6000 B.C. (early and late Aceramic Neolithic)	Central Syria, Upper Euphrates	Moore (1975)
Değirmentepe	Ubaid-Chalcolithic levels	Southern Turkey (Malatya)	Siracusano (in press)
Tepe Sarab	6900 years B.C.	Western Iran	Protsch and Berger (1973)
Hirbemerdon Tepe	Bronze Age (end 4th-beginning 3rd millennium B.C.)	Turkey, near Bismil on the Tigris	Unpublished data (Remi Berton, pers. comm.)
Tell Bderi	3rd millennium B.C.	North-eastern Syria, eastern bank of the Khabur river	Becker (2005)
Tell Beydar	First half of the 3rd millennium B.C.	Southern Turkey, western bank of the river Khabur	Siracusano (2010)
Zeytinli Bahçe Hoyük	2350–2200 years B.C.	Southern Turkey, eastern bank of the Euphrates	Siracusano (2010)
Arslantepe	Late Early Bronze Age	Southern Turkey (Malatya)	Bökönyi (1993)
Tell Halaf ^a	1000–800 B.C.	Northern Syria, province of Hassakê, opposite Ceylanpınar (Şanlıurfa, Turkey)	von Oppenheim (1931); Legge and Rowley-Conwy (1986)
Tell Hadidi, west bank of the Euphrates	1800–1600 years B.C. (Middle Bronze Age 2)	Central Syria	Clason and Buitenhuis (1978); Buitenhuis (1979, 1988, 1999)

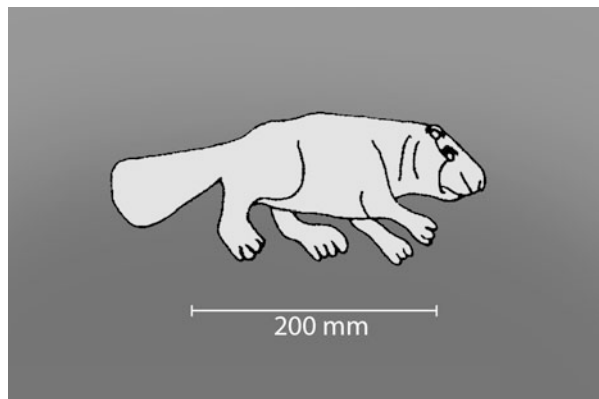
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Table 2.1 (continued)

Site	Chronology	Country	References
Alisar Hüyük	1500–1200 years B.C. (Hittite period)	Central Turkey, along the Kızılırmak river	Patterson (1937)
Korucutepe I	Neo-Hittite levels,	Southern Turkey, Upper Euphrates	Boessnek and von der Driesch (1975)
Norsuntepe	Neo-Hittite levels	Southern Turkey, upper Euphrates	Boessnek and von der Driesch (1975)
Tell Sheikh Hamad	Middle and Late Assyrian period (13th century B.C.) and suburban areas (9th–6th century B.C.)	North-eastern Syria, eastern bank of the Khabur river	Becker (2005)

^aEvidence for the historic presence of beavers comes from the site of Tell Halaf (southern Turkey), where this rodent appear carved on a stone stela dated between 1000 and 800 B.C. (von Oppenheim and Moortgat 1955) gives a good representation of a beaver (Fig. 2.16, after von Oppenheim and Moortgat 1955)

Fig. 2.17 Zoomorphic depiction of a beaver on an orthostat from the site of Tell Halaf, dated between 1000 and 800 B.C. (after von Oppenheim and Moortgat 1955)



avoiding strictly coniferous forests, but evidently much more rarely dispersed in steppe environments, such as those of eastern Syria. Recent records of the gray hamster, *Cricetulus migratorius* (Pallas, 1773), and the Balkan short-tailed mouse, *Mus macedonicus* Petrov & Ruzic, 1983, spread the range of both species eastwards, whereas the Asian garden dormouse, *Eliomys melanurus* (Wagner, 1839), appears to noteworthy extend its range further to the north (Shehab et al. 2004). Moreover, mammalian species unique to the wetlands of Lower Mesopotamia include the Bunn's short-tailed bandicoot rat, *Nesokia bunnii* (Khajuria, 1981), and the Mesopotamian gerbil, *Gerbillus mesopotamiae* Harrison, 1956 (cf. Stuart 2008). Together with the weasel, *Mustela nivalis* L., 1766, the marbled polecat, *Vormela peregusna* (Gueldenstaedt, 1770) (Fig. 2.18), is one of the most widespread small-sized carnivores. Thirteen species of large and medium-sized non-volant mammals are still

Table 2.2 Bats currently recorded from Upper Mesopotamia

English name	Scientific name	References
1. Geoffroy's trident leaf-nosed bat	<i>Asellia tridens</i> (É. Geoffroy, 1813)	Atallah and Harrison (1967); Nader and Kock (1983); Shehab et al. (2007); Omer et al. (2012)
2. Botta's serotine	<i>Eptesicus bottae</i> (Peters, 1869)	Shehab et al. (2004, 2007); Omer et al. (2012)
3. Anatolian serotine	<i>Eptesicus anatolicus</i> (Felten, 1971)	Omer et al. (2012)
4. Serotine	<i>Eptesicus serotinus</i> (Schreber, 1774)	Shehab et al. (2007)
5. Sind serotine	<i>Rhyneptesicus nasutus</i> (Dobson, 1877)	Omer et al. (2012)
6. Schreiber's bent-winged bat	<i>Miniopterus schreibersii</i> (Kuhl, 1817)	Wettstein (1913); Shehab et al. (2007)
7. Lesser mouse-eared myotis	<i>Myotis blythii</i> (Tomes, 1857)	Harrison and Lewis (1961)
8. Long-fingered bat	<i>Myotis capaccinii</i> (Bonaparte, 1837)	Shehab et al. (2004, 2007)
9. Geoffroy's bat	<i>Myotis emarginatus</i> (É. Geoffroy, 1806)	Niazi (1976); Benda (1996)
10. Greater Mouse-eared bat	<i>Myotis myotis</i> (Borkhausen, 1797)	Harrison and Lewis (1961); Nadachowski et al. (1990)
11. Hemprich's desert bat	<i>Otonycteris hemprichii</i> (Peters, 1859)	Atallah (1977); Shehab et al. (2004, 2007); Omer et al. (2012)
12. Kuhl's pipistrelle	<i>Pipistrellus kuhlii</i> (Kuhl, 1817)	Harrison and Bates (1991); Shehab et al. (2004, 2007); Omer et al. (2012)
13. Common pipistrelle	<i>Pipistrellus pipistrellus</i> (Schreber, 1774)	Benda et al. (2003)
14. Rüppell's pipistrelle	<i>Vansonia rueppellii</i> (Fischer, 1829)	Omer et al. (2012)
15. Gray Big-eared Bat	<i>Plecotus austriacus</i> (Fischer, 1829)	Trouessart and Kollman (1923)
16. Caucasian long-eared bat	<i>Plecotus macrobullaris</i> (Kuzjakin, 1965)	Shehab et al. (2007)
17. Lesser horse-shoe bat	<i>Rhinolophus ferrumequinum</i> (Schreber, 1774)	Shehab et al. (2007); Omer et al. (2012); Shehab and Mamkhair (2006)
18. Blasius's horseshoe bat	<i>Rhinolophus blasii</i> (Peters, 1867)	Wettstein (1913)
19. Mediterranean horseshoe bat	<i>Rhinolophus euryale</i> (Blasius, 1853)	Wettstein (1913); Trouessart and Kollman (1923); Omer et al. (2012); Shehab and Mamkhair (2006)
20. Lesser horse-shoe bat	<i>Rhinolophus hipposideros</i> (Bechstein, 1800)	Shehab et al. (2007); Omer et al. (2012)
21. Mehely's horseshoe bat	<i>Rhinolophus mehelyi</i> (Matschie, 1901)	Shehab et al. (2007)

(continued)

Table 2.2 (continued)

English name	Scientific name	References
22. European free-tailed bat	<i>Tadarida teniotis</i> (Rafinesque, 1814)	Shehab et al. (2007)
23. Egyptian fruit bat	<i>Rousettus aegyptiacus</i> (E. Geoffroy, 1810)	Shehab and Mamkhair (2004)
24. Naked-bellied tomb bat	<i>Taphozous nudiventris</i> (Cretzschmar, 1830)	Dobson (1878); Thomas (1915); Harrison (1964); Harrison and Bates (1991); Masseti (2001); Shehab et al. (2004, 2006, 2007); Omer et al. (2012); Masseti (2016)

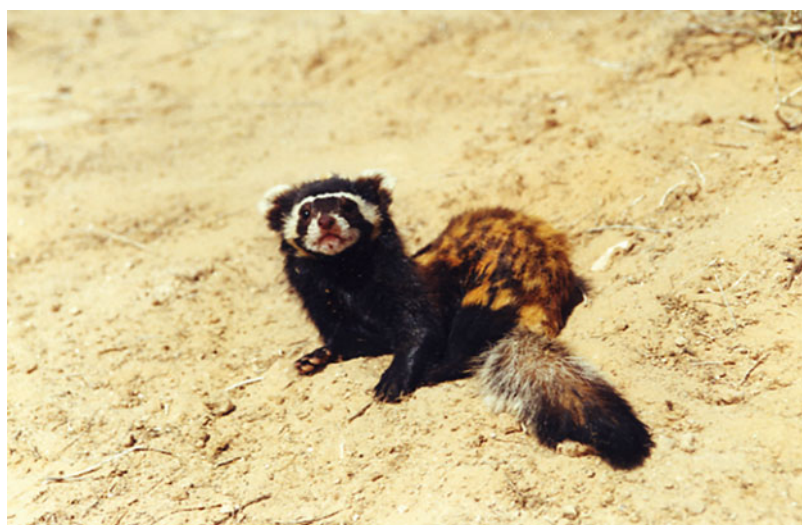


Fig. 2.18 The marbled polecat, *Vormela peregusna* (Gueldenstaedt, 1770), is one of the most widespread small-sized carnivores of Upper Mesopotamia (photo by Gianluca Serra)

recorded from the Jazīra (Masseti 2001, 2004; Omer et al. 2012; Masseti 2016). However, there are some surprising absentees, such as the ratel or honey badger, *Mellivora capensis* (Schreber, 1776), which has been never reported from the Syrian Upper Mesopotamia but figures as widespread in the desert and arid steppes of central and southern Iraq, not however in the region of the Jazīra (Hatt 1959; Masseti 2009a; Omer et al. 2012). The last Syrian leopard, *Panthera pardus* (L., 1758), is reported to have been killed in 1963, west of the Euphrates valley, in the vicinity of the village of Bab Jannè (= “the gate of paradise”), Slonfeh, on the Alawit Mountains, about 20 km from the Turkish border (Masseti 2000), whereas it has been recently recorded in many localities of northern Iraq (Omer et al. 2012) (Fig. 2.19). Carnivores such as the wild cat, *Felis silvestris* (Schreber, 1775), the Asian jackal, *Canis aureus* L., 1758 (Fig. 2.20), the wolf, *Canis lupus*, *Canis lupus*

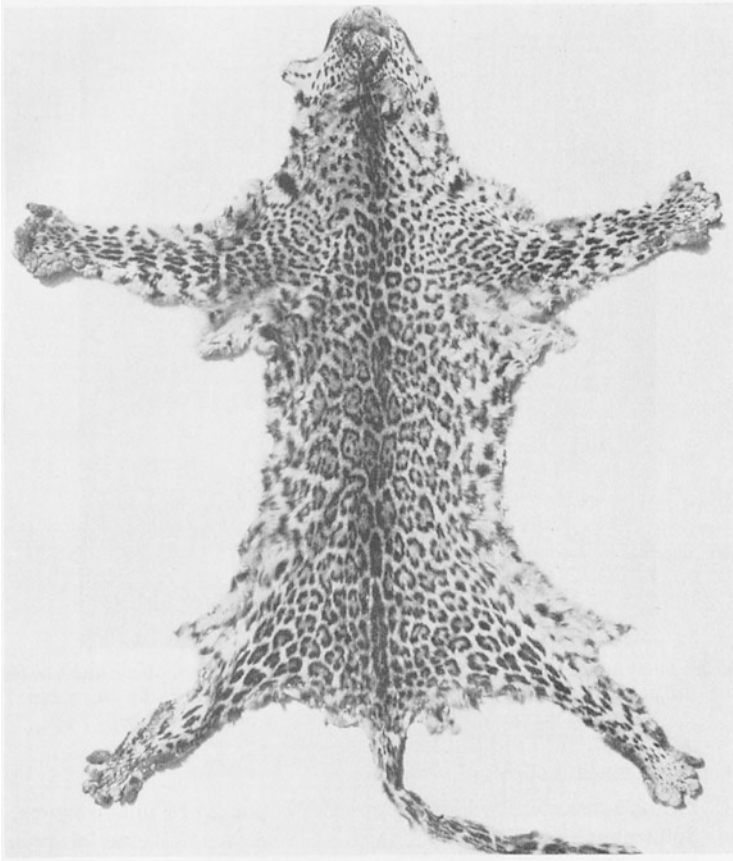


Fig. 2.19 The skin of one of the last Syrian leopard, *Panthera pardus* (L., 1758), an adult male killed at Nabi Yunes, Slonfeh, north-western Syria, in 1959, in the collection of the Museum Alexander König of Bonn (ZFMK n. 64.1171, see von Lehmann 1965)

L., 1758, the common fox, *Vulpes vulpes* (L., 1758), the Rüppel sand fox, *Vulpes rueppellii* (Schinz, 1825), and the striped hyena, *Hyaena hyaena* (L., 1758), still figure among the mammalian species most skilled at avoiding contacts with human beings, although they inhabit areas even densely settled by humans and sometimes behave as a commensal of man (Masetti 2009a, 2016). To all these must be added a felid particularly suitable for life in wetlands, the jungle cat, *Felis chaus* (Gueldenstaedt, 1776), whose world diffusion ranges from the Nile valley to the Indian subcontinent passing through Mesopotamia (Table 2.3).

There are other mammals the occurrence of which is still documented in the territories of Upper Mesopotamia, where their presence was much more widespread in former times. The already mentioned bas-reliefs of Ashurbanipal palace (seventh century B.C.), at Niniveh, undoubtedly describe, for example, a species of gazelle still present in Upper Mesopotamia, where its occurrence has also been confirmed by



Fig. 2.20 The Asian jackal, *Canis aureus* L., 1758, is among the mammalian species most skilled at avoiding contact with human beings, although it inhabits areas even densely settled by humans and behaves as a commensal of man (photo by Gianluca Serra)

archeological evidence (Masseti (2003) (Fig. 2.21). The ungulates represented refer to the already mentioned goitered gazelle, because of the accurate description of the morphology of the *taxon* (Masseti 2003). This is a rather heavily built gazelle, with indistinct flank and face stripes, and with the nose and sometimes the whole face largely white. Males have a goitered-like swelling in the mid-line of the throat, at least during the breeding season (Harrison and Bates 1991). The male horns are long and lyrate but in females they may be absent, especially in the variety *G. s. subgutturosa* Gueldenstaedt, 1780, distributed from former Soviet Union to the Levant (Kingswood and Kumamoto 1988) (Fig. 2.22). In southeast Asia, these subspecies are recorded from southwestern Anatolia, Syria, and northern Iraq (Harrison and Bates 1991; Masseti 2004). Among the gazelles that still inhabit the Near Eastern region, *G. s. subgutturosa* is the only variety showing hornless females, the same subspecies that is portrayed on the stone reliefs at Niniveh (Masseti 2003). In Upper Mesopotamia the southern range of the nominate form *G. s. subgutturosa* seems to overlap with the northern range of *G. s. marica* (Thomas, 1897), also known as Arabian sand gazelle (cf. Kingswood and Kumamoto 1988). North of the region of Deir ez Zor, in the very Upper Mesopotamia, gazelles of the subspecies *G. s. subgutturosa* are recorded up to Jabal al Bilas (north-eastern Syria) and Ceylanpınar (Şanlıurfa, south-eastern Turkey) (Kasperek 1986b; Masseti 2004), while the form *marica* has been reported already starting from the surroundings of Deir ez Zor (Masseti 2004). Although the distribution of gazelles in Iraq has been reported by Al-Sheikhly (2012), Omer et al. (2012) are of the opinion that further

Table 2.3 Birds recorded from the Jazīra in the present research (after Masseti 2016)

Species
1. Black-necked grebe, <i>Podiceps nigricollis</i> (Brehm, 1831)
2. White pelican, <i>Pelecanus onocrotalus</i> (L., 1758)
3. Pygmy cormorant, <i>Phalacrocorax pygmeus</i> (Pallas, 1773)
4. Bittern, <i>Botaurus stellaris</i> (L., 1758)
5. Little bittern, <i>Ixobrychus minutus</i> (L., 1766)
6. Squacco heron, <i>Ardeola ralloides</i> (Scopoli, 1769)
7. Night heron, <i>Nycticorax nycticorax</i> (L., 1758)
8. Cattle egret, <i>Bubulcus ibis</i> (L., 1758)
9. Great white egret, <i>Egretta alba</i> (L., 1758)
10. Little egret, <i>Egretta garzetta</i> (L., 1766)
11. Grey heron, <i>Ardea cinerea</i> (L., 1758)
12. Purple heron, <i>Ardea purpurea</i> (L., 1766)
13. White stork, <i>Ciconia ciconia</i> (L., 1758)
14. Black stork, <i>Ciconia nigra</i> (L., 1758)
15. Greater flamingo, <i>Phoenicopterus ruber</i> (L., 1758)
16. Shelduck, <i>Tadorna tadorna</i> (L., 1758)
17. Mallard, <i>Anas platyrhynchos</i> (L., 1758)
18. Teal, <i>Anas crecca</i> (L., 1758)
19. Garganey, <i>Anas querquedula</i> (L., 1758)
20. Pintail, <i>Anas acuta</i> (L., 1758)
21. Shoveler, <i>Anas clypeata</i> (L., 1758)
22. Marbled teal, <i>Marmaronetta angustirostris</i> (Ménétries, 1832)
23. Tufted duck, <i>Aythya fuligula</i> (L., 1758)
24. Pochard, <i>Aythya ferina</i> (L., 1758)
25. Ferruginous duck, <i>Aythya nyroca</i> (Gueldenstaedt, 1770)
26. Short-toed eagle, <i>Circaetus gallicus</i> (Gmelin, 1788)
27. Griffon vulture, <i>Gyps fulvus</i> (Hablizl, 1783)
28. Hen harrier, <i>Circus cyaneus</i> (L., 1766)
29. Pallid harrier, <i>Circus macrourus</i> (Gmelin, 1771)
30. Montagu's harrier, <i>Circus pygargus</i> (L., 1758)
31. Levant sparrowhawk, <i>Accipiter brevipes</i> (Severtzov, 1850)
32. Buzzard, <i>Buteo buteo</i> (L., 1758)
33. Long-legged buzzard, <i>Buteo rufinus</i> (Cretzschmar, 1827)
34. Honey buzzard, <i>Pernis apivorus</i> (L., 1758)
35. Booted eagle, <i>Hieraetus pennatus</i> (Gmelin, 1788)
36. Golden eagle, <i>Aquila chrysaetos</i> (L., 1758)
37. Pheasant, <i>Phasianus colchicus</i> (L., 1758)
38. Chukar, <i>Alectoris chukar</i> (J.E.Gray, 1830) ¹
39. Black francolin, <i>Francolinus francolinus</i> (L., 1766) ²
40. Quail, <i>Coturnix coturnix</i> (L., 1758)
41. Water rail, <i>Rallus aquaticus</i> (L., 1758)
42. Moorhen, <i>Gallinula chloropus</i> (L., 1758)

(continued)

Table 2.3 (continued)

Species
43. Coot, <i>Fulica atra</i> (L., 1758)
44. Common crane, <i>Grus grus</i> (L., 1758) ³
45. Houbara, <i>Chlamydotis undulata</i> (Jacquin, 1784)
46. Black-winged stilt, <i>Haematopus haematopus</i> (L., 1758)
47. Stone curlew, <i>Burhinus oediconemus</i> (L., 1758)
48. Cream-coloured courser, <i>Cursorius cursor</i> (Latham, 1787)
49. Lapwing, <i>Vanellus vanellus</i> (L., 1758)
50. Spur-winged plover, <i>Hoplopterus spinosus</i> (L., 1758)
51. Curlew, <i>Numenius arquata</i> (L., 1758)
52. Common sandpiper, <i>Actitis hypoleucos</i> (L., 1758)
53. Black-headed gull, <i>Larus ridibundus</i> (L., 1766)
54. Pin-tailed sandgrouse, <i>Pterocles alchata</i> (L., 1766)
55. Black-bellied sandgrouse, <i>Pterocles orientalis</i> (L., 1758)
56. Turtle dove, <i>Streptopelia turtur</i> (L., 1758)
57. Cuckoo, <i>Cuculus canorus</i> (L., 1758)
58. Eagle owl, <i>Bubo bubo</i> (L., 1758)
59. Short-eared owl, <i>Asio flammeus</i> (Pontoppidan, 1763)
60. Barn owl, <i>Tyto alba</i> (Scopoli, 1769)
61. Hoopoe, <i>Upupa epops</i> (L., 1758)
62. Roller, <i>Coracias garrulus</i> (L., 1758)
63. Golden oriole, <i>Oriolus oriolus</i> (L., 1758)
64. Magpie, <i>Pica pica</i> (L., 1758)
65. Carrion crow, <i>Corvus corone cornix</i> (L., 1758)
66. Jackdaw, <i>Corvus monedula</i> (L., 1758)
67. Starling, <i>Sturnus vulgaris</i> (L., 1758)
68. Rose-colored starling, <i>Sturnus roseus</i> (L., 1758)

investigation is required to update the distribution of both the Arabian sand gazelle and Persian gazelle.

2.6 Birds and Reptiles

The present richness of birds of the *Jazīra* is evidently connected with that of the rest of Mesopotamia, and in particular, the Shatt al-Arab delta and marshes, in southern Iraq, which comprise one of the most important areas for waterfowl in the Near East, both in terms of number of birds and in terms of taxonomic diversity. Here, about 300 species have been recorded; and nearly half of them are wetland birds (Evans 1994). For the record, these marshes support almost the entire world population of the endemic Basra reed warbler, *Acrocephalus griseldis* (Hartlaub, 1891) (BirdLife International 2017), while the Iraq babbler, *Turdoides altirostris* (Hartert, 1909), is



Fig. 2.21 A herd of Persian gazelles, *Gazella subgutturosa subgutturosa* Gueldenstaedt, 1780, is represented on the bas-reliefs of Ashurbanipal palace (seventh century B.C.), at Nimiveh (photo by the British Museum, courtesy of the Trustees of the British Museum, London)



Fig. 2.22 Unlike the Arabian sand gazelle, *G. subgutturosa marica* Thomas, 1897, the adult males of the Persian gazelle are characterized by long and lyrate horns, whereas in the females they may be absent (photo by Marco Masseti)



Fig. 2.23 The south Iraqi marshes were regarded as one of the only two known breeding sites in the Near East for sacred ibis, *Threskiornis aethiopicus* (Latham, 1790) (photo by Luigino Felcher)

also found in a [few other areas of Iraq](#) and south-western [Iran](#) (BirdLife International 2012). The Southern Iraq marshes are the only place where the African darter, *Aninga rufa* (Daudin, 1802), breeds in the Near East (Allouze 1953; Salim et al. 2009), while the Dead Sea sparrow, *Passer moabiticus* Tristram, 1864, is still regarded as a common species. Up to their drainage, which occurred between the 1950s and 1990s, these marshes were also regarded as one of the only two known breeding sites in the Near East for sacred ibis, *Threskiornis aethiopicus* (Latham, 1790) (Salim et al. 2009) (Fig. 2.23).

In the course of a research carried out several years ago in the Syrian Jazīra, about 70 species of birds have been reported, not restricted to wetland species but also including birds of prey, Passeriformes, and others (Masseti 2016). The given list is indicative of the birds of the area but certain occurrences need a more detailed comment (Table 2.4). The fact that, for example, wild geese are absent from this bird list does not mean that these birds do not belong to the avifauna recorded from the Jazīra. Wild geese of the genus *Anser*, for example, have been reported among the faunal remains since the end of the fourth millennium (Early Bronze Age) from several archaeological sites of the region, such as Zeytinli Bahçe (Urfa, south-eastern Turkey) (Siracusano 2005). It is well known that the wintering species of the area include many waterfowls, such as the ruddy shelduck, *Tadorna ferruginea* (Pallas, 1764), and the white-fronted goose, *Anser albifrons* (Scopoli, 1789), (Baumgart and Burkhard 1986; Evans 1994). Although there are not many records of the distribution of the marbled teal, *Marmaronetta angustirostris* Ménétries, 1832, in the Euphrates valley where it is comprised within the globally threatened species, it is locally regarded as a widespread breeding bird (Evans 1994; cf. Salim et al. 2009). The occurrence of common pheasants, *Phasianus colchicus* L., 1758, in Upper

Table 2.4 Archaeological evidence of elephants from Upper Mesopotamia between the first half of the second millennium and the eighth/seventh century B.C.

Site and locality	Chronology	Country	References
Arslantepe	Late Bronze Age	Turkey (Malatya)	Bökönyi (1985)
Değirmentepe	Iron Age	South-eastern Turkey (Malatya)	Siracusano (in press)
el Quitar			Buitenhuis (1988); Lister et al. (2013)
Maraş		Southern Turkey (Upper Euphrates)	Çakırlar and Ikram (2016)
Emar	Late Bronze Age	Syria	Gündem (2010); Gündem and Uerpmann (2003); Lister et al. (2013)
Zincirli		Southern Turkey	Lister et al. (2013)
Chagar Bazar	Late Bronze Age	North-eastern Syria (Al Hasaka)	Barnett (1982)
Tell Archana	Late Bronze—Iron Age	Syria	Çakırlar and Ikram (2016)
Tell Munbaqa	2nd millennium B.C.	Iraq (middle Euphrates)	Boessneck et al. (1986); Fischer (2007)
Tell Sabi Abyad			
Tell Sheikh Hamad	7th century B.C.	North-eastern Syria	Becker (2005)
Tell Bderi	Early Bronze Age	North-eastern Syria	Becker (2005)
Nimrud			
Nuzi			
Babylon	c. 1800 B.C.	Iraq	Reuther (1926)
Haft Tepe	Middle Bronze Age	South-eastern Iran	Negahban (1979)

Mesopotamia is probably the result of a recent introduction (Masseti 2016). The species is considered as an extraneous element to the biogeography of the region, its most western homeland being comprised between the eastern shore of the Black Sea and the Caspian Sea (Zeuner 1963; Cramp 1980; Hill and Robertson 1988). The taxon was named after the ancient *Phasis* (present day Rion or Rioni), the main river of western Georgia which originates in the Caucasus mountains and flows west to the Black Sea. According to local people, also the black francolin, *Francolinus francolinus* (L., 1766), is not a species characteristic of the Jazīra, but was apparently introduced by the French possibly during their protectorate of Syria, between 1922 and 1941. It should not be forgotten, however, that this bird is regarded as autochthonous in remote coastal forests of north-eastern Turkey (Kasperek 1988). Not uncommon in the Jazīra, and in other areas of Syria and Iraq, is also the rose-colored starling, *Pastor roseus* L., 1758, a migrant characteristic of the steppe and open

agricultural land from easternmost Europe across temperate southern Asia, (Masseti 2016).

It may be important to remember that along the Euphrates, near to the village of Birecik, in south-eastern Turkey at the border with Syria, there is one of the last nidification quarter of the Northern bald ibis, *Geronticus eremita* (L. 1758). Upper Mesopotamia is regarded, in fact, as the homeland of this species. Also the town of Raqqa, for example, was known to have hosted on its roof and in its walls an important colony of this bird still in the course of the second half of the nineteenth century (Mlíkovský 2012). Bald ibises were considered to have become extinct at the end of the 1980s, when the last survivors of the southeastern Anatolia colony—that of Birecik—where prevented from migrating and where held in semi-captivity (Masseti 1987; Kaspárek 1992; Serra et al. 2008). A few years ago a relic breeding population of this bird was also discovered in the surroundings of Palmyra, in the Syrian desert (Serra et al. 2003b). The political unrest, which recently affected this territory, makes it fear even for the survival of the latter small colony.

Many species of reptiles and amphibians are also recorded from Upper Mesopotamia. Among them, the desert monitor, *Varanus griseus* (Daudin, 1802), was once regarded as one of the commonest lizards of the Near-Eastern steppes and deserts. However, it has been recorded from only a few localities of south-western Anatolia, in the last decades (Sindaco et al. 2000; Masseti 2016).

The Jazīra snakes include the Montpellier snake, *Malpolon monspessolanus* (Hermann, 1804), and at least two specific representatives of the genus *Natrix*: the grass snake, *Natrix natrix* (L., 1758), and the dice snake, *N. tessellata* (Laurenti, 1768) (Masseti 2016). Although the Montpellier snake belongs to the most African group of Psammophini, it is regarded as a circum-Mediterranean zoological element (De Haan 1997). In Asia Minor and Upper Mesopotamia, it presents a disjointed distribution, being dispersed in western, southern, and eastern Anatolia (see Sindaco et al. 2000). Among the most dangerous snakes in the region the desert black snake or black cobra, *Walterinnesia aegyptia* Lataste, 1887, can be mentioned; a highly venomous, medium-sized snake, which can grow to lengths of 1.3 m, completely black in color. The herpetofauna of Upper Mesopotamia also includes the beautiful Levantine viper or blunt-nosed viper, *Macrovipera lebetina* (L., 1758), a snake dispersed from the Near Eastern and western Asia mainland to northern India, parts of North Africa, and the Mediterranean island of Cyprus (Fig. 2.24).

2.7 Inside the Rivers and Along Their Shores

Mesopotamia also displays its own endemic zoological elements which, of course, cannot be found outside its boundaries, such as the already mentioned Bunn's short-tailed bandicoot rat, and the Mesopotamian gerbil (Petter 1961; Lay and Nadler 1975; Stuart 2008; Kock and Amori 2016).

Taxa indigenous to the Upper Mesopotamia water bodies include several sub-species of fish, most of which occur in the genera *Aphanius*, *Glyptothorax*, *Cobitis*,



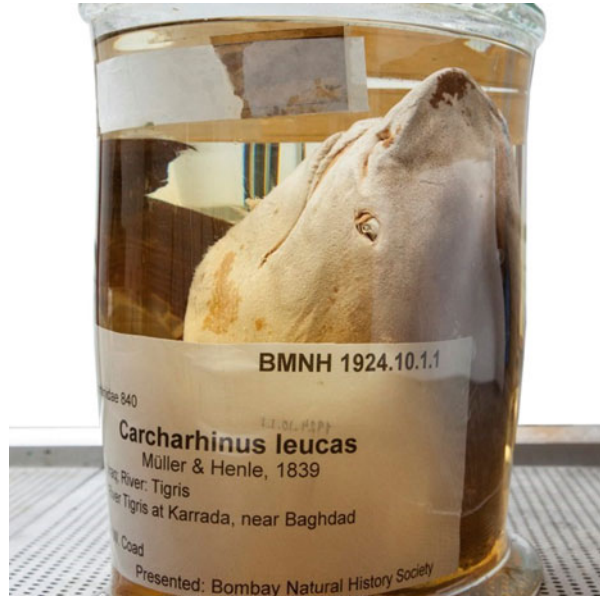
Fig. 2.24 The Levantine viper or blunt-nosed viper, *Macrovipera lebetina* (L., 1758), is a snake dispersed from the near eastern and western Asia mainland to northern India, parts of North Africa, and the Mediterranean island of Cyprus ((courtesy Philipp Wagner, Forschung, and Artenschutz, Allwetterzoo Münster)

Orthrias, and *Schistura*. *Iranocypris* is a monotypic genus endemic to this region (Coad and Hales (2013)). The autochthonous inland ichthyofauna is threatened by an increasing number of exotic fish receiving from different geographic realms including the Neotropical and Nearctic regions. Control of malaria and ornamental purposes, are the main reasons for these introductions. Recently, also a few individuals of the fish alligator gar, *Atractosteus spatula* (Lacepède, 1803), native to North America, were caught by local fishermen in the waters of Basrah (Mutlak et al. 2017), and in the lake of Marivan (Zarivar), a Tigris river tributary of Iran (Esmaeili et al. 2017). Although this is a Nearctic species, few notable sightings of it have been reported outside North America, including Turkmenistan (Salnikov 2010), Hong Kong, Singapore, and India. Iran is a new locality for this fish.

Perhaps, from time immemorial, even marine fish go up the Tigris and Euphrates. Written Arabic accounts from as early as 1263 A.D. hint at the presence of large aquatic predators in the Mesopotamian rivers, but it was not until very recent times that the Western World really took notice of such an occurrence (cf. Hunt 1951). Bull sharks, *Carcharhinus leucas* (Müller and Henle, 1839), for example, are known to frequent the Euphrates and Tigris as far inland as Baghdad (Coadt and Al-Hassan 1989). There have been even cases of the capture of two-meter sharks more than 200 km from the sea (Fig. 2.25). This type of fish is still today not uncommonly recorded and, according to Campbell (2007), it “. . . is far better known to the Iraqi than is the crocodile.”

To the taxonomic class of reptiles would be referred the sightings of some other intriguing zoological species carried out in the course of the nineteenth century. Among the many legends that surround the sleepy flow of the Mesopotamian rivers,

Fig. 2.25 Specimen of bull shark, *Carcharhinus leucas* (Müller and Henle, 1839), captured near Bagdad in 1924, and preserved in the collection of the Natural History Museum of London



there is also one reflecting the former, incredible, occurrence of crocodiles or similar reptiles. The existence in the Upper Euphrates of this type of animals was described by Byerly and Timbs (1838) who referred an observation of Colonel Alexander George Chesney. As no specimen was ever captured, it was impossible to say whether the supposed loricate was: “. . . a true crocodile, an alligator or a gavia!” (Byerly and Timbs 1838). Since then, however, it seems that the presence in Mesopotamia of crocodiles has never more been reported, as well as the assertion of Chesney never confirmed (Muzio 1925). According to Campbell (2007), the Iraqi word used for crocodile was *timsah*, of which, of course, there were none in Iraq. Therefore, it is not possible to understand if the legends about these reptiles originated from Africa, possibly as one told by indigenous people of the Black Continent themselves. Despite the fact that no representatives of the Crocodylidae taxonomic family have ever been reported from Mesopotamia, we must remember that Nile crocodiles, *Crocodylus niloticus* Laurenti, 1768, were dispersed in geographical areas not very far from here, in the swamps of the western Levant up to historical times (Ross and Magnusson 1989; King 1989; Thorbjarnarson et al. 1992; Kaplan 1993; Levin et al. 2009; de Gelder 2010). These reptiles became extinct in Palestine and western Syria only at the beginning of the twentieth century (Werner 1988; Ross 1989; Delfino et al. 2007).

If, even the former existence of crocodiles in Mesopotamia is strongly doubtful, on the other hand, the occurrence of another peculiar amphibian reptile, the Euphrates softshell turtle, also known as the Mesopotamian softshell turtle, *Rafetus euphraticus* (Daudin, 1801), is certain (Mobaraki and Mola 2011) (Fig. 2.26). This



Fig. 2.26 The Euphrates softshell turtle or Mesopotamian softshell turtle, *Rafetus euphraticus* (Daudin, 1801), is recognized as an autochthonous component of the zoogeography of Mesopotamia and its surroundings (photo by Şemsettin Turğa; courtesy Remi Berthon)

is a close relative of the Afrotropical softshell turtle, *Trionyx triunguis* (Forsskål, 1775), dispersed along the Nile valley up to south-eastern Anatolia, along the Levantine coast and rivers (Corsini-Foka and Masseti 2008; Masseti *in press-a*). With a distribution which extends from south-eastern Turkey to the north-western extent of the Persian Gulf, encompassing the rivers Euphrates and Tigris and their tributaries and other related water bodies in Syria, Iraq, and southwestern Iran (Khuzestan province) (Taskavak et al. 2016; Masseti 2016), the Euphrates softshell turtle is recognized as an autochthonous component of the zoogeography of Mesopotamia and its surroundings (Taşkavak 1998; Ghaffari et al. 2017; Ihlow et al. 2014). It is one of the least-known species of Trionychidae (Ghaffari et al. 2008), and its feeding habits are still imperfectly known. The species has generally been considered a carnivore, sometimes having been seen feeding on carcasses (Taskavak et al. 2016). The presence of large, flesh-eating turtles in the Tigris and Euphrates is commonly recorded by early travellers since the nineteenth century (Legge and Rowley-Conwy 1986). As far as 1842, for example, Ainsworth recorded several softshells feeding on the carcass of a wild ungulate: “*a number of Euphratic turtles tearing to pieces a stag.*” Habitat destruction, pollution, and fisheries interactions (intentional killing) are the main threats to the survival of this species throughout its entire diffusion range (Ghaffari et al. 2008). Some of the most ancient evidences of human exploitation of the Mesopotamian softshell turtle have been provided by the archaeological excavation of the Late Bronze Age levels (1500–1068 B.C.) of the site of Kavuşan Hoyuk, located on the right bank of the river Tigris. Here, the faunal remains of the species cannot only be considered as consumption refuse (Berthon

2013, 2014), but also as elements of post-Assyrian funerary practices (Berthon et al. 2016). The unique burial finds from Kavaşan Hoyuk, where human beings are associated with Mesopotamian turtles, coupled with archaeological and textual records, underline the economic and symbolic significance of these animals for communities in prehistoric and early historical Mesopotamia.

2.8 Vanishing Wild Boars

Once the large carnivores were disappeared from the southernmost river banks of Mesopotamia, the only dangerous beast left in the marshes of the Shatt al-Arab, is the wild boar *Sus scrofa* L., 1758, the sole species still able to synthesize the unconscious archetype of all that is wild, savage, and dangerous. Despite the dramatic and progressive drainage of the southern Iraqi wetlands, together with the high level of hunting, this ungulate still represents one of the most widespread mammals of large dimensions in the southern marshes (Thesiger 1954, 1959; Harrison and Bates 1991; Bedair et al. 2006), where its habits were diffusely described by Thesiger (1954) who noted, among other things, that its hunt was until recently performed with the spear (cf. Meakin 1901; Masseti 2016) (Fig. 2.27).

According to Al-Sheikhly et al. (2015), wild boars were recorded from at least 33 sites throughout Iraq during 2013–2014, being abundant mainly along the Tigris and Euphrates and the southern marshes. More in particular, however, the species has long since disappeared from the middle Euphrates valley, where no report has



Fig. 2.27 Thesiger (1954) noted that, in the south Iraqi marshes, the wild boar hunt was performed with the spear

been registered between the years 1989 and 2004. Here, according to hunters at Deir ez-Zor, wild boars appear to have vanished many years before (Masseti 2004). Up to the end of the 1950s, these ungulates were instead reported to be widespread in most of Upper Mesopotamia, where they were common in every suitable spot (see Ainsworth 1838). According to Hatt (1959), for example, north of Baghdad, wild boars thrived in the maze of trails and rootings on the left bank of the Tigris, mainly in thickets and in fields where cover was adequate. In Syria, their occurrence is still confirmed in the Alawite mountains (east of Latakia), as well as in the hilly areas north of Aleppo (Zahoueh and Cheiko 1993), and are regarded as still rather common on the mountains of Bayr (Kassab), Jabal el Ansaryie, and along the Gharb plain (Masseti 2004).

According to Harrison and Bates (1991), the subspecies occurring in Syria have been referred to *S. s. libycus* (Gray, 1868), whereas Hatt (1959) was of the opinion that the form dispersed in Iraq is the bigger *S. s. attila* Thomas, 1912. Thesiger (1954) observed instead that the wild suids of the southern Mesopotamian marshes were the same as the Indian wild boar.

2.9 Mesopotamian Otters

As far as 1954, Thesiger noted that otters were widely hunted for their skins in the southern Iraqi marshes, and mentioned one person who shot 40 otters in the space of 2 months. No otters were, however, recorded during several surveys carried out between 1968 and 1979, and it seems likely that by that time the populations of these carnivores were becoming much depleted by the hunters (Bedair et al. 2006).

Traditionally, two species of otter are reported from the marshes of southern Mesopotamia: the Eurasian otter, *Lutra lutra* (L., 1758), and the Middle and Far Eastern smooth-coated otter, *Lutrogale perspicillata* (I. Geoffroy Saint-Hilaire, 1826). The geographical distribution, threats, and conservation status of both of these species have been the subjects of recent studies carried out in Iraq (Omer et al. 2012; Al-Sheikhly and Nader 2013). *L. lutra* is widespread in a huge areal which comprises most of the Palaearctic region, spanning from the western Iberian peninsula to Vietnam and Taiwan (Wozencraft 2005). The smooth-coated otter is instead found in Java, Sumatra and Borneo, northward to southwestern China and Vietnam, east through Nepal and Bhutan and India to Pakistan, excluding the Indus Valley (due to barrages and dams) (Wozencraft 2005). The Eurasian otter is still the most common otter recorded from northern, central, and western Iraq (Al-Sheikhly and Nader 2013). Here its habitat is restricted to densely vegetated banks of permanent rivers, stationary rain puddles, mountain streams, and reservoirs of Tigris and Euphrates basin, and marshes (see also Hatt 1959). Data collected between 1989 and 1998 indicate that a considerable population of these otters was still present in the region comprised between the Euphrates, its tributary the Khabur and Iraq (Kock et al. 1994; Masseti 2009a). Two stuffed specimens, captured in the surroundings of Deir-ez-Zor, confirmed, in particular, the occurrence of the species in the Syrian

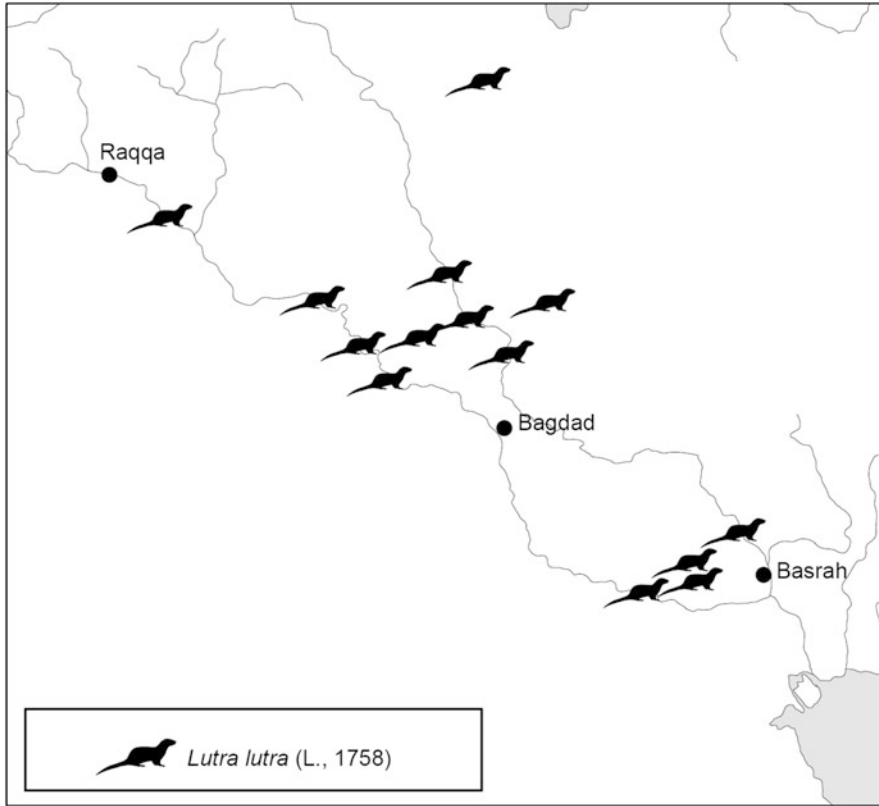


Fig. 2.28 Present distribution of the Eurasian otter, *Lutra lutra* (L., 1758), in Mesopotamia

Jazīra certainly up to the first half of the 1990s (Masseti 2001, 2004, 2009a). According to local people, there were numerous Eurasian otters in the Syrian Euphrates valley between the Iraqi border, Al Mayaddin and Doura Europos, but not in the north-westernmost area of Raqqa. Additional data were also reported from an island in the Euphrates at Doura Europos, from the site of Halabiyyeh and from Tell Sheikh, along the river Khabur, in the district of Deir-ez-Zor (Uhrin et al. 2000; Masseti 2009a) (Fig. 2.28).

As observed by Hatt (1959), the recognition of the smooth-coated otter in Mesopotamia is a matter of great interest. In Iraq, it has been described as the endemic subspecies *Lutrogale perspicillata maxwelli* Hayman, 1956 (Mason and Macdonald 1986), whose distribution was at first regarded as limited to the southern marshes (Harrison 1968; Harrison and Bates 1991; Wozencraft 2005; Karami et al. 2008). The occurrence of the species has been, however, recently documented also in north-eastern Iraq (Kurdistan Region, between Sulaymanya and the extreme North-East beyond the town of Erbil, from where 2 ♂♂ and 1 ♂ were recorded at a mountain river in TaqTaq (N 35°54' E (Omer et al. 2012; Al-Sheikhly and Nader

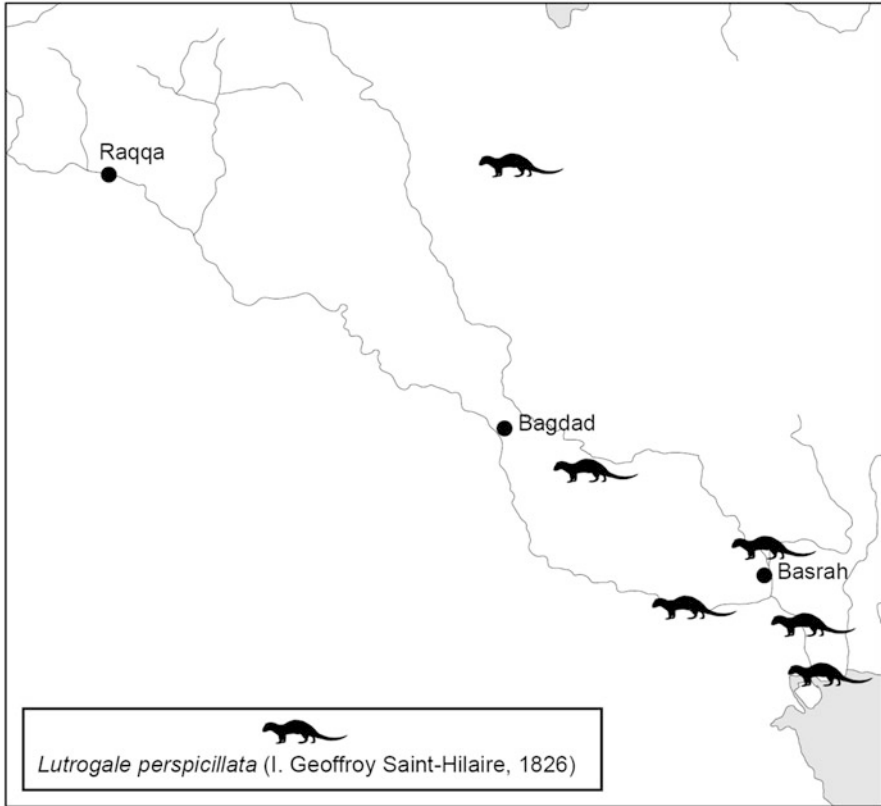


Fig. 2.29 Present distribution of the smooth-coated otter, *Lutrogale perspicillata* (l. Geoffroy Saint-Hilaire, 1826), in Mesopotamia

2013) (Fig. 2.29). In its Iraqi distribution, the smooth-coated otter prefers dense, tall reed beds, marshy lakes, and ponds. It was not possible, however, to obtain any information about its occurrence along the Syrian course of the Euphrates (Masseti 2009a). The current status of the isolated Iraqi population is uncertain. The fact that the carnivore inhabits a geographical portion of the Near East so far located from the remaining world areal of the species possibly indicates the range must once have been wider. However, one wonders if it cannot be the result of an ancient importation from abroad. Since immemorial time, smooth otters are used for commercial fishing in the Indian subcontinent. Today, in southern [Bangladesh](#), these otters are still bred in captivity, trained, and used to chase fish into fishing nets (Feroz et al. 2011).

2.10 Middle and Far Eastern Mongooses

Another medium-sized carnivore whose primary distribution has been described as limited to the Oriental Region, with the inclusion of eastern Arabia and southern Iran (Corbet 1978; Harrison and Bates 1991; Corbet and Hill 1992), the Indian gray mongoose, *Herpestes edwardsii* (É. Geoffroy Saint-Hilaire, 1818), was recently observed in northern Iraq. This record represents a large extension of the species range in Arabia (Al-Sheikhly and Mallon 2013; Al-Sheikhly et al. 2015). It confirms, after more than 100 years, the observation of Cheesman (1923), according to whom: “. . . in May 28, 1917, I chased but failed to secure, a large mongoose beyond the oil fields at Maidan-i-Naptun. This might have been an Indian species . . .”. On the native occurrence of the Indian gray mongoose in Arabia there are, however, several serious doubts. There is, for example, evidence—dated since 2000 B.C. or just before—for the anthropochorous occurrence of the latter species and the small Indian mongoose, *Herpestes auropunctatus* (Hodgson, 1836), in the western Arabian peninsula and, more in particular, on the island of Bahrain (Uerpmann 1995). Moreover, by the ancient Sumerians the name of the mongoose refers to a god, which has control over the mice. According to Uerpmann (1995), the cult of this divinity is known from the early third millennium B.C., or probably already before. There is, however, no evidence of the primary distribution of these carnivores in Mesopotamia. Thus, there is no reason to exclude that they have been artificially imported from the Indus valley already in the course of the fourth millennium B.C. Who knows if the origin of the extant gray mongooses of northern Iraq can be somehow related to an ancient oriental introduction?

2.11 Aliens from the Indian Subcontinent and Beyond

There is considerable archaeological evidence for the circulation and trade of living biological elements, materials, and ideas between the Near East and the western Indian subcontinent. As we have just seen, cultural interaction between Mesopotamia and the Middle East seems to have been established since, at least, the fourth millennium B.C. Contacts with traders in the Arabian Gulf who brought goods from India and Arabia, by way of *Dilmun* (Bahrein), were also established since, at least, the third millennium B.C. (Leemans 1960; Lloyd 1984). Archaeological and textual documentation shows, for example, that merchants from Harappa, an important Bronze Age center of the Indus Valley civilization, were present in Sumer and Akkad, and a number of Indian animals were indeed brought to Mesopotamia as gifts or exotic goods from proto-history onward. Some of these evidences came from the period of approximately 2350–2150 B.C., named in southern Mesopotamia (Sumer) after the city of Agade (or Akkad), the Akkadian capital, whose Semitic monarchs united the region, bringing the rival Sumerian cities under their control by conquest. Agade was probably founded before the time of Sargon (r. ca. 2340–2285

BC), the dynasty's first king. In the Akkadian text *The Curse of Agade*, a story about the city Agade (dated to the Ur III Period, 2047–1750 B.C.), and how it was made wonderful by the goddess *Inanna*, several exotic animals were invoked to give a flavor on the cosmopolitan nature of the Akkadian capital:

That monkeys, mighty elephants, water buffalo, exotic animals, as well as thoroughbred dogs, lions, mountain ibexes, and alum sheep with long wool would jostle each other in the public squares (Electronic Corpus of Sumerian Literature, “The Cursing of Agade”, lines 21–24).

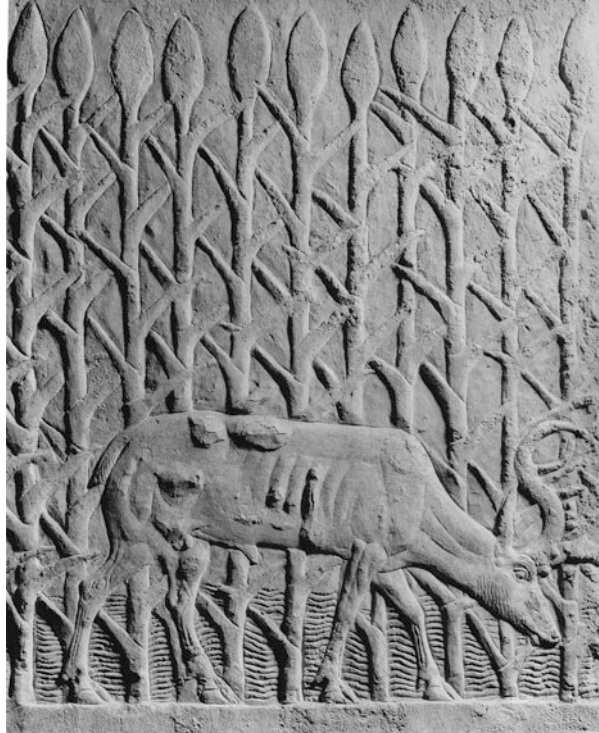
As it is easy to understand, all the animals mentioned in the latter text, including monkeys, elephants, buffaloes, and the *alum sheep with long wool*—perhaps a domestic breed characterized by a fleece of particularly fine hair—were exotic biological elements imported from the Middle East and not characteristic of Mesopotamia. Furthermore, an Ur III text describes a red dog originally from *Meluhha*, the Sumerian name of a prominent trading partner of the ancient Mesopotamian civilization, whose location in the Indus valley is still debated. The site was given in Mesopotamian literature as a source of god dust. The “red dog,” which was given to king Hibbi-Sin as tribute from *Marhasi* (inland southwestern Iran) (McIntosh 2008), was probably not a domestic canid but a dhole, *Cuon alpinus* (Pallas, 1811), the Asiatic wild dog, once very widely distributed across India. Figurines of animals were also among the goods imported to Mesopotamia from the Indus valley. Also, the phenotypical characters of the representation of an Asian elephant, *Elephas maximus* L., 1758, in the Black Obelisk of Shalmaneser III (ninth century B.C.), together with monkeys with and without tail—here identified with the Akkadian word of *pagii*, a rare case where text and picture coincide (Andrew R. George, pers. comm.)—and their association on the other side of the monument with pictures of typical Indian mammals, such as the greater one-horned rhinoceros, *Rhinoceros unicornis* (L., 1758), and other ungulates, point to a Middle Eastern source of inspiration.

2.12 Deer of Mesopotamia

Curiously, the only deer that fall into the morphology of Middle Eastern species is portrayed in ancient Assyrian art, between the ninth and the eighth centuries B.C. (Masseti 2003). Yet, at least, four species occur today in the Near East and have been also reported from prehistorical times, on the basis of osteological evidence: the roe deer, *Capreolus capreolus* (L., 1758), the already mentioned red deer and common fallow deer, and the Persian or Mesopotamian fallow deer, *D. dama mesopotamica* (Uerpmann 1981, 1987; Harrison and Bates 1991).

In Mesopotamian art, one of the most interesting representations of deer is shown on the stone relieves from Sennacherib's palace, at Niniveh (about 700 B.C.) (Masseti 2003). Among the reeds of a marsh near the Assyrian town, appear certain animals that definitely inhabited this type of environment: a domestic sow with its

Fig. 2.30 Detail of a stone reliefs from Sennacherib's palace, at Niniveh (about 700 B.C.) (photo by the British Museum, courtesy of the Trustees of the British Museum, London)



young, two hornless hinds and a stag, with well-developed but scantily pointed antlers (Fig. 2.30). Although the general aspect of this deer might resemble a small variety of *C. elaphus*, the shape of the antlers, the shortness of the limbs, and the rather large feet point to its identification with a tropical Oriental swamp-dwelling species, perhaps the thamin or Eld's deer, *Rucervus eldi* (McClelland, 1842), the most endangered wild animal in Asia. The species, formerly distributed in the grassland–forest mosaics of the Indian subcontinent, adapted to its semiaquatic existence by developing elongated hooves and hard, hairless pasterns which assist in its movements in the morass and floating islands, and which are a distinguishing feature of this species (Israel and Sinclair 1988). This cervid is also called “brow-antlered deer,” because the long first branch of the antlers, the brow tine, and the main beam form a continuous bow-shaped curve (Putman 1988). Further representations of deer of probable Middle Eastern origin are documented on the stone hunting scenes of Ashurbanipal, where a group of these ungulates is led by the beaters against a hunting net (Fig. 2.31). The morphology of these deer might be related to that of the Indian swamp deer or barasingha, *Rucervus duvaceli* (Cuvier, 1823), another endangered species, which was formerly recorded all along the base of the Himalayas, from upper Assam to Bhawalpur and Rohri in the upper Sind (Putman 1988). Like the thamin, this species too, adapted to the extensive Middle Eastern areas of marshy grassland, could have been imported into Mesopotamia



Fig. 2.31 Stone hunting scenes from the seventh century B.C. palace of Ashurbanipal, at Niniveh, where a group of Indian swamp deer or barasinga, *Rucervus duvaceli* (Cuvier, 1823), is led by the beaters against a hunting net (photo by the British Museum, courtesy of the Trustees of the British Museum, London)

from the Indian subcontinent by the Assyrian rulers, through the traders of the Arabian Gulf or via mainland Persia, and might have found convenient environmental conditions in the royal hunting parks, which were located along the Euphrates and Tigris shores (Masseti 2003).

As already seen, archaeological evidence furnishes enough documents to understand the long-term network established in commercial exchanges among Assyria and the nearest foreign countries. It may not be surprising that at some point in the recent natural history of the Near East the unexpected evidence of allochthonous biological elements could attest to their artificial diffusion in the geographical range which concerns us: this evidence may in fact be a testimony of an imported species successful acclimatization (Masseti 2003). As far as is presently known, it is not possible to ascertain whether the Indian deer were physically present in Mesopotamia or their artistic depiction was merely the result of a well-developed artistic skill. Perhaps based on models imported already made from the Middle East. In any case, this illustrates how it is not always possible to document the past presence of a certain zoological species in a specific territory and/or a particular cultural context, solely on the basis of the data offered by archaeozoological research, especially when we are dealing with animals that were utilized by an absolute *elite* (cf. Masseti 2009b), such as the kings of Assyria.

2.13 Monkeys

Apart from the southern Arabian population of the sacred baboon, *Papio hamadryas* (L., 1758), native monkeys are today unknown in the Near East (see Harrison 1964), as well as in its fossil horizons (Fig. 2.32). In fact, other representatives of the Order Primates are completely absent from the Upper Pleistocene levels of this geographical portion of the Western Palaearctic; and, as far as is presently known, no bone of monkey has ever been yielded by the scientific exploration of any of the archaeological sites of Mesopotamia. Nonetheless, monkeys are sometimes evoked in local literature and art since very ancient times (McDermott 1938; van Buren 1939).

The awareness by the Near Eastern civilizations of the existence of animals like the primates is attested since the appearance of the earliest written documents, which dates back to the third millennium B.C. (Masetti *in press-b*). Among these, the epic of the hero Gilgamesh, king of Uruk, is a poem from Sumerian and Babylonian Mesopotamia that is often regarded as the earliest surviving great work of literature. Here, the *Cedar Forest*, the glorious realm of the gods of Mesopotamian mythology, is described. In the comment to a new tablet, discovered in 2011, Al-Rawi and George (2014) observe that, in the Babylonian literary imagination, the Cedar Forest was a dense jungle inhabited by exotic and noisy fauna (17–26). Among the other sounds of this wooded environment, the chatter of monkeys formed a symphony (or cacophony) that daily entertained the forest’s potent guardian, the giant *umbaba*. In fact, as translated by Al-Rawi and George (2014), monkeys daily “... *bash out a rhythm in the presence of umbaba.*” A propos this, Andrew R. George, in his oral paper contributed to the “Primates in Antiquity Symposium,” held August 19, 2016, at Dartmouth College (New Hampshire, USA), emphasized the relationship between the musician monkeys of Gilgamesh Cedar Forest and the

Fig. 2.32 Skull of a subadult female of the Arabian sacred baboon, *Papio hamadryas arabicus* (Thomas, 1900), the sole primate species still occurring in south-western Near East (photo by Saulo Bambi; courtesy of the Natural History Museum of the University of Florence, Zoological Section “La Specola”)



many artistic evocations yielded by the archaeological exploration of ancient Mesopotamia. The translation of Al-Rawi and George (2014) gives us an unexpected description of the “*forest for the gods*,” mythologically located in a mountainous range which may have been perhaps inspired by Mount Lebanon, in the Levant, where the last centuries-old individuals of the Lebanon cedar, *Cedrus libani* A.Rich. 1823, are still preserved. No monkey, however, has ever inhabited any Near Eastern cedar forest, and, according to McDermott (1938), the presence of primates in the art of Mesopotamia indicates some exotic influence: “*The main source of this influence was Egypt—the close trade connections meant that specimens of the animals and more often artistic representations would be exported from Egypt to Mesopotamia as tribute, as presents, or as objects of trade. For example one of the tablets from Amarna lists gifts sent by Amenhotep IV (Ikhnaton, 1380-1362) to a Babylonian king—among these was a silver ape (cf. II Chronicles, 25, 27).*” But we cannot exclude that, possibly, primates have come into southern Mesopotamia from India, and that their trade passed throughout the eastern orographic chains. Sumerians believed, in fact, that monkeys came “. . . from the east [. . .] In the year name of king Ibbi-Sin’s twenty-third year, one hears of ‘the monkeys coming from the mountains’ . . .” (Snell 2005). It is not easy to place geographically the location of these eastern mountains from where monkeys must have come. East of Mesopotamia, one can find the Zagros chain and the Iranian plateau. This means that, possibly, the monkeys have come in Mesopotamia from India, throughout these orographic systems; and so, Middle Eastern primates might have been regarded as elements of Gilgamesh’s *Cedar Forest*. Also, the phenotypic characters of the monkeys evoked in many artistic representations of ancient Mesopotamia tell us of species of eastern origin, such as common Asian macaques of the species *Macaca mulatta* (Zimmermann, 1780). And very recently, osteological remains the latter species have been provided by the exploration of the Iranian site of Shahr-i Sokhta, in the province of Sistan and Baluchistan, dating to the third millennium B.C. (Minniti 2018, 2019).

There is even who, like van Buren (1939), says that several of the glazed frit monkey amulets of Akkadian Ur represent a species of anthropoid apes, and most likely a variety of gibbon of the Family Hylobatidae Gray, 1871. On the other hand, Houghton (1876-1877) suggests to identify some of the primates represented in Shalmaneser III Black Obelisk with Indian langurs of the genus *Semnopithecus* Desmarest, 1822 (Fig. 2.33), while van Buren (1939) is of the opinion that even northern plains gray langurs, *Semnopithecus entellus* (Dufresne, 1797), have been represented on many of the Mesopotamian artistic productions. Other authors, such as Hatt (1959) and Dunham (1985), believed to have further recognized several primates from the Middle to the Far East in the artistic artifacts of ancient Mesopotamia.



Fig. 2.33 The Indian elephant and the Asian monkeys of the Black Obelisk of Shalmaneser III, from Nimrud (about 825 B.C.) (photo by the British Museum, courtesy of the Trustees of the British Museum, London)

2.14 Syrian Elephants

Ivory is among the luxury materials most widespread in the ancient ornamental contexts of the southwestern Near East and, in particular, of Mesopotamia (see Mallowan 1978). This precious material was used for the decoration of furniture, such as chairs, tables, possibly beds, to ornament horse's bridles, to create boxes and cosmetic's containers, as holders for mirrors or fly swatters. The ancient world acquired its ivory either directly or through trade with Africa and the Middle East via the Levant, as attested by the Bronze Age shipwreck of Ulu Burun which had ivory as part of its cargo (Pulak 1996, 1998). Ivory, in fact, was obtained from Indian and African elephants and/or African or, even, Levantine hippopotamuses, *Hippopotamus amphibius* L., 1758 (Haas 1953; see Masseti 2003). There is some reason to assume that hippos were present at least in the coastal areas of the southern Levant, as indicated by the finding of subfossil remains of the species in local Bronze and Iron Age sites (Haas 1953; Uerpmann 1981, 1987). According, in fact, to Tchernov (1981, 1984a, 1991), the latter species was doomed to extinction in the western Near East in protohistoric/early historical time. We cannot exclude, however, that these bones might have been even imported there from the nearest African territories, such as the Nile Valley, where the species still occurred until the seventeenth century AD (Osborn and Helmy 1980).

It is generally believed that ivory was also accessible from the herds of elephants which were hunted in Syria between the first half of the second millennium and the ninth century, when they became extinct (cf. Miller 1986) (Fig. 2.34). In fact, according to pictorial, written, and osteological evidence, it seems that herds of elephants lived—possibly in a free-ranging state—in early historical times, in the



Fig. 2.34 Elephant tusks of supposed Syrian origin from the Minoan palace of Zakro (southern Crete), in the Archaeological Museum of Herakleion (photograph by Marco Masseti, courtesy of the Archaeological Museum of Herakleion, Greece)

region of north-west Syria, between the Oronte's Valley and the Khabur river (van Buren 1939; Arnold 1952; Hatt 1959; Brentjes 1969a; Drower 1973; Winter 1973; Hofmann 1974; Scullard 1974; Collon 1977; Corbet 1978; Clutton-Brock 1981; Barnett 1982; Bökönyi 1985; Miller 1986; Buitenhuis 1988, 1999; Houlihan 1996; Osborne and Osbornova 1998; Gabolde 2000; Masseti 2002, 2003). Several of the latter authors are of the opinion that the central range of the diffusion of the Mesopotamian proboscideans was the lost land of *Nij*, or *Neya*, where in 1464 B. C., the Egyptian pharaoh Tuthmosis I (1525–1512 B.C.) and his grandson Thutmosis III (1504–1450 B.C.) both took the opportunity to hunt elephants (Hatt 1959; Scullard 1974). The site of *Neya* was possibly located either in the *Gharb* plain, north of Hama (Drower 1973), or in the Euphrates region, not very far from the present site of Aleppo (Winter 1973; Barnett 1982). Also the Assyrian kings, Tiglathpileser I (1.1115–1.1102 B.C.), Adadnirari II (911–889 B.C.), Ashurnasirpal II (884–859 B.C.), and Shalmaneser III, all left accounts of elephants they killed or captured alive, presumably along the Euphrates (Hatt 1959).

Becker (2005) and Çakırlar and Ikram (2016) gave a summary of the available data on the distribution of protohistoric and early historic sites of the Near East with elephants remains from where it is possible to deduce that of the 15 sites considered in the study, at least ten are located within the Mesopotamian boundaries. More recently, elephant remains have been provided by the archaeological exploration of the Iron Age layers of Değirmentepe near Malatya, in south-eastern Turkey (Siracusano *in press*) (Fig. 2.35). Together with the findings of Arslantepe (Bökönyi 1985), from which it was only a few tens of kilometers away, the latter are the northernmost remains attributable to Mesopotamian proboscideans of historic times.

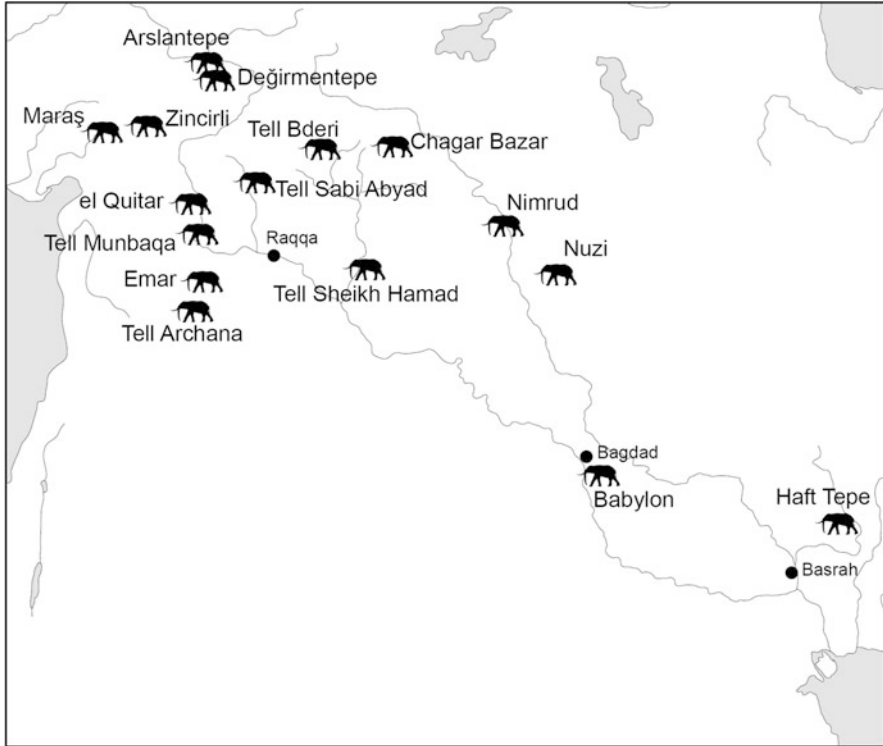


Fig. 2.35 Location of the protohistoric and early historic sites of Mesopotamia that provided osteological remains of elephants (data from Becker 2005, Çakırlar and Ikram 2016, and Siracusano [in press](#))

Biogeographic considerations make us assume that the Syrian elephants must belong to the Asian species that is *Elephas maximus* L., 1758. As far as the end of the 1950s, Hatt (1959) was already of the opinion that the few teeth, which constituted the sole physical evidence of elephants, recovered until then from ancient Iraq, belonged to the same taxon. Teeth testifying the presence of *E. maximus* in Iraq in the late Pleistocene are also known (Hatt 1959; Al-Sheikhly et al. 2015).

The presence of elephants in north-west Syria during the late second and early first millennia B.C. coincided with a period of reduced human settlement and lower population density in the area comprised between the Oronte's valley and the Upper Mesopotamia (Miller 1986; cf. McClellan 1993). It is presumed that at this time the kind of woodland-savannah mosaic needed by elephants was found throughout much of the region. Miller (1986) argued that with the increasing demand for charcoal and fuel among sedentary communities of the Iron Age, forest resources declined to the point where elephant populations became extinct. Changes in metallurgy, politics, and patterns of rangeland management may also have contributed to the reduction of elephant populations to the point where they became

vulnerable to overhunting (Miller 1986). The last pictorial evidence of the occurrence of proboscideans in Mesopotamia is carved on the already mentioned Black Obelisk of Shalmaneser III (859–824 B.C.), where a female Asian elephant is shown in the tribute of the land of *Muṣri* to the Assyrian king (see Layard 1853). van Buren (1939) suggested that the so-called “Syrian elephants” were merely animals brought in tribute or used to stock royal hunting parks. Following van van Buren (1939), in view of the fact that no other representations of proboscideans have been found in Mesopotamian art, we can presume that the so-called “Syrian elephants” were merely animals brought in tribute or used to stock royal hunting parks (Masseti 2003). They did not represent endemism of the region, but the result of frequent contacts with the Indian subcontinent (Çakırlar and Ikram 2016; Siracusano *in press*). Recently, Çakırlar and Ikram (2016) formulated the hypothesis according to which, if one accepts that tamed elephants were known in the Indus Valley around 2500 B.C. (Clutton-Brock 2012), and considers the ethnographic record of elephant herding over long distances (Baker and Manwell 1983), together with the regular contacts between south-western Asia and the Indus Valley starting in the second half of the fourth millennium B.C., it is feasible to suggest that small groups of Asian elephants were transported to the Near East as part of the long-distance overland exchange.

Furthermore, Al-Rawi and George (2014) suggest that the creation of *umbaba*, the legendary guardian of the Cedar Forest of *Gilgamesh*'s poem, was perhaps inspired by the observation of elephants. Thus, it cannot be ruled out that the source of inspiration for the invention of the mythical creature is to be referred precisely to the proboscideans who inhabited ancient Syria.

2.15 The Water Buffalo

Although there is no conclusive paleontological evidence that the Asian water buffalo, *Bubalus bubalis* (L., 1758), was indigenous to Mesopotamia, it cannot be denied that, today, this ungulate is among the most widespread domestic animals of the Euphrates and Tigris vallies, especially in its southernmost portion. The water buffalo is a coarsely robust breed, extensively used in the agricultural areas as a draft animal and for its milk, butter, cheese, and hides (Hatt 1959); it is well-adapted animal to swamps and areas subject to flooding (Abid and Fazaa 2007). These ungulates are largely immune to piroplasmiasis, and in these territories perform better than the oxen, in terms not only of work, but also of meat and milk. Herding of water buffaloes is one of the traditional main economic activity in the life of the marsh Arabs of southern Iraq, the *Ma'dān* (Thesiger 1954, 1959; Roncalli and Mandel 1993; Kubba 2011) (Fig. 2.36). Thesiger (1954) wrote that the latter also used the animal for bride buying and for meat, although they usually slaughter only animals already near death. More than one century ago, Parish (1860) observed that although extremely common in the domestic state, these ungulates were more generally feral: “. . . the abundant pastures affording such great facilities for it



Fig. 2.36 Herding of water buffaloes, *Bubalus bubalis* (L., 1758), is one of the traditional main economic activities in the life of the marsh Arabs of southern Iraq, the *Ma'dān* (from Thesiger 1959)

increase. Those wild are a much greater in size than those domesticated, and have horns of enormous size. They are also endowed with an extraordinary amount of strength, and it is said can knock over a good-sized elephant. The horns and hides of this, as well as the oxen, form articles of commerce.” Actually, domestic water buffaloes are to be found throughout the wetland areas of the Near East and particularly in the marshy, malaria-ridden territories, almost always kept in a free-ranging state (cf. Manetti 1921). Still in the nineteenth century, the Arabs of the Upper Euphrates employed the buffalo even in lion hunting (Blunt 1896). Until the end of the 1950s, these ungulates were still common in the river valleys from Basrah to Baghdad (Williamson 1949; Hatt 1959).

It seems that the water buffalo was domesticated independently in India and China from wild stock possibly before 6000 years ago. It has been introduced widely and used in domesticated herds for thousands of years across southern mainland Asia, Southeast Asia, and the Near East, and for at least 2000 years in far northeastern Africa and southern Europe, all areas where it is seen as naturalized and not invasive. Buffaloes were probably imported in the Near East not before the fourth millennium B.C. when these animals were introduced in Lower Mesopotamia following the arrival of nomadic human groups originating from India (cf. Lombard 1971). An alternative hypothesis is that the culturally advanced Uruk people, who came into the hills of Iraq from what is now central Turkey, already used the water buffalo as a domestic animal (Hatt 1959). The earliest evidence of the species in the Euphrates and Tigris plains consist of horn cores from the site of Grai Resh in the Sinjar hills, a village of Uruk culture, dated to around the first half of fourth millennium B.C. (Davis 1987). Some bones of water buffalo were also found

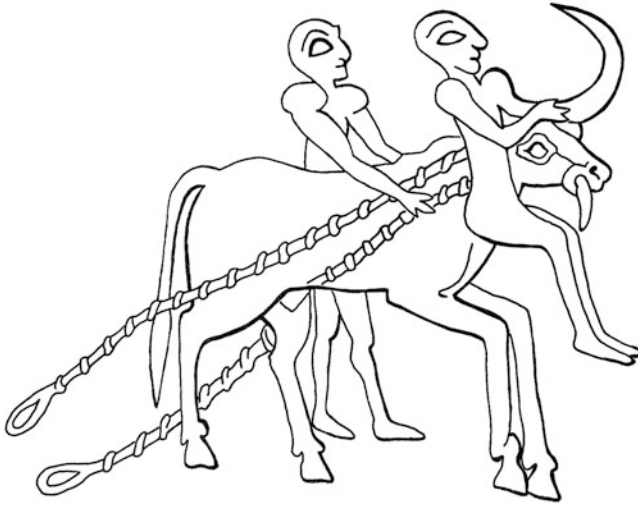


Fig. 2.37 Impression of a cylinder seal of the Uruk period, 3200–2700 B.C. (first half of the fourth millennium B.C.) (from Davis 1987)

in the post-Hittite (twelfth to seventh century B.C.) layers of the Turkish village of Boghazköy, built in the immediate vicinity of Hattusa, the ancient capital of the Hittite empire (Vogel 1952; Bökönyi 1974).

The importation of the domestic buffalo in Lower Mesopotamia is also documented by several artistic productions (Brentjes 1969b). The vivid depiction of this ungulate appears in a few Sumerian artifacts since the first half of the fourth millennium B.C. (Davis 1987), such as one cylinder seals of the Uruk period, 3200–2700 (first half of the fourth millennium B.C.) (Davis 1987) (Fig. 2.37), confirming its Mesopotamian occurrence, also documented as we have already seen by the contemporary discovery of osteological findings. Images of water buffaloes compare on Akkadian artistic productions of the late Agade period (2750–2100 B.C.), in another seal of Ibn-Sharrum, the scribe of king Sharkali-Sharri son of Naram-Sin, 2250 B.C. (Fig. 2.38), and are even mentioned in a few texts (McIntosh 2008). According to Hatt (1959), the species was frequently portrayed until about 2100 B.C. at which time it presumably became extinct. Failing to find representations of buffaloes after the third millennium B.C., Hilzheimer (1926) suggested that they may have disappeared from Mesopotamia by that time, whereas the occurrence on the Babylonian animal lists of about 1500 B.C. of a name translated as “water-ox,” suggests to Oppenheim and Hartman (1945) knowledge of the water buffalo. The ungulate, however, was neither mentioned in literature, nor seen in artwork of the ancient Egyptians, Romans, or Greeks, to whom it was apparently unknown (Bökönyi 1974; Abid and Fazaa 2007). Thus, it cannot be excluded that these artiodactyls came already domesticated to Mesopotamia from the Indus valley, during the fourth millennium B.C., as the result of economic changes with the Harappa and Mohenjo-Daro cultures (which existed from about 3000 to

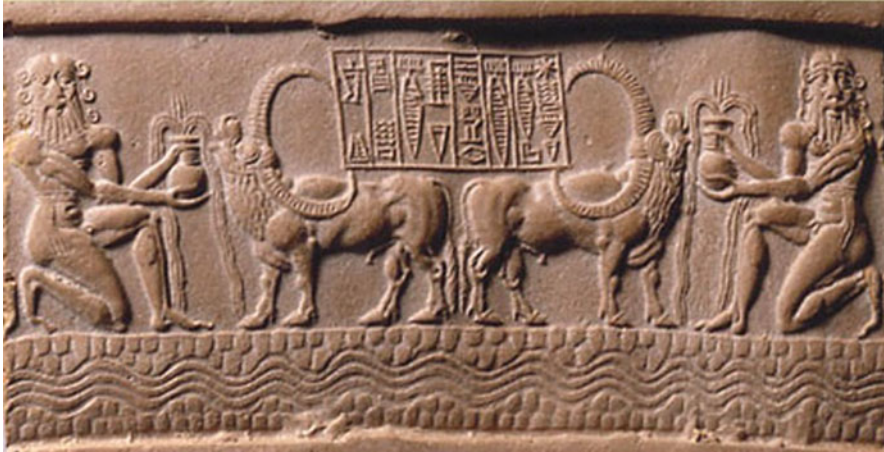


Fig. 2.38 Cylinder seal of Ibni-Sharrun, the scribe of king Sharkali-Sharri son of Naram-sin and king of Akkad, Mesopotamia (2340–2100 B.C.) (Paris, Louvre)

1500 B.C.). Later introduction was presumed by Smith (1827), Zeuner (1963), and Lombard (1971) who believed that these animals were imported into Persia, Mesopotamia, and northern Syria, where they became acclimatized in the marshes of the Orontes and, later on, even in Egypt, not before the early Middle Ages, possibly in the eighth century A.D. In any case, according to Postgate (2017), since water buffaloes were again introduced to Iraq during the early Islamic period, it is deceptive to treat the “marsh Arabs” way of life as inherited unbroken from prehistoric times.

The population of Mesopotamian water buffaloes suffered an evident and drastic decline due to the southern Iraqi marsh desiccation, an environmental disaster perpetrated by the previous Iraqi regime for political reasons over the years 1991–2003 (Alsaedy 2007). Drying reduced the number of these ungulates in the marshes, mainly due to their dependence on available water and reeds. Additionally, the buffalo’s economic importance forced most breeders to leave the marshes and seek other wetland habitats far from the desiccated areas (Abid and Fazaa 2007). However, since 2003 many breeders were encouraged to return to the marshes after their re-flooding, driving their stock back from the villages around Baghdad where they had found a provisional shelter.

2.16 Concluding Remarks

“Middle-earth” between Eurasia and Africa, as well as between the two rivers Euphrates and Tigris, Mesopotamia has always represented a biogeographical crossroads between opposite natural entities, allowing the coexistence of different biogeographical realities, often also conflicting (cf. Atallah 1977, 1978; Serra et al.

2005). Among the species apparently extraneous to the zoogeography of the Near East, we can mention the African darter, and the sacred ibis, both Afrotropical elements that find in Mesopotamia one of the few breeding sites out of the Black Continent. The smooth-coated otter is instead a species primarily dispersed in most of the Indian subcontinent and southeastern Asia, with a curious, and very reduced, Near Eastern enclave of distribution. Another medium-sized carnivore characteristic of the Oriental zoogeographic region is the Indian gray mongoose, whose occurrence in northern Iraq has been recently confirmed. These species, and possibly others, must be added to those that, since prehistoric times, accompanied the movements of human communities, such as many of the domestic, commensal, and synanthropic vertebrates (cf. Tchernov 1984b; Tangri and Wyncoll 1989; Masseti 2002).

From immemorial time, Mesopotamia has hosted and suffered on its soil the plural succession of indigenous civilizations and the continuous passage of foreign cultures proceeding from afar. The consequences of this have inevitably reverberated on the primary composition of local environment and faunal balances that have undergone a prolonged alteration from prehistory onward, without apparent solution of continuity. We have seen that several zoological species have also been imported from abroad and that some of them have become naturalized in the new environment perhaps since antiquity, others have never done so. A few animals have been described as free-ranging in the Mesopotamian natural environment already in antiquity. In this regard, one of the most striking example we could recall is the elephant herd that apparently survived in Syria between the first half of the second millennium and the eighth century B.C. These Asian proboscideans were not endemic to the region, but had very likely an anthropochorous origin, being—as observed by Çakırlar and Ikram (2016)—the product of the power hungry Bronze Age elite in the Near Eastern region. Anthropochorous as well must be considered the appearance in the palaces of the Assyrian Mesopotamia of the barasinga imported from the Indian subcontinent or the wild horses of Central Asia. Another species extraneous to Mesopotamia is the bharal, or blue sheep, *Pseudois nayaur* (Hodgson, 1833), still dispersed in the mountain range of China, Tibet, and the Indian subcontinent (see Prater 1948; cf. Harris 2014). The bas-relief representation of this caprine decorates one of the walls of Ashurbanipal's throne room at Nimrud, about 865 B.C. (London, British Museum) (Fig. 2.39), already documenting the Assyrians' knowledge of this wild sheep. Elephants, Indian deer, wild horses, and blue sheep have disappeared long ago from the Near East but other Middle Eastern mammals are still reported from several sites in Upper Mesopotamia. It cannot be excluded, in fact, that even the smooth-coated otter may have been introduced for utilitarian purposes from India, already in early times. After all, we have already mentioned that, even today, human beings still use these otters for fishing in some parts of the Middle East.

The problem of the introduction of biological elements extraneous to the original ecosystems of Mesopotamia has increased over time, assuming a more and more worrying dimension. Even the deepest waters of the local rivers have not been spared from the importation of allochthonous biological elements and have undergone the invasion of fish of Neotropical and Nearctic origin, such as the voracious North American alligator gar. The invasion of ecosystems by exotic *taxa* is currently



Fig. 2.39 A protective genie carrying a bharal, or blue sheep, *Pseudois nayaur* (Hodgson, 1833), from Ashurbanipal's throne room at Nimrud, about 865 B.C. (courtesy British Museum, London). The species is still today characteristic of the Himalayan chain and of its mountainous surroundings

regarded as one of the most important causes of the loss of biodiversity. Today, in view of the vulnerability of what remains of the natural ecosystems, it is critically important to prevent further introductions. This, however, leaves the question of how to treat the allochthonous zoological populations of certified ancient anthropochorous origin, which instead deserve to be protected and considered in terms of a veritable “cultural heritage” (Masseti 2002, 2009c). Within the latter category we should, for example, comprise the smooth-coated otter and the water buffalo, both species of probable anthropochorous spread in Mesopotamia. The protection of these mammals and their study can provide an opportunity for testing a range of different evolutionary theories. Thus, the current challenge is how to use the specific knowledge to manage and conserve these anthropochorous populations. Their survival is significant not only in ecological but also in historical and archaeological terms (Masseti et al. 2008; Masseti 2009d). For these reasons too, their importance has to be considered on a par with that of a human artifact, as the dynamic testimony of ancient human intervention that is still available for our evaluation and our appreciation, with all the consequences that such an estimate brings with it.

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