

## Checklist of the Mammals of Iraq (Chordata: Mammalia)

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**Abstract.** A checklist of the mammals of Iraq including their current status and geographical distribution is provided. Data were collected from literature and combined with field observations obtained during 2013–2014. The checklist comprises 93 species of wild mammals occurring in Iraq and belonging to eight orders, 28 families, and 65 genera. The status and distribution of three Erinaceomorphs, three Soricomorphs, 20 Bats, 23 Carnivores, eight Artiodactyls, two Lagomorphs, 28 Rodents, and six Cetaceans are reported. The checklist includes 24 species evaluated by the International Union for the Conservation of Nature and Natural Resources: one was listed as Extinct, one as Critically Endangered, four as Endangered, eight as Vulnerable, seven as Near Threatened, and three as Data Deficient. One subspecies of carnivores (Smooth-coated Otter *Lutrogale perspicillata maxwelli*) and one rodent species (Long-tailed Nesokia *Nesokia bunnii*) endemic to Mesopotamian marshlands were highlighted as taxa with conservation priority to Iraq. We also focused on main threats to the most common wild mammals with special attention to impacts of illegal hunting and poaching.

**Key words.** Iraq, systematic checklist, vertebrates, wild mammals, endemics

### الخلاصة

فيما يلي القائمة التصنيفية للبانائن (الثدييات) البرية في العراق مع ذكر وضعها وانتشارها الجغرافي الراهن. تم جمع المعلومات من خلال المراجع التاريخية وبعض المشاهدات الحقلية التي أجريت خلال الفترة من 2013–2014. تشمل القائمة الحالية ثلاثة وتسعون نوعاً من اللبانائن المتواجدة في العراق والتي تعود إلى ثمانية رتب وثمانية وعشرون عائلة وخمسة وستون جنساً. إن الوضع الحالي والانتشار الجغرافي لثلاثة أنواع من القناذف، ثلاثة أنواع من الزبائيات، عشرون نوعاً من مجنحات الأيدي (الخفاقيش)، ثلاثة وعشرون نوعاً من الضواري، ثمانية أنواع من شقبيعية الأظلاف، نوعان من الأرناب البرية، ثمانية وعشرون نوعاً من القوارض، وستة أنواع من اللبانائن البحرية (الحيتان والدلافين) قد تم نشره ضمن القائمة الحالية. تضم القائمة أيضاً على أربعة وعشرون نوعاً من اللبانائن في العراق قد تم تقييمه من قبل الاتحاد العالمي لصون الطبيعة والموارد الطبيعية كالتالي: نوع واحد منقرض من البرية، نوع واحد ذو حالة حرجية، أربعة أنواع تم تقييمها كأنواع مهددة بخطر الانقراض، ثمانية أنواع عرضة لخطر الانقراض، سبعة أنواع تحت وطأة (قريبة من) الانقراض، بينما يفتقر ثلاثة أنواع إلى المعلومات الكافية للتقييم. كما يمتلك العراق نوعاً من الضواري وهو القضاة (كلب الماء) ناعمة الفراء العراقية و *Lutrogale perspicillata maxwelli* ونوعاً متميزاً من القوارض وهو الركين طويل الذيل *Nesokia bunnii* المستوطنان للأهوار بلاد ما بين الرافدين وذوي أهمية صون قصوى للعراق. إضافة إلى ذلك قد تم إجراء تقييم عن أهم المهددات وحالة الصون للأنواع الشائعة خاصة فيما يتعلق بالأنشطة البشرية غير المرخصة كالأسر من البرية والصيد الجائر وتأثيرها على وضع اللبانائن البرية في العراق.

## INTRODUCTION

The territory of Iraq is comprised between latitudes 29° to 38° N and longitudes 39° to 49° E (a small area lies west of 39°) and spans over 437,072 km<sup>2</sup> (168,754 sq mi). It borders with Turkey to the north, Syria to the northwest, Iran to the east, Jordan to the west, Saudi Arabia to the south and southwest, and Kuwait to the south. Border with the latter is marked by a narrow section of coastline stretching for 58 km (36 mi) in the northern Arabian Gulf. The landscape includes high mountains in the north (Kurdistan), desert, arid lands, and sandy steppes in the western and south-western plateau (Al-Badiyah), and the Mesopotamian marshlands in the southern alluvial plain. This wide range of habitats awards Iraq with a noticeable biodiversity, the wild mammals being not an exception (Fig.1).

Since Hatt (1959) little was known about the mammals of Iraq. Most of the observations available to date for Iraq were due to Robert T. Hatt, indeed. In 1959, he published “The Mammals of Iraq”, where he included data collected on wild and domestic animals during surveys carried out between October 1952 and March 1953 under the auspices of the United States Educational Foundation of Iraq (“Fulbright Foundation”). Hatt’s report is considered the first checklist of the mammals of Iraq, as it includes not only author’s own findings but also both material and reports provided to him by Charles A. Reed and Lee Merriam Talbot. Charles A. Reed (School of Pharmacy, University of Illinois, USA) joined to an expedition to study the historical fauna of Iraq in 1954–1955. He was supported by a grant of the National Science Foundation (USA) and worked in collaboration with the Oriental Institute of the University of Chicago. Lee Merriam Talbot visited Iraq

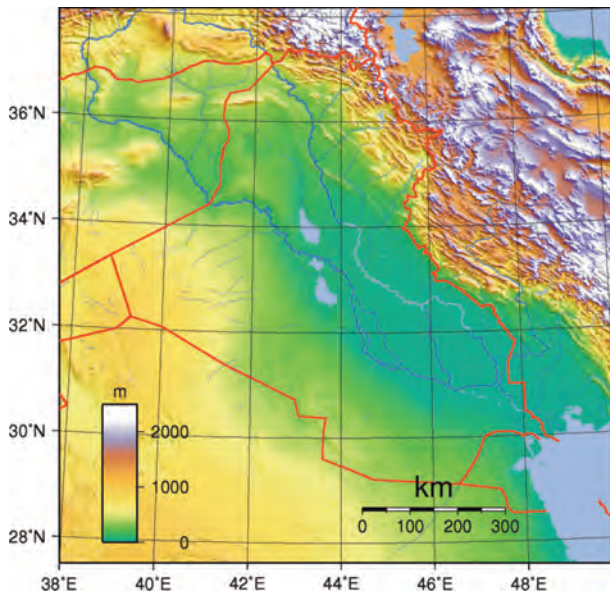


Fig. 1. Map showing the major landscapes in Iraq.

briefly in 1955 under the auspices of the International Union for the Conservation of Nature and Natural Resources (IUCN) to get insight into the status of a few threatened large mammals.

Another relevant contribution to the knowledge of the terrestrial mammals of Iraq was provided by David L. Harrison (co-author; deceased March 2015), who joined the British Royal Air Force in 1953 and carried out the major part of his national service in Iraq. Harrison reviewed Hatt's records and made further field observations especially by surveying the surroundings of Ramadi and Habaniya in central Iraq (Anbar Province). His work was published in three volumes entitled "The Mammals of Arabia" (1964; 1968; 1972). Further updates were included in the second edition of his book that was published in 1991. In his books, Harrison exhaustively addressed the entire information available for the mammalian fauna of Iraq during the period 1953–1991.

In 1969, Nuri Mahdi and P.V. George prepared their checklist of the vertebrates of Iraq, which included wild and domesticated mammals. Mahdi & George (1969) listed 88 mammalian species according to the systematic arrangement of Ellerman & Morrison-Scott (1951). They included taxa that had been actually recorded in Iraq and those that were assumed to occur as well, citing previous literature records and reporting the catalogue of the specimens included in the collection of the Biological Research Centre in Baghdad (BRCB). However, Mahdi & George's checklist failed to provide detailed information on all the listed species (e.g., distribution range and/or collecting localities and dates).

The present checklist takes into account eight orders, 28 families, 65 genera and 93 species of mammals of Iraq including both their taxonomic status and geographical distribution (Table 1). Nomenclature adopted in this checklist follows third edition of Mammal Species of the World (Wilson & Reeder 2005) unless otherwise stated.

## EXTINCT SPECIES

The historical record of the mammals of Iraq (Hatt 1959) included many species that are currently extinct. The Mesopotamian Lion (*Panthera leo persica*) was present along the Euphrates River in the early XIX<sup>th</sup> century. Last representatives of the species were killed at the time of the military actions of the British forces (1916–1918). Historical occurrence of the Tiger (*Panthera tigris*) in Iraq is documented by Kock (1990). The Indian One-horned Rhinoceros (*Rhinoceros unicornis*) is known only by a single lower tooth from the Paleolithic site of Barda Balka, and by later sculptural representations that likely referred to animals of Indian origin. Accurate depictions of Bison (*Bison bonasus*) resembled on cylinder seals and potteries were found in Mesopotamia (4000 to 2000 B.C.). The Siva's Giraffe (*Sivatherium giganteum*) inhabited Iraq during the Paleolithic and was present as late as 3500 B.C.. It is presumed that the Water Buffalo (*Bubalus bubalis*) was also native to Mesopotamia. In fact, the wild type was frequently portrayed until about 2100 B.C. before it went extinct. Teeth testifying the presence of the Elephant (*Elephas maximus*) in Iraq in the late Pleistocene are also known. Bones and representations of Wild Ox or Aurochs (*Bos primigenius*) are abundant in archeological sites from the Palaeolithic to the IX<sup>th</sup> century (B.C.). The Syrian Wild Ass "Onager" (*Equus hemionus hemippus*) was abundant in the plains of north-western Iraq, but since the middle of the XIX<sup>th</sup> century its number has dramatically decreased due to over-hunting. The last herd was reported near Jabal Sinjar in 1927 (Raswan 1935; Hatt 1959). A few bone fragments, teeth, and some reasonably accurate depictions of the Red Deer (*Cervus elaphus maral*) testify the early occurrence of this species in Iraq, although there is lack of evidence for its more recent presence. Nevertheless, the species still inhabits Turkey and Iran. A Beaver (*Castor fiber*) mandible was found in Palaeolithic deposits of Iraq as well as near the Khabur River in eastern Syria in 1837; the latter, however, was not reliably assessed and could be assigned also to an Otter (*Lutra* sp.) (Hatt 1959). As part of this work, we revised the taxonomic identification of the species that were misidentified or overlooked. Finally, we included the Arabian Oryx (*Oryx leucoryx*) in the checklist as it has occurred until recently in the southern desert of Iraq (Harrison 1968; Harrison and Bates 1991; Al-Sheikhly 2012c).

## TAXONOMIC REMARKS

### Erinaceomorpha

Early records of the European Hedgehog (*Erinaceus europaeus*) from Iraq can be referred now to the Southern White-breasted Hedgehog (*E. concolor*) (Harrison & Bates 1991).

### Soricomorpha

Nader (1969) examined specimens of Bicolored White-toothed Shrew, which were assigned by Hatt (1959) to the Iranian subspecies (*Crocidura leucodon persica*), and re-assigned them to *C. russula*. A more recent investigation carried out by Hutterer & Harrison (1988) has provisionally allocated Hatt's (1959) specimens to the Lesser White-toothed Shrew (*C. suaveolens*).

### Chiroptera

Kinnear (1916) reported the presence of "*Rhinopoma arabicum*" (= *R. arabium*) in Iraq, a taxon formerly regarded as subspecies of Lesser Mouse-tailed Bat (*R. hardwickii*) (Ellerman & Morrison-Scott 1951, Simmons 2005). Presently, the name *arabicum* is applicable to the Levantine and Arabian populations of *R. cystops* (Berda et al. 2009). Khajuria (1988) described *R. hadithaensis* as a new bat species from the western Iraq; however, this taxon is now considered as junior synonym of *R. microphylum* (Kock et al. 2001). Both *Taphozous kachhensis babylonicus* and *Taphozous magnus* are presently regarded as synonym of the Naked-bellied Tomb Bat (*Taphozous nudiventris*) (Harrison & Bates 1991, Simmons 2005). As far as Kinnear's (1916) record of the Mediterranean Horseshoe Bat (*Rhinolophus euryale*) is concerned, Cheesman (1920) and Hatt (1959) found no confirmation for its occurrence in Iraq. Niazi (1967) reported the occurrence of *R. euryale* in two localities in Iraq. However, according to the cranial measurements, Harrison & Bates (1991) suggested that the specimens described by Niazi were in fact Mehely's Horseshoe Bats (*R. mehelyi*). Mahdi & George (1969) included *R. euryale* in their list without providing details (e.g., voucher specimens or sampling locality) on the collected material.

Rzebik-Kowalska et al. (1978) collected the first known specimens of Natterer's Bat (*Myotis nattereri*) in Iraq: nevertheless, these individuals were larger than the locally known forms and might represent a distinct taxon (Harrison & Bates 1991). Harrison (1956a) discovered Serotine Bat (*Eptesicus serotinus turcomanus*) in northern Iraq. However, this record was assigned later by Harrison & Bates (1991) to Anatolian Serotine [*E. bottae anatolicus* (= *E. anatolicus*)] (Juste et al. 2013). Another individual collected in Baghdad and initially identified as Northern Bat (*E. nilssoni nilssoni*) by Hatt (1959) was subsequently assigned to *E. bottae* (Harrison 1972; Harrison & Bates 1991). Hatt (1959) also reported the occurrence

of the Hingston's Serotine Bat (*E. sodalis hingstoni*), which was considered later on as synonym of *E. bottae* (Harrison & Bates 1991). Harrison (1964) considered the Sind Serotine Bat (*E. nasutus*) and Wall's Serotine Bat (*E. walli*) as synonymous. Records from Iraq of *E. walli* and its synonym, *Vespertilio matschiei pellucens*, are reported as *E. nasutus* (= *Rhyneptesicus nasutus*) by Harrison & Bates (1991). Similarly, previous records of the Cox's Pipistrel (*Pipistrellus coxi*) are now referred to Rüppell's Pipistrelle (*P. rueppellii*), while the Schreiber's Bat or Long-winged Bat (*Miniopterus schreibersi pulcher*) described by Harrison (1956) is considered to be synonym of *M. s. pallidus* (= *M. pallidus*) by Harrison & Bates (1991). Finally, Metaxas (1891) reported the occurrence of both Particolored (*Vespevtilio murinus*) and Long-eared (*Plecotus auritus*) Bat in Iraq, but Hatt (1959) could not confirm these records.

### Carnivora

According to Lawrence (1956) both Iranian (*Canis lupus pallipes*) and Arabian (*C. l. arabs*) Wolf did occur in Iraq, where a zone of hybridization between the two subspecies is known in the western part of the country (Harrison & Bates 1991). Very recently, the Arabian Wolf was recorded in the extreme western Iraq by Al-Sheikhly (2012b). Al-Sheikhly (2012) recorded the Syrian Jackal (*Canis aureus syriacus*) for the first time in western Iraq. Similarly, the Indian Grey Mongoose (*Herpestes edwardsi*) was recently observed for the first time in northern Iraq. This record represents a large extension of the species range in Arabia (Al-Sheikhly & Mallon 2013).

The Red Fox (*Vulpes vulpes*) observed in the deserts of Iraq and assigned by Hatt (1959) to the Indian subspecies (*V. v. pusillus*) is now listed as Arabian Fox (*V. v. arabica*) according to Harrison & Bates (1991). Captured individuals and pictures taken by means of stealth camera traps referring to Rüppell's Sand Fox (*Vulpes rueppelli*) were published in the Al-Assad au Natural (newsletter of the 371<sup>st</sup> Sustainment Brigade of the Ohio Army National Guard, Al-Assad base, Anbar Province- N-SB). According to the morphological traits of the animals reported in Al-Assad au Natural newsletter, it seems much more likely that the reported Sand Foxes were in fact Arabian Red Foxes (*V. v. arabica*). However, *V. rueppelli* was reported once at Khan Al-Baghdadi in western Iraq by Al-Assad au Natural (2009).

Mahdi & George (1969) reported the likely occurrence of the Fennec Fox (*V. zerda*) in Iraq. Al-Robaee (1982) collected an individual near Jabal Sanam (c. 30 km south west of Basra, extreme southern Iraq). The same author also reported that an individual was captured alive near Jabal Hafit (United Arab Emirates) and kept at the Al-Ain Zoological Garden. Later on, Gasperetti et al. (1985) proved that the Jabal Hafit fox was in fact *V. rueppellii*.

The Middle East Badger (*Meles canescens*) was shown recently to represent a separate species distinguishable from its closest relative, the European Badger (*Meles meles*) by a combination of cranial and dental characters (Abramov & Puzachenko 2013).

The Smooth-coated Otter [*Lutrogale perspicillata* (the endemic subspecies: *L. p. maxwelli*)] was believed to be extinct in Iraq by the 1990s. However, during field surveys carried out in 2007–2012, Al-Sheikhly & Nader (2013) proved the occurrence of the species in the southern marshes.

Finally, whereas the endangered Persian Leopard (*Panthera pardus saxicolor*) has been recently recorded in many localities of northern Iraq (Kurdistan), there has been no recent sighting of the Asiatic Cheetah (*Acinonyx jubatus venaticus*) since Hatt's (1959) report; hence, the latter is considered as virtually extinct in Iraq.

### Artiodactyla

Details about the Gazelles complex and their distribution in Iraq was reported by Al-Sheikhly (2012c). However, further investigation is required to update the distribution of both the Arabian Sand Gazelle (*Gazella subgutturosa marica*) and Persian Gazelle (*G. s. subgutturosa*) in Iraq.

### Lagomorpha

With reference to the status of the Hare in Iraq, Hatt (1959) regarded *connori* as subspecies of the European Hare (*Lepus europaeus*). However, according to some genetic investigations Harrison & Bates (1991) considered the European and Cape Hare as closely related taxa, and regarded *connori* as subspecies of the Cape Hare (*Lepus capensis*). Sanborn (1940) tentatively identified hares collected in Baghdad and Camp Rashid as European Hare (*L. europaeus connori*), which is now regarded as synonym of *L. c. connori*. Hubbard (1955) reported the occurrence of *Lepus babylonicus* in Baghdad and Hilla, a taxon now considered as synonym of *L. capensis*. The Syrian subspecies of the Cape Hare (*L. c. syriacus*) was recently recorded (April 2012) c. 17 km to the north west of Rutba (Anbar Province) near the Iraqi-Syrian borders (Al-Sheikhly, in litt.).

### Rodentia

Hatt (1959) included the Persian Squirrel (*Sciurus anomalus anomalus*) among the Iraqi rodents with comparatively deep red-coloured tails; nevertheless, these records are now considered as referable to the Caucasian Squirrel (*S. a. pallescens*) (Harrison 1956a; Harrison & Bates 1991).

Khajuria (1981) assigned two rats from Al-Qurna (Basra Province) to a new taxon under genus *Erythronesokia*, but shown to be a distinctive species of *Nesokia*, Long-tailed Nesokia (*Nesokia bunnii*) by Al-Robaae & Felten (1990). However, later on Harrison & Bates (1991) sug-

gested that these individuals could provisionally be referred to as Short-tailed Bandicoot Rat (*Nesokia indica*).

The earlier records of the Wagner's Gerbil [*Gerbillus (Hendecapleura) dasyurus*] mentioned by Cabrera (1901), Cheesman (1920), and Hatt (1959) are now considered referable to Harrison's Gerbil [*G. (H.) mesopotamiae*] (Harrison & Bates 1991). Similarly, Hatt's (1959) records of the Turkish Jird (*Meriones blackleri blackleri*) are now assigned to the Tristram's Jird [*M. (M.) tristrami*] by Harrison & Bates (1991).

The presence of the Afghan Mole Vole (*Ellobius fuscocapillus*) in Iraq is uncertain as it does not occur today in the south Levant, but fossils document its former presence during Pleistocene, about 220,000–110,000 and 80,000–60,000 years ago (Tchernov 1992; 1994). Hatt (1959) suggested that Afghan Mole Vole might still be present in the mountains of Kurdistan. Some fossils found in a 25,000 years old deposit (Cave of Hazar Merd) as well as other remains from an older deposit (Shanidar Cave) were assigned by Bates (1930) to *E. fuscocapillus*. Baltazard & Seydian (1960) reported the presence of the species in the locality of Penjwin; however, Petter (1961) excluded such an occurrence. The Iraqi records of *E. fuscocapillus* are now considered referable to the Transcaucasian Mole Vole [*Ellobius (Afganomys) lutescens*]. Hatt's (1959) records of the Persian Vole (*Microtus irani*) regarded as Social Vole [*Microtus (Microtus) socialis*] (Harrison 1972; Harrison & Bates 1991). Harrison & Bates (1991) included *guentheri* and *irani* under Social Vole *M. socialis*. However, *M. irani* has been separated as distinct taxon (Kefelioğlu & Kryštufek 1999; Golenishchev et al. 2002; Kryštufek & Kefelioğlu 2002).

### Cetacea

Most of Iraq marine mammals' records were provided by Al-Robaae (1969, 1970, 1974, 1975). However, further investigation is needed to reliably describe the status of this order in Iraq.

## MATERIAL AND METHODS

Evidence for both occurrence and distribution of the Iraqi mammals were obtained from field observations carried out in 2013 and 2014, and combined with the following literature records (listed according to the year of publishing): Layard (1852); Metaxas (1891); Cabrera & Viaje Del Sr (1901); Wettstein (1913); Lydekker & Blaine (1914); Wigram & Wigram (1914); Kinnear (1916); Thomas (1919a, b); Cheesman (1920); Capper (1921); Pitman (1922); Cheesman (1923); Cheesman & Hinton (1923); Musil (1927); Corkill (1929); Bate (1930); Pocock (1930); Corkill (1930); Pocock (1934); Dollman & Burlace (1935); Pocock (1936, 1938); Heptner (1940);

Sanborn (1940); Pocock (1941,1946); Ellerman (1947, 1948); Drower (1949); Ellerman & Morrison-Scott (1951); Felid (1951, 1954); Page (1954); Thesiger (1954); Felid (1955); Hubbard (1955); Weber (1955); Harrison (1956a, b, c); Sanborn (1956); Hayman (1957); Maxwell (1957); Petter (1957); Hoogstraal & Kaiser (1958); Reed (1958); Bodenheimer (1959); Harrison (1959); Hatt (1959); Maxwell (1960); Baltazard & Seydian (1960); Petter (1961); Harrison (1964); Thesiger (1964); Al-Robaae (1966); Von Lehmann (1966); Groves & Harrison (1967); Mahdi (1967); Al-Robaae (1968); Harrison (1968); Al-Robaae (1969); Mahdi & George (1969); Nader (1969); Al-Robaae (1970); Nasher (1970); Felten (1971); Nader (1971); Nadler et al.(1971); Andera (1972); Harrison (1972); Al-Robaae (1974, 1975); Kadhim (1975); Thalen (1975); Al-Robaae (1976); Niazi (1976); Al-Robaae (1977); Jawdat (1977); Kadhim et al. (1977); Bhatnager & El-Azawi (1978); Nadachowski et al. (1978); Rzebik-Kowalska et al. (1978); Shamsuddin & Mohammad (1978); Young (1978); Darviche et al. (1979); Kadhim (1979); Kadhim et al.(1979); Nader (1979); Matskási (1980); Jawdat & Mahmoud (1981); Kadhim (1981); Khajuria (1981); Al-Robaae (1982); Al-Shenawi et al. (1982); Kadhim & Mustafa (1983); Nader & Kock (1983); Al-Khalili (1984); Gasperetti et al. (1985); Kadhim & Wahid (1986); Kadhim et al.(1986); Nader (1968 a; b); Groves (1988); Hutterer & Harrison (1988); Khajuria (1988); Kadhim et al. (1989); Kock (1990); Al-Robaae & Felten (1990); Nadachowski et al. (1990); Nader & Kock (1990a); Harrison & Bates (1991); Kadhim (1997, 1998); Kock et al. (2001); McLellan & Garshelis (2006); Haba (2009); Mallon & Kingswood (2001); Al-Sheikhly (2012b, c); Coşkuna et al. (2012); Omer et al. (2012); Raza et al. (2012); Abass (2013); Al-Sheikhly & Nader (2013); Al-Sheikhly & Mallon (2013); Haba (2013); Lahony et al. (2013); Mohammad et al. (2013); Raza (2013); Al-Sheikhly et al. (2014); Al-Sheikhly et al. (2015). We also relied our work on mammal collections resident to: Biological Research Centre, Baghdad, Iraq (BRCB); Bombay Natural History Society, Mumbai, India (BNHS); Field Museum of Natural History, Chicago, Illinois, USA (FMNH); Harrison Institute (formerly Harrison Zoological Museum), Sevenoaks, Kent, UK (HZM); Iraqi Natural History Research Centre and Museum, Baghdad, Iraq (BRCB); Museum National d'Histoire Naturelle, Paris, France (PM); collection of the University of Michigan, Michigan, USA (UMC); Natural History Museum, London, UK (BMNH); Hungarian Natural History Museum - Hungary (HNHM).

Recent records were derived from direct visual observations of live animals in the wild or in captivity, dead specimens (hunted or trapped), and investigation of study skins or mounted specimens, tracks, scats, field signs, calls and vocalizations. Reports and photographs from members of the Iraqi Hunters Association (IHA) as well as in-

terview with local people were also considered. In addition, Baghdad Zoological Garden (BZG) and local animal markets were visited. Photo-identification was carried out by means of an EOS 40D and EOS 1Ds Mark II Canon digital SLR camera bodies attached to a Canon EF 400 mm F5.6L USM telephoto lens and Bushnell IR remote camera traps. The identification of the individuals collected during this study was based on Harrison & Bates (1991) and Aulagnier et al. (2008). The orders, families, genera, species and subspecies were listed in the order they appear in the 3<sup>rd</sup> edition of Wilson & Reeder's (2005). During 2013–2014 several recent records (RR) were made and presented in the text as the following: a single record made in Anbar Province in 2013 (An-13); multiple records made in Basra Province in 2013 and 2014 (Ba-13; 14) and so on.

## RESULTS

### Systematic list of the species

#### Order Erinaceomorpha

##### Family Erinaceidae

Southern White-Breasted Hedgehog *Erinaceus concolor* (Martin, 1838)

Subspecies: *E. c. concolor* (Martin, 1838).

Distribution: Mountains, forests, and grassy steppes of northern Iraq. Recorded from: Hais 10 km NW Ser Amadia (Harrison 1956a); Banaman (Hatt 1959).

RR: Bradost Mountain (Er-14).

Long-eared Hedgehog *Hemiechinus auritus* (Gmelin, 1770)

Subspecies: *H. a. calligoni* (Satunin, 1901).

Distribution: Arid steppes, marshes, and riparians along the Tigris and Euphrates Rivers. Recorded from: Amara and Basra (Cheesman 1920); Hit, Al-Falluja, and near Samarra (Pitman 1922); Baghdad (Sanborn 1940; Hubbard 1955; Weber 1955); Mansuriya al Shatt (Hatt 1959; Nader 1968b; Martin & Nader 1975; Bhatnager & El-Azawi 1978; Shenawi et al. 1982); Chebaeish (Haba 2009); Jabal Makhool, Al'Alam, Hussaiba, and 3 km from Al-Qa-eem (Al-Sheikhly 2012); Hammar Marsh (Abass 2013).

RR: Jadriyah and Umm Al-Khanazeer Island, Yarmook, and Dor'ah (B-13); Hammar Marsh (Ba-14).

Desert Hedgehog *Paraechinus aethiopicus* (Ehrenberg, 1832)

Subspecies: *P. a. ludlowi* (Thomas, 1919).

Distribution: Arid deserts and steppes of central and southern Iraq. Recorded from: Qasr al Helqum (Harrison 1959), 40 km E Rutba (Nadachowski et al. 1990), Hadithah and

Baghdad (Hatt 1959), Hit (type locality of *P. a. ludlowi*) and Hamam Al-Alil (Bhatnager & El-Azawi 1978).  
RR: Rutba (An-2013).

### Order Soricomorpha

#### Family Soricidae

Asian House Shrew *Suncus murinus* (Linnaeus, 1766)  
Subspecies: No named subspecies; Iraq population likely originate from north India.

Distribution: Introduced to extreme southern Iraq. Recorded from: Al-Qurna (Cheesman 1920); Basra (Hatt 1959); Chebaeish (Haba 2009); specimens collected in Fao are resident to the BMNH collection; Hammar Marsh (Abass 2013).

RR: Al-Qurna (Ba-13); Hammar Marsh (Ba-14).

Etruscan Shrew *Suncus etruscus* (Savi, 1822)

Subspecies: *S. e. etruscus* (Savi, 1822).

Distribution: Bushland, cultivated fields, and marshes of southern and central Iraq. Recorded from: Basra and Amara (Cheesman 1920); Al-Falluja (Pitman 1922); Kut al Imarra (Hatt 1959); Habbaniya and the eastern bank of the Euphrates River (Harrison 1959; Harrison & Bates 1991); Hammar Marsh (Abass 2013).

Lesser White-toothed Shrew *Crociodura suaveolens* (Pallas, 1811)

Subspecies: Likely *C. s. portali* (Thomas, 1920) subspecies, with individual variation in the colour of pelage.  
Distribution: Mountains and steppes of northern Iraq. Recorded from: Bebaidi and Sarsank (Harrison 1956a; Hatt 1959); specimens from Cora and Almawan originally listed by Hatt (1959) as Bicolored White-toothed Shrew (*C. leucodon persica*), which was referred later to this species by Hutterer & Harrison (1988); the vicinity of Mousel (Andera 1972; Hutterer & Harrison 1988).

RR: Safen Mountain (Er-14).

### Order Chiroptera

#### Family Rhinopomatidae

Lesser Mouse-tailed Bat *Rhinopoma hardwickii* (Gray, 1831)

Subspecies: *R. h. arabium* (Thomas, 1913).

Distribution: Apparently rare, restricted to the caverns in the arid steppes of western and central Iraq. Recorded from: 19 km E Hilla by Sanborn (1956); near Haditha (Hatt 1959; Nader 1971). A colony of 83 individuals were found roosting in a small cave at Sheikh Hadid sink hole near Haditha (Al-Sheikhly 2012).

Greater Mouse-tailed Bat *Rhinopoma microphyllum* (Brünnich, 1782)

Distribution: Uncertain. Recorded by Khajuria (1988) from Haditha in western Iraq as a distinct species (*Rhinopoma hadithaensis*), but regarded as a junior synonym of the Greater Mouse-tailed Bat (*R. microphyllum*) by Kock et al. (2001).

#### Family Emballonuridae

Naked-rumped Tomb Bat *Taphozous (Liponycteris) nudiventris* (Cretzschmar, 1830)

Subspecies: *T. n. magnus* (Wettstein, 1913).

Distribution: Widespread, mainly along the Tigris and Euphrates Rivers. Recorded from: banks of Euphrates River (Kinnear 1916); Amara, Shaiba, Ctesiphon, and Basra (Cheesman 1920); Baghdad and Diltawa (Sanborn 1940); Ctesiphon arch (Weber 1955); between Habbaniya and Ar Ramadi, Habbaniya, and at Shaiba (Harrison 1956b); Aqqar-Quf, Baghdad, Fao, and Najaf (Harrison 1964); recorded also by Al-Robaae (1968), Shamsuddin & Mohammad (1978), Nadachowski et al. (1978), Al-Shenawi et al. (1982) and Haba (2009).

RR: Large colonies roosting in cracks of old buildings at Chebaeish (Th-14).

#### Family Rhinolophidae (Horseshoe bats)

Greater Horseshoe Bat *Rhinolophus ferrumequinum* (Schreber, 1774)

Subspecies: *R. f. irani* (Cheesman, 1921), with distinctive pale pelage.

Distribution: Limestone caverns and suitable retreats of northern and central Iraq. According to Hatt (1959) the species was reported to occur in Iraq only by Metaxas (1891) and Kinnear (1916). Recorded from: 130 km W Ramadi (Niazi 1976); Salahadin and Erbil Liwa (Nader & Kock 1983); a single specimen from Tang-i-dorg in Duhok is kept in the collection of the BMNH (Harrison 1964). Al-Robaae (1976) has tentatively identified some specimens from Mousel (Harrison & Bates 1991).

Lesser Horseshoe Bat *Rhinolophus hipposideros* (Bechstein, 1800)

Subspecies: *R. h. midas* (Anderson, 1905).

Distribution: Three specimens from Baghdad were reported by Cheesman (1920); this represents the only record for Iraq (Hatt 1959; Harrison & Bates 1991).

Mediterranean Horseshoe Bat *Rhinolophus euryale* (Blasius, 1853)

Subspecies: The Iraqi population can not be assigned to any named subspecies.

Distribution: Previous data of the species (Niazi 1976) represents *R. mehelyi* (see remarks below). The only definite record is from Bjil village, Akre District in northern Iraq (Al-Sheikhly et al. 2015).

Mehely's Horseshoe Bat *Rhinolophus mehelyi* (Matschie, 1901)

Subspecies: *R. m. mehelyi* (Matschie, 1901).

Distribution: Caves of arid areas in central and western Iraq. Niazi (1967) reported the occurrence of the Mediterranean Horseshoe Bat (*R. euryale*) in two localities; however, the species was proved to be in fact *R. mehelyi* (Harrison & Bates 1991, Al-Sheikhly et al. 2015). Recorded from: 43 km SW Ash-Shinaffya and 130 km W Ramadi; specimens collected in Al-Alfasia Cave (8 km S Haditha) are resident to the BMNH (Harrison & Bates 1991). Specimens collected in El Hashfe and Hadhita areas of Iraq (Matskási 1980) are kept in the collection of HHNM and those of collected in Bjil village, Akre District in northern Iraq will be deposited in BRCB.

RR: Three individuals were found roosting in a tunnel near Mawat (Su-14).

Family: Hipposideridae

Geoffroy's Trident Leaf-nosed Bat *Asellia tridens* (E. Geoffroy, 1813)

Subspecies: *A. t. murraiana* (Anderson, 1881).

Distribution: Common in deserts and arid steppes and wadis of central Iraq. Recorded from: Mousel (Wettstein 1913); A1-Falluja and "Lake" Aqar Quf (Cheesman 1920); Baghdad (Sanborn 1940; Hubbard 1955); A1 Qa-eem near the Syrian border (Weber 1955); between Ar Ramadi and Habbaniya and from Uqhaidhir (Harrison 1956); Mustansiriyah in Baghdad (Hatt 1959); recorded at many localities by Al-Robaee (1966), Shamsuddin & Mohammad (1978), and Nadachowski et al. (1990); at Sheikh Hadid sink hole near Haditha by Al-Sheikhly (2012).

Family: Molossidae

European Free-tailed Bat *Tadarida teniotis* (Rafinesque, 1814)

Subspecies: *T. t. rueppelli* (Temminck, 1826), with pale grey pelage colour.

Distribution: Uncommon, confined to the rocky terrain and crevices in western Iraq. Recorded from: Between Ar Ramadi and Habbaniya (Harrison 1956b; Harrison & Bates 1991).

Family: Vespertilionidae

Lesser Mouse-eared Myotis *Myotis blythii* (Tomes, 1857)

Subspecies: *M. b. omari* (Thomas, 1906).

Distribution: Confined to the caverns of northern mountains. Recorded from: Hazar Mard caves (Bate 1930; Hatt 1959); Diyana and near Baradust (Sanborn 1940; Harrison & Bates 1991).

Long-fingered Myotis *Myotis capaccinii* (Bonaparte, 1837)

Subspecies: *M. c. bureschi* (Heinrich, 1936).

Distribution: Uncertain; a male individual reported from

the ruined city of Kish: this is the only confirmed occurrence (Sanborn 1956; Hatt 1959; Harrison 1964; Harrison & Bates 1991).

Geoffroy's Myotis *Myotis emarginatus* (E. Geoffroy, 1806)

Subspecies: As no voucher specimens exist, the Iraqi population can not be assigned to any named subspecies.

Distribution: Niazi (1976: 172) reported the occurrence of this species in the mid-west part of Iraq but no exact locality or any detailed description was given. Two individuals were observed and photographed in Bjil village (Akre District, northern Iraq): this represents the only record for Iraq (Al-Sheikhly et al. 2015).

Natterer's Myotis *Myotis nattereri* (Kuhl, 1817)

Subspecies: Iraqi individuals investigated by Rzebik-Kowalska et al. (1978) were clearly smaller than the geographically closest and related taxon *M. nattereri araxenus* (= *Myotis schaubi*) but differed in certain cranio-dental traits from the other subspecies of *M. nattereri*. These individuals could be representative of a distinct taxon.

Distribution: Confined to the rocky caverns of the mountains of northern Iraq. Recorded from Gali Ali Beg, which is the only confirmed occurrence (Rzebik-Kowalska et al. 1978; Harrison & Bates 1991).

Botta's Serotine *Eptesicus bottae* (Peters, 1869)

Subspecies: *E. b. hingstoni* (Thomas, 1919), restricted to central and southern Iraq;

Distribution: Widespread. Recorded from: Basra, Baghdad, Nasiriyah, Karbal'a (Hatt 1959); Habbaniya (Harrison 1956b); Ramadi and Sulaymaniyah (Felten 1971); 35 km N An-Najaf, Al-Mahmudiya, Baqubah, and Al-Khalis (Nader & Kock 1990a).

Anatolian Serotine *Eptesicus anatolicus* (Felten, 1971)

The Anatolian Serotine, formerly regarded as subspecies of *E. bottae* has recently been elevated to the rank of species on the basis of combined evidences derived from cranial morphology, molecular DNA markers, and echolocation characteristics (Juste et al. 2013).

Distribution: Confined to the mountains and foothills of central and northern Iraq. Recorded from: Ser Amadia and Kani Mase (Harrison 1956a; Harrison & Bates 1991); Al-Alam (Al-Sheikhly 2012).

Sind Serotine *Rhyneptesicus nasutus* (Dobson, 1877)

Subspecies: *R. n. pellucens* (Thomas, 1906). *Rhyneptesicus* was re-elevated as a separate genus by Juste et al. (2013) on craniodental and phylogenetic grounds.

Distribution: Inhabits ruins and old buildings of central and southern Iraq. Recorded from: Zubeir and Shaiba as *Eptesicus n. pellucens* (Harrison 1964); Basra and



**Fig. 2.** Wolf hunting in Iraq, Photo © Hameed A. Al-Habash/ Iraqi Hunting Association.

Nasiriya (Sanborn 1940); Qalat Salih and Al Miqdadiyah (Nader 1971; Harrison & Bates 1991).

Kuhl's Pipistrelle *Pipistrellus (Pipistrellus) kuhlii* (Kuhl, 1817)

Subspecies: *P. k. ikhwanius* (Cheesman & Hinton, 1924), with pale desert pelage.

Distribution: Abundant and ubiquitous. Recorded from: Karbala, Baghdad, Mousel, Qalat Sharqat, Mejadin, and Bahrka (Wettstein 1913); Amara, Baghdad, and Sheik Saad (Cheesman 1920); Baghdad, Amara marshes, Shaikh Falih as Saihud's camp, Al Halfayah, Balad, Sinjar, Badra, Diltawa, An Nasiriya, Karbala, and Rustamiyah Farm near Baghdad (Sanborn 1940); Baghdad, Al Qa-eem, the pipeline station T-1 and in Dhibban near Habbaniya (Weber 1955); Shaiba, Ramadi marshes, south of Amiriya, Ramadi-Habbaniya, Basra, Al Falluja, and Uqhaidhir (Harrison 1956b); Baghdad (Hatt 1959); Specimens from Fao, Kut as Sayyid, Basra, Khaniqin, Wadia south of Majar al Kabir of Amara, and from Ain Zalah 45 km S Mousel resident to the collection of the BMNH (Harrison 1964); recorded also by Shamsuddin & Mohammad (1978) and Al-Shenawi et al. (1982).

RR: Ramadi (An-13); Al-Adhamiyah; Jadriyah; Al-Yarmook (B-13); Garmat Ali and Hammar Marsh (Ba-14).

Rüppell's Pipistrelle *Vansonia rueppellii* (Fischer, 1829) Subspecies: *V. r. coxi* (Thomas, 1919), with sandy-buff dorsal pelage. *Vansonia* was elevated to genus level by Koubinová et al. (2013) based on genetic data.

Distribution: Uncommon, inhabits settlements and ruins of central and southern Iraq. Recorded from: Al-Adhamiyah (Nader 1971); Basra and at Beit Sheikh Mahammad at the marshes of Chahala in Amara: these specimens are resident to BMNH collection (Cheesman 1920; Hatt 1959; Harrison 1964); Agergoof (Harrison & Bates 1991).

Hemprich's Desert Bat *Otonycteris hemprichii* (Peters, 1859)

Subspecies: *O. h. petersi* (Anderson & de Winton, 1902), in the eastern Euphrates basin and in central and southern Iraq; *O. h. jin* (Cheesman & Hinton, 1924), confined to the desert habitat of both extreme western and southwestern Iraq.

Distribution: Local, confined to arid steppes and rocky deserts of central and southern Iraq. Recorded from: Fao (Kinnear 1916) as well as by Ellerman & Morrison-Scott (1951), who listed the taxon as *O. petersi*, probably a synonym of *hemprichi* (Hatt 1959); Chamchamal-Jarmo valley in Kurkuk Liwa (Nader & Kock 1983; Harrison & Bates 1991); Al-Cidr and Himreen foothills (Al-Sheikhly 2012).



Family: *Miniopteridae*

Pallid Long-fingered Bat *Miniopterus pallidus* (Thomas, 1907)

Recorded as *Miniopterus schreibersii* (Kuhl, 1817) by Hatt (1959) and Harrison & Bates (1991). Mitochondrial and nuclear DNA studies corroborated by slight variations in size, wing shape, and echolocation call parameters suggested that *M. pallidus* should be considered as full species (Furman et al. 2010a, b).

Distribution: Uncertain, confined to the mountain caves of the extreme northern Iraq. Reported from: Ser Amadia (type locality of *M. p. pulcher*: Harrison 1956), the only record for Iraq (Harrison 1964; Harrison & Bates 1991).

### Order Carnivora

Family: *Canidae*

Golden Jackal *Canis aureus* (Linnaeus, 1758)

Subspecies: *C. a. aureus* (Linnaeus, 1758), along the Tigris and Euphrates Rivers; *C. a. syriacus* (Hemprich & Ehrenberg, 1833), restricted to the desert and arid lands of the extreme western Iraq, yet probably present also in northern Iraq.

Distribution: Abundant along the river riparians, cultivated land, marshes, mountains and arid lands. *Canis a. aureus* recorded from: Babylon (Jebb 1908); Sheik Saad (Cheesman 1920); Jezira, c. 40 km W Mousel (Bodenheimer 1959); Habbaniya, Al Falluja and Samarra (Harrison 1959); Basra, Diyala and Hilla (Hatt 1959); the marshes near Majar (Thesiger 1964); Chebaeish (Haba 2009); Hammar Marsh (Abass 2013); Hawraman Mountain (Lahony et al. 2013). Specimens collected in Legait, Shahraban, Baghdad, Amara, near Kut, Shaiba, Fao and Saqlawiya are included in the collection of the BMNH (Harrison & Bates 1991). *Canis a. syriacus* recorded from: Rutba and Hussaiba (Al-Sheikhly 2012).

RR: *Canis a. aureus*, abundant in Al-Alam (Sa-13); Anah; Hit (An-13); Mashab and Hammar Marsh (Ba-14).

Gray Wolf *Canis lupus* (Linnaeus, 1758)

Subspecies: *C. l. pallipes* (Sykes, 1831), confined to the northern mountains and on eastern bank of the Euphrates River; *C. l. arabs* (Pocock, 1934), restricted to the arid steppes and desert of western and south-western Iraq.

Distribution: Widespread, *Canis l. pallipes* recorded from: Al-Shaiba and At Tanumah (Cheesman 1920); Ur (Pocock 1935); Rawanduz, Diyala, Sulaymaniyah, and Khaniqin (Sanborn 1940); Sinjar, Karadagh and umm al-Kahab Wells (Felid 1954); Erbil Liwa, near Jarmo, east Kurkuk Liwa, Lake Habbaniya and near Haditha (Hatt 1959); Jazira, c. 40 km W Mousel (Bodenheimer 1959); near Majar (Thesiger 1964); Central and Hammar Marsh (Haba 2009); Makhmore, Jabal Himreen, Jabal Makhool, and Wadi Al-Tharthar (Al-Sheikhly 2012); Hammar Marsh

(Abass 2013). *Canis l. arabs* recorded from: Rutba (Al-Sheikhly 2012b).

RR: *Canis l. pallipes*, Jabal Himreen (Di- 13; 14) (Fig.2).

Red Fox *Vulpes vulpes* (Linnaeus, 1758)

Subspecies: *V. v. arabica* (Thomas, 1902), around marshes, deserts, and arid steppes of central and southern Iraq; *Vulpes v. flavescens* (Gray, 1843), restricted to the foothills and mountains of northern Iraq.

Distribution: Widespread. *Vulpes v. arabica*, Recorded from: Qalat Luqait, Shatt al Adhaim, and Basra (Cheesman 1920); Hilla, Baghdad, and Baquba (Hatt 1959); Saqlawiya, Tikrit, Fort Ukhaider, Haur al Hasa, Falluja, and Tar al Hazar north west of Iraq (Harrison 1968). Specimens collected in Baghdad, Falluja, and Ctesiphon are included in BMNH collection (Harrison & Bates 1991); Hammar Marsh (Abass 2013); Hawraman Mountain (Lahony et al. 2013). *Vulpes v. flavescens* recorded from: Kurkuk, Rawanduz and Jarmo (Hatt 1959); near Amadia (Harrison 1959), Himreen foothills (Al-Sheikhly 2012). RR: *Vulpes v. arabica* recorded from: Jadriyah and Yarmook districts (Ba-13); Hila and Dalmaj (Qa-14). *Vulpes v. flavescens* recorded from: Ramadi (An-13); Jabal Himreen (Sa-13).

Rüppell's Fox *Vulpes rueppellii* (Schinz, 1825)

Subspecies: *V. r. sabaeya* (Pocock, 1934).

Distribution: Restricted to the arid steppes and desert of western and south-western Iraq. Recorded from: Haditha (Hatt 1959); Khan Al-Baghdadi (N-SB 2008); Massad Al-Rutba, Hussaiba, Ga'ara, Wadi Horan (10 km E Hadithah), Nikheab, and Khan Al-Baghdadi (Al-Sheikhly 2012).

RR: c. 30 km south of Rahaliya – Karbal'a desert (An-14) (Fig. 3).



**Fig. 3.** Adult male Rüppell's Fox *Vulpes rueppellii*, a carnivore confined to the desert habitat in western Iraq. Photo © Omar F. Al-Sheikhly 2014.

Fennec Fox *Vulpes zerda* (Zimmermann, 1780)

Subspecies: *V. z. zerda* (Zimmermann, 1780).

Distribution: Uncertain. Mahdi & George (1969) reported the likely occurrence of this species in Iraq. Al-Robaae (1982) collected an individual near Jabal Sanam SW of Basra, extreme southern Iraq.

Family: Ursidae

Brown Bear *Ursus arctos* (Linnaeus, 1758)

Subspecies: *U. a. syriacus* (Hemprich & Ehrenberg, 1828).

While bears in northern Iraq show brown-greyish pelage those inhabiting the district of Jilu are known for their pale fur. Nevertheless, individual variation and/or seasonal change in the pelage colour may occur.

Distribution: Confined to the mountains of extreme northern Iraq. Recorded from: Iraqi-Turkish frontier region (Wigram & Wigram 1914); Bradost Mountain north of Erbil Liwa, east of Sulaymaniyah (Hatt 1959); north east of Kurkuk (McLellan & Garshelis 2006); QaraDaq (Raza 2013).

RR: An adult bear was killed by locals nearby Duhok (Du-13); a specimen from the Zagros Mountain is included in the collection of the BRCB; two adult males collected in Haji Omran are presently kept at BZG.

Family: Mustelidae

Beech Marten *Martes foina* (Erxleben, 1777)

Subspecies: *M. f. syriaca* (Nehring, 1902).

Distribution: Confined to the mountains of northern Iraq. Recorded from: Iraq-Iran border (Cheesman 1920); Rawanduz (Sanborn 1940); Bradost Mountain (Field 1955); Narwa (Harrison 1956a); Hawraman Mountain (Lahony et al. 2013).

Marbled Polecat *Vormela peregusna* (Güldenstädt, 1770)

Subspecies: *V. p. syriaca* (Pocock, 1936), with individual variations in pelage color and pattern.

Distribution: Restricted to the high grounds of Mousel. Recorded from: c. 64 km S Mousel (Pocock 1936); Mousel (Hatt 1959); 45 km N Mousel (Allouse 1954; Harrison 1968; Harrison & Bates 1991); Hawraman Mountain (Lahony et al. 2013).

Least Weasel *Mustela nivalis* (Linnaeus, 1766)

Subspecies: Probably *M. n. boccamela* (Bechstein, 1800).

Distribution: Confined to the mountains of northern Iraq. Hatt (1959) did not find any definitive occurrence of the species, but he received hunters' reports where the presence of Weasel-like animals at Erbil Liwa (Zagros Mountain) was recorded. Confirmed record from Shirin Mountain in Barzan area (Raza 2013); Hawraman Mountain (Lahony et al. 2013).

Middle East Badger *Meles canescens* (Blanford, 1875)

Distribution: Confined to the mountains of northern Iraq,

with local distribution in central Iraq. Recorded from: Qali Ali Beg (Sanborn 1940); Baghdad (Hatt 1959); 20 km N Shaqlawa (Smielowski 1978); Hawraman Mountain (Lahony et al. 2013).

RR: Barzan Area (Er-14); Chami-reazan area (Su-14).

Honey Badger *Mellivora capensis* (Schreber, 1776)

Subspecies: *M. c. wilsoni* (Cheesman, 1920).

Distribution: Widespread in the desert and arid steppes of central and southern Iraq. Recorded from: Baksai (Cheesman 1920); An Nuhaidam (Harrison 1959); T1 station and Rawa (Hatt 1959); Abu Khasib (Anon 1966); Hammar Marsh (Abass 2013). Specimens from Fuluja are included in the collection of the BMNH (Harrison & Bates 1991).

RR: Ga'ara and Massad Al-Rutba (An-13); Nugratt Al-Salman (Mu-14).

European Otter *Lutra lutra* (Linnaeus, 1758)

Subspecies: *L. l. seistanica* (Birula, 1912).

Distribution: Lakes, streams, tributaries, and marshes of Tigris and Euphrates Rivers. Recorded from: Amara (Cheesman 1920); Qalat Salih (Sanborn 1940); Baghdad and Hindiya (Hatt 1959); Central marshes, vicinity of Al-Maimona, Musharah River, Tarmiya, Al-Alam, Samarra Lake, Himreen, Khan Al-Baghdadi, Haditha, Derbendikhan, Dukan, Little Zab, Barzan and TaqTaq (Al-Sheikhly & Nader 2013); recorded also in Mashab in eastern Hammar Marsh by Abass (2013). Specimens from Abusakhair (South of Hor Al-Hammar Marsh) are included in the collection of the BMNH (Harrison & Bates 1991). Recent records from Mashab River in eastern Hammar Marsh (Al-Sheikhly et al. 2014).

RR: Mashab and Salal River (Ba-14); Taq Taq (Er-14).

Smooth-coated Otter *Lutrogale perspicillata* (I. Geoffroy Saint-Hilaire, 1826)

Subspecies: *L. p. maxwelli* (Hayman, 1956).

Distribution: Confined to the dense reed beds of the southern marshes; one record from northern Iraq (Kurdistan). Recorded from: Abusakhair and Azair (Hayman 1956; Maxwell 1957, 1960); Azair by (Hatt 1959); TaqTaq (Omer et al. 2012); Fao-Rass Al-Beisha, Abu Al-Khasib and Umm Al Rassas, Abu Ajaj-Hor Al-Hammar, Umm Al-Na'aj lake-Hawizeh, and TaqTaq (Al-Sheikhly & Nader 2013; Al-Sheikhly et al. 2014).

Family: Herpestidae

Small Asian Mongoose *Herpestes javanicus* (E. Geoffroy Saint-Hilaire, 1818)

Subspecies: *H. a. pallipes* (Blyth, 1845).

Distribution: Widespread along the Tigris and Euphrates Rivers. Recorded from: Basra (Cheesman 1920); Amara (Pitman 1922); Baghdad (Sanborn 1940); Hilla and Mousel (Hatt 1959); Habbaniya (Harrison 1959); Zeban,

c. 32 km from Falluja (Harrison 1968); Chebaeish (Haba 2009); many localities Iraq (Al-Sheikhly & Mallon 2013); Al-Hammar Marsh (Abass 2013).

RR: Recorded from many sites in Al-Hammar Marsh (Ba-14); Chebaeish (Th-14); Hawizeh (Ma-14).

Indian Grey Mongoose *Herpestes edwardsi* (E. Geoffroy Saint-Hilaire, 1818)

Subspecies: *H. e. ferrugineus* (Blanford, 1874)

Distribution: Local, in the rocky highlands of northern and central Iraq; however, it may be found in southern Iraq as well. Recorded from: Qashqulai and near Al-Alam (Al-Sheikhly & Mallon 2013).

RR: Near TaqTaq (Er-14).

Family: Hyaenidae

Striped Hyena *Hyaena hyaena* (Linnaeus, 1758)

Subspecies: *H. h. syriaca* (Matschie, 1900). Pocock (1934) suggested that *H. h. syriaca* may be synonym of *H. h. hyaena*.

Distribution: Common in the lowlands of central and southern Iraq; uncommon in the northern mountains. Recorded from: Ur, Basra and Falluja (Cheesman 1920); between Amara and Sheikh Saad (Capper 1921); Falluja, Nahrwan, and Ad Dawr (Pitman 1922); Tyb River, Jabal Hamrin, and Ur (Pocock 1941); Bradost Mountain (Field 1955); near Haditha (Lawrence 1956); near Samarra (Harrison 1959); Jezira, c. 40 km W Mousel (Bodenheimer 1959); Mansuriya al Shatt (Hatt 1959); Erbil Liwa, Ctesiphon, Chamchamal, Baghdad, Baquba, Habbaniya, Ramadi and Sulaymaniya (Harrison 1968); Khan Al-Baghdadi (N-SB 2008; 2009); near Hammar Marsh (Haba 2009); Hammar Marsh (Abass 2013).

RR: Al-Ga'ara, Rutba (An-13).

Family: Felidae

Wild Cat *Felis silvestris* (Schreber, 1777)

Subspecies: *F. s. nesterovi* (Birula, 1916), confined to the forests and wooded valleys of northern Iraq; *Felis s. iraki* (Cheesman, 1921), restricted to the marshes and arid steppes of central and southern Iraq. Distribution: Wooded mountains, rooky steppes, and nearby marshes; nevertheless, the species appears to be rare. *Felis s. iraki* was recorded from: Sheikh Saad (Cheesman 1920); Baghdad and Diwaniya (Hatt 1959). *Felis s. nesterovi* was recorded from Nachr-Chasasch (Harrison 1968; Harrison & Bates 1991) and Peramagroon (Raza et al. 2012).

RR: *Felis s. iraki* near Habbaniya (An-13); Auda Marsh (Ma-14).

Jungle Cat *Felis chaus* (Schreber, 1777)

Subspecies: *F. c. furax* (de Winton, 1898), although intermediation with *F. c. chaus* (Güldenstädt, 1776) may occur.

Distribution: Widespread along the Tigris and Euphrates

Rivers. Recorded from: Amara, Qalat Salih, Madij, and Shahraban (Cheesman 1920); between Al-Qurna and Azir, Shatt al Adhaim, and Ad Dawr (Pitman 1922); Hilla Desert (Sanborn 1940); Abu Ghreb, near Akkarkuf (Bodenheimer 1959); Hila and Dujail (Hatt 1959); Khan Al-Baghdadi (N-SB 2008; 2009); Hammar Marsh (Abass 2013). Specimens collected in Mousel, Baghdad, Ramadi, and Habbaniya are included in the collections of the BMNH and HZM (Harrison 1968).

RR: Hammar Marsh (Ba-14).

Sand Cat *Felis margarita* (Loche, 1858)

Subspecies: *F. m. harrisoni* (Hemmer, Grubb and Groves, 1976).

Distribution: Confined to the desert and arid steppes of south western Iraq. Recorded from W Al-Najaf city and Al-Jufaira oasis in the desert of Al-Najaf Province (Mohammad et al. 2013).

RR: Takhadid (Mu-14) (Fig. 4).



**Fig. 4.** Adult male Sand Cat *Felis margarita* trapped in Muthana Province in south-western Iraq. Photo © Omar F. Al-Sheikhly 2014.

Caracal *Caracal caracal* (Schreber, 1776)

Subspecies: *C. c. schmitzi* (Matschie, 1912).

Distribution: Confined to the desert and arid steppes of the extreme western and southern Iraq. Recorded from: Basra (Metaxas 1891); 45 km from Rutba (Corkill 1930). Uncertain records from southern and western deserts of Iraq (Thalen 1975). Reported by locals from Faidhatt Al-Massad (Al-Sheikhly 2012).

RR: Hunters' reports from Ain Al-Faras in the Tharthar Valley (An-13).

Eurasian Lynx *Lynx lynx* (Linnaeus, 1758)

Subspecies: *L. l. dinniki* (Satunin, 1915).

Distribution: Restricted to the forested mountains of extreme northern Iraq; it would appear to be rare. Recorded from: Zakho and Erbil Liwa (Hatt 1959; Harrison & Bates 1991); Barzan area (Raza 2013).

Leopard *Panthera pardus* (Linnaeus, 1758)  
 Subspecies: *P. p. saxicolor* (Pocock, 1927).  
 Distribution: Rare, restricted to the forested mountains of extreme northern Iraq. Recorded from: near Rawa (Musil 1927); Aqra and Rowanduz (Pocock 1930); Jabal Bradost (Field 1955); Harir Dagh (Hatt 1959); Bamur Harrison (1968); Murdka of Darbandikhan, Mandili, and QaraDag (Al-Sheikhly 2012b); QaraDag (Raza et al. 2012).  
 RR: Suran Area (Du-13).

Cheetah *Acinonyx jubatus* (Schreber, 1775)  
 Subspecies: *A. j. venaticus* (Griffith, 1821).  
 Distribution: Probably extinct. Recorded from: near Busaiya (W Basra southern desert), K3 station, and H1 and H2 pumping stations in Syrian Desert (Corkill 1929); near Iraq-Saudi Arabia-Jordan borders (Hatt 1959; Harrison & Bates 1991).

### Order Artiodactyla

Family: Bovidae  
 Wild Goat *Capra aegagrus* (Erxleben, 1777)  
 Subspecies: *C. a. aegagrus* (Erxleben, 1777).  
 Distribution: Confined to the mountain range of north-eastern Iraq; the largest population is in the area of Barzan. Recorded from: Bradost, Barzan near Aqra, and near Zawitta (Layard 1852); Baradost and Sarsank (Field 1951); Safin Dagh, Zagarta, and Jabal Sinjar (Hatt 1959); Chamchamal Valley (Hoogstraal & Kaiser 1958); near Shaqlawa, Safin Dagh, Harir Dagh, Erbil Liwa, Nahiya, near Diyana, Rawandoz, and near Darbandikhan (Harrison 1968; Harrison & Bates 1991); Barazan, Qara Dag Mountain; Peramagroon Mountain (Al-Sheikhly 2012b); Qara Dag Mountain and Peramagroon Mountain (Raza 2013). Specimens collected in Berat Dag, Mousel Liwa, Jabal Zagarta, Sugrimah Dagh, and Kurkuk Liwa are resident to the collection of the FMNH (Sanborn 1940). Recent observations with remarkable range extension were made in Al-Qosh in northwestern Mousel (Ali N. Salman pers. comm. 2014).

Mouflon *Ovis orientalis* (Gmelin, 1774)  
 Subspecies: *O. o. gmelini* (Blyth, 1841).  
 Distribution: Uncommon, restricted to the highlands of eastern and north-eastern Iraq. Recorded from: Zagros Mountain and mountains of Derbandikhan (Harrison 1968; Nadler et al. 1971; Harrison & Bates 1991); Jabal Himreen near Mandli in Diyala (Al-Sheikhly 2012b). Specimens collected in Kanispika, Baranand Dagh are resident to the collection of the FMNH (Hatt 1959).

Arabian Oryx *Oryx leucoryx* (Pallas, 1777)  
 Subspecies: *O. l. leucoryx* (Pallas, 1777).  
 Distribution: Probably extinct; the last individual was shot in Maqil in southern Iraq in 1914 and kept in collection

at the BMNH (Hatt 1959). Specimens known from Iraq yet it is unclear if they have occurred on the eastern side of the Euphrates River (Harrison 1968; Al-Sheikhly 2012c).

Saudi Gazelle *Gazella saudiya* (Carruthers & Schwarz, 1935)

Subspecies: this species is distinct from Dorcas Gazelle (*G. dorcas*) according to Groves (1988). Status reviewed by Mallon & Kingswood (2001).

Distribution: Uncertain, probably extinct in the wild. There is only one record from the Ramadi-Rutba road in western Iraqi desert (Harrison 1968; Harrison & Bates 1991; Al-Sheikhly 2012c). A single specimen from southern Iraq was assigned to *G. subgutturosa marica* (Mallon & Kingswood 2001).

Goitred Gazelle *Gazella subgutturosa* (Guldenstaedt, 1780)

Subspecies: *G. s. marica* (Thomas, 1897), confined to the desert and arid steppes in western and southern Iraq; *G. s. subgutturosa* (Guldenstaedt, 1780) inhabits steppes of northern and eastern Iraq.

Distribution: Widespread. Recorded from: Euphrates valley (Lydekker & Blaine 1914); Samarra, Basra, Nasiriyah, and Amara, where was reported as *G. s. marica* (Cheesman 1920; Mallon & Kingswood, 2001); Sheikh Saad and NE Baghdad (Dollman & Burlace 1935); Chamchamal (Hoogstraal & Kaiser 1958; Harrison 1968); Faidhat Al-Massad, Faidhat Al-Dhaba'a, Al-Dheabeat, Al-Jazera Area near Haditha, Rutba, Al-Qa-eem, Jabal Makhool, Al-Sherqat, Baiji, Jabal Sinjar, Rabe'ea; Makhmoor, Jabal Himreen, Kafri, Kalar, Jalwla, Mandli, Badra, Khanaqeen, and Ser Qella at Garmyan area (Al-Sheikhly 2012c). Specimens collected in Erbil and Kurkuk are included in the collection of the BMNH (Hatt 1959). Specimens from Basra are resident to the collection of the BNHS, while those collected in Kurkuk, Baghdad, and Hinaidia are included in the collection of the FMNH (Harrison 1968).

RR: Small herds reported from Garmiyana area (near Kalar), assigned to *G. s. subgutturosa* (Su-14).

Family: Cervidae

Fallow Deer *Dama dama* (Linnaeus, 1758)  
 Subspecies: *D. d. mesopotamica* (Brooke, 1875).

Distribution: Rare, a few individuals may still survive in the mountains of the extreme north eastern Iraq. Recorded from: Zakho (Ellerman & Morrison-Scott 1951); Bradost Mountain (Field 1955); between Maidan and Halabja (Harrison 1968; Harrison & Bates 1991).

European Roe Deer *Capreolus capreolus* (Linnaeus, 1758)  
Subspecies: *C. c. coxi* (Cheesman & Hinton, 1923).

Distribution: Confined to the forested mountains of the extreme northern Iraq. Recorded from: Harir Dagh and Mer-gasor (Hatt 1959). Subspecies *C. c. coxi* was described by Cheesman & Hinton (1923) on the basis of individuals observed in Zakho and Harir west of Rawandoz (Harrison 1968).

RR: Small herd reported from Barzan Area (M. Taib, Iraq, pers. comm. 2014).

Family: Suidae

Wild Boar *Sus scrofa* (Linnaeus, 1758)

Subspecies: *S. s. attila* (Thomas, 1912).

Distribution: Abundant, mainly along the Tigris and Euphrates Rivers and the southern marshes. Recorded from: Diyala, Kut al Imara, Baghdad, Ad Dawr, and Shatt al Adhaim (Pittman 1922); Amara, Khaniqin, and Baradost (Sanborn 1940); Hawizeh (Drower 1949); Tigris River, south of Amara (Page 1954); north and south of Hilla and Mansuriyah al Shatt (Hatt 1959); near Majar, Chahala and Masharia Rivers, and Auaisij (Thesiger 1964); Lake Habbaniya, Hadithah, Badra, Sulaymaniyah, and Sarsank (Harrison 1968); Fao and Hammar Marsh (Haba 2009); east of Hammar Marsh (Abass 2013); Hawraman Mountain (Lahony et al. 2013). Thesiger (1954) hunted 488 pigs in two years around Al-Hammar Marsh. Specimens collected in Baghdad and Baquba are resident to the BMNH, while those collected in Khaniqin, Wadi Hostocki, Towaka, Zharir, Baradost, Chahala near Amara, and 30 km N Hilla are resident to the UoM (Harrison & Bates 1991).

RR: Recorded from 33 sites throughout Iraq during 2013-2014.

### Order Lagomorpha

Family: Leporidae

Cape Hare *Lepus capensis* (Linnaeus, 1758)

Subspecies: *L. c. arabicus* (Ehrenberg, 1833).

Distribution: Widespread, confined to the desert and arid steppes west of the Euphrates River. Ellerman & Morrison-Scott (1951) reported the occurrence of this hare in Kuwait. Harrison & Bates (1991) reported an individual from Saqlawiya in western Iraq; recorded also from Central and Al-Hammar marshes (Haba 2009; Abass 2013); Hawraman Mountain (Lahony et al. 2013).

RR: Rutba, Ga'ara, and Al-Qa-eem (An- 13); Teeb (My-13).

European Hare *Lepus (Eulagos) europaeus* (Pallas, 1778)

Subspecies: *L. e. connori* (Robinson, 1918), in the steppe, grassland, and foothill east of the Euphrates River; *L. e. syriacus* (Hemprich & Ehrenberg, 1832), confined to the arid steppes of the extreme north western Iraq.

Distribution: Widespread. Recorded from: Hindiya, Kut al Imara, Shatt al Adhaim, Jalam, the frontier of Arabia, the plain north of Samarra, Al Falluja, Hit, Amara, Al Kumait on the Tigris, Shahraban, and Twin Canals (Cheesman 1920); along the Tigris north of Ad Dam (Pittman 1922); Baghdad and from Camp Rashid on its outskirts (Sanborn 1940); Baghdad and Hilla (Hubbard 1955); Hilla, Mansuriya al Shatt, and Habbaniya (Hatt 1959); Chebaeish (Haba 2009).

RR: *L. e. connori* from Hor Dalmaj (Qa-13), Bahr Al-mil-ih (Ka-13); *L. e. syriacus* from 17 km NW Rutba (An-13).

### Order Rodentia

Family: Sciuridae

Caucasian Squirrel *Sciurus (Tenes) anomalus* (Gmelin, 1778)

Subspecies: *S. a. pallescens* (Gray 1867), with seasonal variation in pelage colour.

Distribution: Abundant in the forested mountains of northern Iraq. Recorded from many localities in north eastern Iraq (Hatt 1959); Penjwin (Petter 1961); Koshek (Von Lehman 1966); Derbendikhan Dam (Harrison & Bates 1991); Hawraman Mountain (Lahony et al. 2013).

RR: Recorded from 34 sites in northern Iraq (12-14).

Family: Hystricidae

Indian Crested Porcupine *Hystrix (Hystrix) indica* (Kerr, 1792)

Subspecies: *H. i. indica* (Kerr 1792).

Distribution: Abundant along the Tigris and Euphrates valleys, deserts and arid steppes, and mountains of northern Iraq. Recorded from many localities by Hatt (1959), Harrison (1959), Smielowski (1978), Nadachowski et al. (1990) and Kadhim (1997); Peramagroon (Raza et al. 2012); Hawraman Mountain (Lahony et al. 2013).

RR: Jabal Makhool, Al-Alam, Al-Cidir, Al-Tharthar Valley (Sa-13); Rutba, Ga'ara, Wadi Horan, Khan Al-Baghdadi, Al-Jezera (An-13); Jabal Himreen and near Hor Shwija (Di-13), Hor Dalmaj (Qa-13); Central Marshes (Th-14).

Family: Dipodidae

Euphrates Jerboa *Allactaga (Paralactaga) euphratica* (Thomas, 1881)

Subspecies: *A. e. euphratica* (Thomas, 1881).

Distribution: Relatively local in central and southern Iraq. Records were provided by Harrison (1959), Hatt (1959), Al-Robaae (1976), Kadhim & Wahid (1986) and Nadachowski et al. (1990).

RR: Western Hammar Marsh (Th-13).

Lesser Egyptian Jerboa *Jaculus jaculus* (Linnaeus, 1758)

Subspecies: *J. j. loftusi* (Blanford, 1875), in the arid steppe of the eastern Euphrates basin; *J. j. vocater* (Thomas,

1921), in western and southern desert of Iraqi.

Distribution: Widespread, in the desert and rocky steppes of central and southern Iraq. Recorded from: Az Zubeir (Ellerman & Morrison-Scott 1951); W Basra (Hatt 1959); 40 km E Rutba, Hatra (Nadachowski et al. 1990); Haur al Hasa, S Habbaniya (Harrison & Bates 1991); Al-Cidir (Al-Sheikhly 2013).

RR: Wadi Al-Tharthar (An-13).

Family: Gliridae

Large-eared Garden Dormouse *Eliomys melanurus* (Wagner 1840)

Subspecies: *E. m. melanurus* (Wagner, 1840).

Distribution: Restricted to the rocky steppe of north western Iraq. Recorded from: Hatra (Nadachowski et al. 1978); from c. 90 km SW of Mousel (Harrison & Bates 1991).

Forest Dormouse *Dryomys nitedula* (Pallas, 1779)

Subspecies: Possibly close to the Iranian subspecies *D. n. pictus* (Blanford, 1875).

Distribution: Confined to the Oak forests of Kurdistan. Recorded from: Sulaymaniyah in northern Iraq (Jawdat 1977; Harrison & Bates 1991).

Family: Spalacidae

Middle East Blind Mole Rat *Nannospalax ehrenbergi* (Nehring, 1898)

Iraqi populations of this variable taxon belong to the same karyotype (Coşkun et al. 2012). Although *N. ehrenbergi* is better regarded as a superspecies comprising several biological species (Hadid et al. 2012), uncertainty remains about the taxonomic rank as well as the nomenclature of the Iraqi karyotype, which is widely distributed also in southeastern Anatolia.

Distribution: Found in the steppe of northern Iraq. First description provided by Bate (1930), who reported bones of *N. ehrenbergi* from the Hazar Mard caves near Sulaymaniyah. Also recorded by Reed (1958) and Petter (1961) (Harrison & Bates 1991). Individuals collected in Ser Amadiya, Tim near Bermaneh (Harrison 1956) and Sarsank (Hatt 1959) were also assigned to this species. Recently recorded as *Spalax leucodon* from Hawraman Mts. (Lahony et al. 2013). The distribution in Iraq is summarised by Coşkun et al. (2012).

Family: Muridae

Eastern Broad-toothed Field Mouse *Apodemus mystacinus* (Danford & Alston 1877)

Subspecies: *A. m. mystacinus* (Danford & Alston, 1877).

Distribution: Confined to the Oak forests and wooded rocky cliffs of northern Iraq. Recorded from: Sarsank (Hatt 1959); Qali Ali Beg (Nadachowski et al. 1990; Harrison & Bates 1991).

Yellow-necked Field Mouse *Apodemus flavicollis* (Melchior, 1834)

Subspecies: *A. f. argyropuloi* (Heptner, 1948).

Distribution: Confined to the Oak forests of northern Iraq. Recorded from: Haj Omran and Sarsank (Hatt 1959); Salahadin and Sulaymaniyah (Al-Shenawi et al. 1982; Harrison & Bates 1991).

Steppe Field Mouse *Apodemus witherbyi* (Thomas, 1902)

Subspecies: May be the species is represented by the sample collected in Qazvin (northern Iraq), which separated electrophoretically from both *A. sylvaticus* and *A. flavicollis*. To date, however, the specimens from Qazvin are considered closer to the latter (Darviche et al. 1979).

Distribution: Confined to the rocky mountain slopes of the extreme northern Iraq. Harrison (1956) reported this species from Ser Amadiya as *A. sylvaticus*. Hatt (1959) confirmed its occurrence at the same locality. Also recorded by Petter (1961) (Harrison & Bates 1991).

Roof Rat *Rattus rattus* (Linnaeus, 1758)

Subspecies: *R. r. rattus* (Linnaeus, 1758).

Distribution: Widespread, an urban pests mainly in settlements along the Tigris and Euphrates Rivers and their tributaries. Recorded from many localities in central and southern Iraq (Cheesman 1920; Hatt 1959; Nader 1968b; Al-Shenawi et al. 1982).

RR: Old Rasafa; Yarmook (B-13; 14).

Brown Rat *Rattus norvegicus* (Berkonhout, 1769)

Subspecies: *R. n. norvegicus* (Berkonhout, 1769).

Distribution: Widespread, mainly along the Tigris and Euphrates Rivers and their tributaries. Recorded from: Basra (Cheesman 1920; Hatt 1959); Baghdad (Kadhim et al. 1979; Al-Shenawi et al. 1982; Harrison & Bates 1991); Hammar Marsh (Abass 2013).

RR: 13 localities in Baghdad (B-13); Mashab River and Garmatt Ali (Ba-14).

House Mouse *Mus (Mus) musculus* (Linnaeus, 1758)

Subspecies: *M. m. praetextus* (Brants, 1827) and *M. m. bactrianus* (Blyth, 1846) occur in both eastern and western Iraq (Harrison 1972). However, further investigation is required.

Distribution: Widespread. Recorded from: Sinn Abtar and Twin Canals from Kut al Imara, Basra, Shaikh Saad, and Amara (Cheesman 1920); Habbaniyah, Baghdad, Sarsank, K-3, Hilla, Haj Omran, the region of Salahuddin, and Jarmo (Hatt 1959); Chebaeish and Ashar (Haba 2009); also recorded by Nader (1968b), Al-Shenawi et al. (1982); Hammar Marsh (Abass 2013); Hawraman Mountain (Lahony et al. 2013).

RR: Al-Alam (Sa-13), Ramdi (An-13), and Yarmook area (B-14).

Short-tailed Nesokia *Nesokia indica* (Gray, 1830)

Subspecies: *N. i. boxtoni* (Thomas, 1919).

Distribution: Widespread in the riverine plains of both central and southern Iraq. Recorded from: Amara, Al Qur-na, Aqar Quf, Shaikh Saad, and An Nasiriya (Cheesman 1920); Baghdad (Sanborn 1940); Cheesman's sites, Maqil and Hinaidi (Ellerman 1948); Ur (Pocock 1934); Baghdad, Mansuriya al Shatt, Ramadi, and Babylon (Hatt 1959); recorded also by Petter (1961), Nader (1968b), Al-Robaae (1977), Kadhim (1981) Al-Shenawi et al. (1982); and Abass (2013).

Long-tailed Nesokia *Nesokia bunnii* (Khajuria, 1981)

Originally described under the genus *Erythronesokia* by Khajuria (1981), later on it was proved to be a distinctive species of *Nesokia* (Al-Robaae & Felten 1990).

Distribution: Current status is unknown. Recorded only in the marshes at the confluence of the Tigris and Euphrates Rivers in south eastern Iraq (Khajuria 1981; Al-Robaae & Felten 1990), the species could also possibly occur in Al-Hawizeh Marsh straddling the Iraq-Iran south eastern border.

Family: Cricetidae

Gray Dwarf Hamster *Cricetulus migratorius* (Pallas, 1773)

Subspecies: *C. m. cinerascens* (Wagner, 1848).

Distribution: Abundant in cultivated lands, forests, and steppes mainly of northern Iraq. Individuals were collected in Ser Amadiya by Harrison (1956). A specimen included in the collection of the FMNH was trapped at Jarmo (Hatt 1959). Also recorded by Petter (1961) and Kadhim (1975) (Harrison & Bates 1991).

Baluchistan Gerbil *Gerbillus (Hendecapleura) nanus* (Blanford, 1875)

Subspecies: *G. n. nanus* (Blanford, 1875), in eastern Iraq; *G. n. arabium* (Thomas, 1918), confined to the desert of south western Iraq.

Distribution: Widespread, in deserts and arid steppes of central and southern Iraq. Recorded from: Ali Al-Gharbi by Petter et al. (1957); specimens from Basra Liwa are included in the collection of the UMC (Harrison & Bates 1991).

Wagner's Gerbil *Gerbillus (Hendecapleura) dasyurus* (Wagner, 1842)

Subspecies: *G. d. dasyurus* (Wagner, 1842).

Distribution: Widespread in the steppic deserts of central and western Iraq. Recorded from: c. 11 km SE H2 pumping station in western Iraq (Harrison 1956c); Haditha (Hatt 1959; Harrison & Bates 1991).

RR: Wadi Al-Tharthar (An-13).

Mesopotamian Gerbil *Gerbillus (Hendecapleura) mesopotamiae* (Harrison, 1956)

Subspecies: *G. m. mesopotamiae* (Harrison, 1956), with

some individual and local variation.

Distribution: Widespread in arid terrains of central and southern Iraq. Harrison (1956) reported the species in the surroundings of Amiriya. Recorded from: Lake Habbaniya, Baghdad, K-3, Basra; Haur Al Hasa, Al-Jadriyah, Ain Tina, 4 km S Falluja, 10 km W Baghdad, Rashidiya, 4 km S Abu Ghraib, and Um al Khanazeer Island (Hatt 1959); 5 km SE Najaf (Nasher 1970); Ramadi Liwa (Nadachowski et al. 1990). Specimens from Ali Gharbi are included in the collection of the PM, while those from Baghdad and Baquba are included in the collection of the BRCB (Harrison & Bates 1991).

Cheesman's Gerbil *Gerbillus (Gerbillus) cheesmani* (Thomas, 1919)

Subspecies: *G. c. cheesmani* (Thomas, 1919).

Distribution: Confined to open sandy hummocks with sparse vegetation of central and southern Iraq. Recorded from: Along the west bank of the Euphrates River (SW Al Falluja, near Haur al Hasa, Amiriya: Harrison 1956); Lake Habbaniya (Hatt 1959; Harrison & Bates 1991).

Indian Gerbil *Tatera indica* (Hardwicke, 1807)

Subspecies: *T. i. taeniura* (Wagner, 1843).

Distribution: Widespread. Recorded from: Amara, Sinn Abtar, Kut al Imara, Baghdad, Aqarkuf, Sheikh Saad, Shahraban, and Baiji (Cheesman 1920); Kasimain and Baghdad (Ellerman 1948); near Habbaniya (Harrison 1956c); Ali Gharbi (Petter 1957); Tell Imlihiye (Kock & Nader 1983); Hatra (Nadachowski et al. 1978; Harrison & Bates 1991). Further records were provided by Kadhim (1998).

Persian Jird *Meriones (Parameriones) persicus* (Blanford, 1875)

Subspecies: *M. p. persicus* (Blanford, 1875).

Distribution: Restricted to the mountains of northern Iraq. Recorded from: Kani Mase and Ser Amadia (Harrison 1956c); Penjwin and Jabal Batiwa (Petter et al. 1957); Salahadin, Shaqlawa, and Jarmo (Hatt 1959).

Tristram's Jird *Meriones (Pallasiomys) tristrami* (Thomas, 1892)

Subspecies: *M. t. lycaon* (Thomas, 1919), with ochraceous buff dorsal pelage.

Distribution: Confined to the Oak forests of northern Iraq. Recorded from: Dohuk (Ellerman 1948); Bakrajo in Sulaymaniyah and Sarsank (Hatt 1959). Petter et al. (1957), Kock & Nader (1983) and Nadachowski et al. (1990) provided further records. A few specimens are included in the collection of the HZM (Harrison & Bates 1991).

Libyan Jird *Meriones (Pallasiomys) libycus* (Lichtenstein, 1823)

Subspecies: *M. l. syrius* (Thomas, 1919), confined to the

desert steppe of western Iraq; *M. l. erythrourus* (Gray, 1842), occurs in the eastern region of the Euphrates basin. Distribution: Widespread. Recorded from: Az Zubair W Basra (Ellerman 1948); Amiriya and Al Jazira SW of Samarra (Harrison 1956c); At Tuba, Basra (Hatt 1959). Also reported by Heptner (1940) and Petter et al. (1957); Al-Cidir (Al-Sheikhly 2013).

Sundevall's Jird *Meriones (Pallasiomys) crassus* (Sundevall, 1842)

Subspecies: *M. c. crassus* (Sundevall, 1842), confined to the arid steppes of western Iraq; *M. c. charon* (Thomas, 1919) occurs in the eastern region of the Euphrates basin. Distribution: Widespread. Recorded from: Kasimain and Az Zubeir (Cheesman 1920); Haur al Hasa and Jazira (Harrison 1956c); Ali Gharbi and Kurkuk (Petter et al. 1957); 150 km NW Basra, Haditha, 24 km W Ramadi, 32 km W Baghdad, and Balad (Hatt 1959); Balad (Harrison 1972; Harrison & Bates 1991).

Transcaucasian Mole Vole *Ellobius (Afganomys) lutescens* (Thomas, 1897)

Subspecies: Possibly *E. l. lutescens* (Thomas, 1897). Distribution: Probably still present on the mountains of northern Iraq. Fossils were discovered in the caves of Hazar Mard (Bate 1930) and Shanidar (Hatt 1959). Hatt (1959) reported that the species might still inhabit the mountains of northern Iraq. Baltazard & Seydian (1960) reported the occurrence of some specimens from Penjwin, whereas Petter (1961), who examined the same collection, did not (Harrison & Bates 1991).

Eurasian Water Vole *Arvicola amphibius* (Linnaeus, 1758)

Subspecies: *A. a. persicus* (de Filippi, 1865). Distribution: Restricted to the mountains of northeastern Iraq; recorded from Penjwin (Petter 1961; Harrison & Bates 1991). RR: Chebaeish (Central Marshes, southern Iraq) yet without supporting material (N. Abod. pers. comm. 2014).

Social Vole *Microtus (Microtus) socialis* (Palas, 1773)

Subspecies: Harrison and Bates (1991) included *guentheri* and *irani* under *M. socialis*. However, *M. irani* has been separated as a distinct taxon (Kefelioğlu & Kryštufek 1999; Golenishchev et al. 2002).

Distribution: Confined to the mountains and foothills of northern Iraq. Recorded from: Ser Amadiya (Harrison 1956a); Sulaymaniyah and Sarsank (Hatt 1959); Penjwin (Petter 1961); Hawraman Mountain (Lahony et al. 2013). A few specimens are included in the collection of both BMNH and HZM (Harrison & Bates 1991). Ellerman (1948) reported the occurrence of some specimens from "Baghdad", but it is wisely questioned whether they really came from that locality (Hatt 1959).

## Order Cetacea

Family: Delphinidae

Indo-Pacific Humpbacked Dolphin *Sousa chinensis* (Osbeck, 1765)

Distribution: Marine coasts of southern Iraq. The species (under the name *Sotalia lentiginosa*) was recorded from Khor Al Zubeir (Al-Robaae 1970a).

Indo-Pacific Bottlenose Dolphin *Tursiops aduncus* (Ehrenberg 1833)

Distribution: Marine coast of southern Iraq. Reported from Rass Al-Mataf (near Fao) in the northern part of the Arabian Gulf (Al-Robaae 1974).

Finless Porpoise *Neophocaena phocaenoides* (G. Cuvier, 1829)

Distribution: Marine coast of southern Iraq. Recorded from the Iraqi territorial water c. 37 km S Fao; another specimen was reported from Fao (Al-Robaae 1975).

Family: Balaenopteridae

Blue Whale *Balaenoptera musculus* (Linnaeus 1758)

Distribution: Marine coast of southern Iraq. Uncertain status; listed by Mahdi & George (1969) but without providing further details.

Bryde's Whale *Balaenoptera edeni* (Anderson 1879)

Distribution: Marine coast of southern Iraq. Recorded from: Khor Al Zubeir (6.4 km NW of port Umm Qasr) (Mahdi 1967; Al-Robaae 1969).

Humpback Whale *Megaptera novaeangliae* (Borowski 1781) (Arabian Sea sub-population)

Distribution: Marine coast of southern Iraq. Specimens collected near Fao and Shatt Al-Arab are resident to the collection of the BRCB (Hatt 1959; Al-Robaae 1970b).

## DISCUSSION

### Historical framework

A checklist of the mammals of Iraq was urgently required in order to support conservation plans for the Iraqi fauna. We reviewed eight major orders including 28 families, 65 genera and 93 species. This manuscript represents the first systematic checklist of wild mammals prepared for Iraq since the 1950s, and includes many new species recorded since Hatt's masterpiece. Moreover, Hatt (1959) included 12 species that were re-evaluated and eventually assigned to other taxa by Harrison & Bates (1991): Bicolored White-toothed Shrew (*Crocidura leucodon persica*) assigned to Lesser White-toothed Shrew (*C. suaveolens*), the European Hedgehog (*Erinaceus europaeus*) assigned to East European Hedgehog (*E. concolor*), Babylonian



Sheath-tailed Bat (*Taphozous kachhensis babylonicus*) assigned to Naked-bellied Tomb Bat (*T. nudiventris magnus*), Northern Bat (*Eptesicus nilssoni nilssoni*) assigned to Botta's Serotine (*E. bottae*); V: Hingston's Serotine (*Eptesicus sodalis hingstoni*) assigned to Botta's Serotine (*E. bottae*), Cox's Pipistrelle (*Pipistrellus coxi*) assigned to Rüppell's Pipistrelle (*P. ruppellii*), the Indian Red Fox (*Vulpes v. pusillus*) assigned to the Arabian Fox (*V. v. arabica*), the European Hare (*Lepus europaeus connori*) assigned to Cape Hare (*L. capensis connori*), the Persian Squirrel (*Sciurus anomalus*) assigned to the subspecies *S. a. pallescens*, Wagner's Gerbil [*Gerbillus (Hendecapleura) dasyurus*] assigned to Harrison's Gerbil [*G. (H.) mesopotamiae*], Turkish Jird (*Meriones blackleri blackleri*) assigned to Tristram's Jird [*M. (M.) tristrami*], and the Persian Vole (*Microtus irani*) assigned to the Social Vole (*M. socialis*).

Later on, further observations were provided by Harrison (1964; 1968; 1972) and Harrison & Bates (1991). Nevertheless, eight new records obtained in 2012 and 2013 were added to the present checklist: Syrian Jackal (*Canis aureus syriacus*) from Hussaiba, 7 km NW Al-Qa-eem, western Iraq (Al-Sheikhly 2012a), Arabian Wolf (*Canis lupus arabs*) from Rutba, western Iraq (Al-Sheikhly 2012b), Indian Grey Mongoose (*Herpestes edwadsii*) from Kurdistan, northern Iraq (Al-Sheikhly & Mallon 2013), Least Weasel (*Mustela nivalis*) from Kurdistan, northern Iraq (Raza 2013), Sand Cat (*Felis margarita*) from desert of Al-Najaf Province (Mohammad et al. 2013). Syrian Cape Hare (*Lepus capensis syriacus*) from Rutba, western Iraq (Al-Sheikhly. in litt.), Mediterranean Horseshoe Bat (*Rhinolophus euryale*) from Kurdistan, northern Iraq (Al-Sheikhly et al. 2015), and Geoffroy's Myotis (*Myotis emarginatus*) from Kurdistan, northern Iraq (Al-Sheikhly et al. 2015).

### Present checklist

Among the 93 species recorded in Iraq, 24 were evaluated by the IUCN (one species listed as extinct, one species as Critically Endangered, four species as Endangered, eight species as Vulnerable, seven species as Near Threatened, and three species as Data Deficient) (Table 2). In this context, the above-mentioned Smooth-coated Otter, a flagship species of Iraq is worth of mention. During the 1980s and 1990s this species was guessed to be extinct due to habitat loss and fragmentation as well as to over-hunting, but it has been rediscovered very recently (Omer et al. 2012; Al-Sheikhly & Nader 2013; Al-Sheikhly et al. 2014).

The strategic geographical position of Iraq provided the local mammals with a historical natural connection to the fauna of southern Turkey, western Iran, eastern Syria and the north eastern part of the Arabian Peninsula. Hence, it

did not come as a surprise that six Arabian species were found west of the Euphrates River: the Arabian subspecies of the Lesser Mouse-tailed Bat (*Rhinopoma hardwickii arabium*), the Arabian Wolf (*Canis lupus arabs*), the Arabian Fox (*Vulpes vulpes arabica*), the Arabian Cape Hare (*Lepus capensis arabicus*), the Arabian Sand Gazelle (*Gazella subgutturosa marica*), and the Arabian subspecies of Baluchistan's Gerbil (*Gerbillus nanus arabium*). In addition, the Sand Cat (*Felis margarita harrisoni*), a species confined to the Arabian Desert, was recently recorded in Iraq as well. Furthermore, the Syrian Desert, the monotonic landscape shared between eastern Syria and western Iraq, which extends until the western bank of the Euphrates River, is inhabited by five species: the Syrian Jackal (*Canis aureus syriacus*), the Syrian Stone Marten (*Martes foina syriaca*), the Syrian Marbled Polecat (*Vormela peregusna syriaca*), the Syrian Striped Hyaena (*Hyaena hyaena syriaca*) and the Syrian Cape Hare (*Lepus capensis syriacus*). Finally, the mammalian fauna of Iraq is also naturally connected to the zoogeographic realm of Persia, a territory stretching mainly east of the Tigris River and along the border with Iran. Eight species can be found so far in the forested mountains, rocky valleys, and grassy steppes of this region: the Iranian Wolf (*Canis lupus pallipes*), the Persian Leopard (*Panthera pardus saxicolor*), the Iranian (Asiatic) Cheetah (*Acinonyx jubatus venaticus*), the Persian Goitred Gazelle (*Gazella subgutturosa subgutturosa*), the Wild Goat (*Capra aegagrus*), the Persian Squirrel (*Sciurus anomalus*), the Persian Jird [*Meriones (Parameriones) persicus*], and the Persian Water Vole (*Arvicola amphibius persicus*).

During the Iraq war in 2003, vandalism against the Biological Research Centre of Baghdad (BRCB) occurred and, as a consequence, many valuable specimens of the Iraqi fauna were lost or damaged. When we examined mammal specimens kept in the BRCB collection we also noticed that many of them were decomposed due to long-term storage. Unfortunately, substitute material was not available especially for Soricomorpha, Chiroptera and Rodentia. Nevertheless, we would like herein to focus on a few valuable mammal specimens collected in Iraq and described as new taxa. The Haditha Mouse-tailed Bat (*Rhinopoma hadithaensis*) was first described by Khajuria (1988) based on a few specimens discovered in Haditha (western Iraq) and now resident to the collection of the BRCB. According to their morphology and, especially, to the cranial features provided by Khajuria (1988), Kock et al. (2001) regarded *R. hadithaensis* as junior synonym of the Greater Mouse-tailed Bat (*R. microphyllum*). However, the status of *R. hadithaensis* remains uncertain and further investigation is needed. Other valuable specimens (study skin kept at the BMNH and live cub) belong to the Iraq Smooth-coated Otter (*Lutrogale perspicillata maxwelli*), collected by Gavin Y. Maxwell (Hayman 1959). The otter skin was found in the village of

Abusakhair (Faraijat tribe, c. 56 km SE of Amara, along the Tigris River) and included in the collection of the BMNH. The live cub was probably found in a tumulus island village called Daub, c. 19 km NW of Al-Azair (west of the Tigris River: Hayman 1956; Maxwell 1957, 1960; Al-Sheikhly & Nader 2013; Al-Sheikhly et al. 2014). After 1980s *L. p. maxwelli* was believed to be extinct, but during field surveys carried out in 2007–2012 the occurrence of *L. p. maxwelli* in southern Iraqi marshes was proved by Al-Sheikhly & Nader (2013). Additionally, another isolated population of *L. perspicillata* was found in Kurdistan (northern Iraq), this finding representing a remarkable extension of the species range known so far (Omer et al. 2012; Al-Sheikhly & Nader 2013). The Long-tailed Nesokia (*Nesokia bunnii*) was described by Khajuria (1981) within the genus *Erythronesokia* on the basis of two individuals collected in Al-Qurna (southern Iraq) and presently included in the collection of the BRCB. This species can be distinguished from the similar Short-tailed Nesokia by its large size, cranial features, long tail, redness of the dorsal pelage, and incipient development of the lower incisor root. Al-Robaae & Felten (1990) showed that Khajuria's (1981) *N. bunnii*, indeed, represents a distinct species. Harrison & Bates (1991) comprehensively examined Khajuria's record and concluded that it could be a large specimen of Short-tailed Bandicoot Rat (*Nesokia indica*), with an abnormal long tail possibly reflecting its ecological adaptation to the aquatic habitat. However, more samples from the Basra Province are required to confirm the taxonomic identity of this taxon in Iraq.

We found that hunting and trapping represent the main threats to the wild mammals of Iraq. Indian Crested Porcupine, Cape Hare, and Jerboas are widely hunted for meat consumption and fur by local people, especially in central and western Iraq. On the contrary, such practices are forbidden in southern Iraq. The spines of the porcupine are used to decorate houses and cars, the tails of both hares and jerboas are used to make keychains, while the fur is used to create handmade souvenirs. Goitred Gazelle, Wild Goat, and Mouflon are heavily hunted to be consumed as food or trapped to be raised as domesticated pets (Al-Sheikhly 2012b). The skulls of hunted gazelles and goats, especially those with big horns, are usually mounted and/or hanged on the front wall of the hunters' houses to testify the success of their hunting trips. Local farmers hunt wild boars for purpose of eradication, as they considered this species as a pest. Locals also hunt Fox, Jackal, Wolf, Striped Hyena, Honey Badger, Jungle Cat and Leopard according to traditional practices and/or myths (Hatt 1959; Harrison 1972). The Bedouins are known to chase wolves and hyenas in the western desert of Iraq in order to collect their eyes, claws and teeth, which are all used as symbols of glory according to the Arabian tradition. Alternatively, Bedouins usually trap wolf cubs in order to raise them as

pets. More in general, a conflict between the previous carnivore species and shepherds, farmers and hunters is ongoing, the local people being constantly engaged to eliminate these species whenever possible. Especially wolves and leopards are considered dangerous to humans and destructive to cattle herds (Fig. 2). Nevertheless, the European Otter and the Smooth-coated Otter are widely hunted for their fur throughout Iraq. Such a practice led the populations of both species to the edge of the extinction. Otters' fur is used as a waterproof sac, which can be filled with illegal imports and inserted in the gasoline tank of smugglers' vehicles (Al-Sheikhly & Nader 2013; Al-Sheikhly et al. 2014). Iraqi farmers and hunters regularly collect juvenile Persian Squirrel and Small Indian Mongoose in spring. Squirrels are mainly trapped in northern Iraq before being carried out to the animal markets of Baghdad, Mousel and Kurkuk. Many of them usually die due to serious injuries caused by trapping and/or transportation before they can be sold as tamed pets. Hunters of central and southern Iraq monitor the lactating female mongooses and chase them at their dens in order to collect young individuals. These latter are then usually sold to local farmers. Young mongooses, indeed, are usually trained to control rodents and insects in farms and settlements.

Unfortunately, illegal trapping and trafficking of autochthonous mammalian species is widely performed in Iraq. The weakness of the wildlife hunting legislation allows unauthorised local hunters to trap many wild animals for purpose of export to neighbouring countries. For instance, young Sand Gazelle and Wild Goat are trapped during the breeding season in the western desert and north-eastern mountains of Iraq, and then shipped to neighbouring countries (Al-Sheikhly 2012c). Youngs of the Brown Bear are trapped in many localities of northern Iraq (Kurdistan) and sold as pets in the animal markets of Baghdad. Nevertheless, the trade of exotic species to Iraq does frequently occur as well, this representing an additional threat to the local biota. For instance, the African Lion (*Panthera leo*), the North-West African Cheetah (*Acinonyx jubatus hecki*), and the Bengal Tiger (*Panthera t. tigris*) are regularly imported and sold in the animal markets of Iraq. The price for each specimen ranges between US\$ 1,700 and US\$ 4,000, cubs being the most requested items.

It is clear that the conflict between man and wild species is leading to a rapid decline of many animal populations in Iraq. The lack of scientific knowledge and awareness about the wild fauna among local farmers and hunters, the ever-increasing hunting pressure, poaching and related illegal trade of animals as well as ongoing habitat loss and fragmentation represent the main threats impacting wild mammals of Iraq. Despite the huge efforts proposed by the Iraqi authorities in order to protect the wild mammalian fauna, further enforcement of present hunting legislation is essential, as Iraq became a signatory country to the Con-

vention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

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**GEOGRAPHICAL GAZETTEER****Al-Anbar Province (An)**

Al Faluja (Falluja; Feluja): 33°21'N43°46'E; Abu Al Jir: 33°16'N42°53'E; Abu Ghreb (Abu Graib): 33°28'N44°17'E; Al-Dhebeate (Al-Thebeate): 32°49'N43°11'E; Al-Ga'ra: 33°29'N40°26'E; Al-Jezera (Jezaratt Al-Anbar): 34°11'N42°49'E; Al-Qa-eem: 34°22'N41°06'E; Anah (Ana): 34°28'N41°56'E; Cheleabat: 32°18'N39°47'E; Faidhat Al Massad: 32°55'N40°13'E; Faidhat Al-Dhaba'a: 32°58'N40°20'E; H1 station: 33°40'N39°57'E; H2 station: 33°16'N40°40'E; Habbaniya: 33°22'N43°35'E; Hadithah: 34°07'N42°23'E; Haur al Hasa: 33°12'N43°45'E; Hit: 33°38'N42°49'E; Hussai-ba: 34°23'N40°59'E; K3 station: 32°55'N39°45'E; Lake Habbaniya: 33°17'N43°29'E; Nikheab: 32°02'N42°15'E; Qasr al Helqum: 33°48'N40°35'E; Rahaliyah: 32°46'N43°23'E; Ramadi (Ar Ramadi): 33°27'N43°19'E; Rawa: 34°28'N41°55'E; Razaza Lake: 32°43'N43°31'E; Rutba (ArRutba): 33°03'N40°18'E; Saqlawiya: 33°24'N43°41'E; Shamiyah Desert: 30°20'N46°40'E; Sheikh Hadid: 34°11'N42°22'E; Sin Al Dhibban (Thuban; Zeban): 33°23'N43°36'E; T1 station: 34°15'N41°20'E; Wadi Arar: 31°27'N41°38'E; Wadi Horan: 33°54'N41°57'E; Wadi Haqlaniya (Haqlan): 34°05'N42°27'E.

**Babel (Babylon) Province (Bb)**

Al-Mahmodiyah: 32°29'N44°25'E; Hilla: 32°32'N44°13'E; Hindiya (Sadatt Al-Hindiya): 33°04'N44°22'E.

**Baghdad Province (B)**

Agergoof (AqarQuf; Aqarkuf; Akkarkuf): 33°24'N44°21'E; Al-Adhamiyah: 33°22'N44°21'E; Al-Kadmiyah: 33°22'N44°20'E; Al-Rashdiyya (ArRashdiyya): 33°32'N44°21'E; Amiriya: 33°22'N44°32'E; Dor'ah (Dora): 33°15'N44°23'E; Jadriyah and Umm Al-Khanazeer Island: 33°17'N44°23'E; Mustansiriyah: 33°22'N44°24'E; Old Rasafa: 33°20'N44°24'E; Rashidiya: 33°25'N44°22'E; Rustamiyah: 33°16'N44°32'E; Yarmook: 33°17'N44°20'E; Zaafaraniyah: 33°13'N44°33'E.

**Basra Province (Ba)**

Abu Al-Khasib: 30°26'N48°00'E; Al-Masshab: 30°39'N47°28'E; Al-Qurna (Gurna): 31°01'N47°27'E; Ashar: 30°30'N47°50'E; At Tanumah: 30°31'N47°51'E; At Tuba: 30°27'N47°30'E; Basra city: 30°30'N47°48'E; Fao: 29°55'N48°30'E; Jabal Sanam: 30°06'N47°42'E; Khor Al-Zubeir: 30°02'N47°58'E; Kut as Sayyid: 30°31'N47°49'E; Majnoon: 31°12'N47°30'E; Maqil (Ma'qal): 30°33'N47°46'E; Rass Al-Beisha: 29°55'N48°33'E; Shaiaba (Shaiba; Shuaiba): 30°24'N47°41'E; Shatt Al-Arab: 30°26'N48°09'E; Umm Al Rassas: 30°26'N48°07'E; Zubeir (Az-Zubeir): 30°24'N47°45'E.

**Diyala Province (Di)**

Adhaim (Shatt al Adhaim): 34°01'N44°19'E; Al Miqdadiyah: 33°58'N44°58'E; Al-Khalis: 33°51'N44°32'E; Baladruz: 33°41'N45°05'E; Baquba (Baqubah): 33°45'N44°40'E; Ctesiphon: 33°06'N44°36'E; Jalwla: 34°17'N45°10'E; Kafri: 34°41'N44°58'E; Khaniqin: 34°20'N45°22'E; Lake Himreen: 34°10'N44°59'E; Madain: 33°05'N44°35'E; Mandli: 33°44'N45°34'E; Mansuriya al Shatt: 33°45'N44°24'E; Nahrwan (Nahrwan): 33°22'N44°42'E; Shahraban: 33°59'N44°56'E.

**Duhok Province (Du)**

Banaman: 36°23'N44°08'E; Bebaidi: 37°07'N43°27'; KaniMase (KaniMasi): 37°13'N43°25'E; Sarsank (Sersang): 37°03'N43°15'E; Ser (Ser') Amadia (Amadiya): 37°08'N43°27'E; Zakho: 37°08'N42°41'E; Zaweta (Zawitta): 36°55'N43°12'E.

**Erbil Province (Er)**

Bradost Mountain (JabalBradost): 36°46'N44°21'E; Barzan: 36°55'N44°03'E; Bola: 36°45'N44°42'E; Diyana: 36°39'N44°32'E; Diyana (Sorani): 36°41'N44°35'E; Gali (Qali) Ali Beg: 36°38'N44°25'E; Hais: 37°13'N43°25'E; Haj Omran: 36°40'N45°05'E; Harir (HarirDagh): 36°27'N44°23'E; Jabal Zhargahta: 35°18'N45°17'E; Kasimain: 33°22'N44°20'E; Makhmoo: 35°45'N43°35'E; Mergasor: 36°50'N44°19'E; Rawanduz (Rowanduz): 36°38'N44°32'E; SafinDagh (Jabal-Safin): 36°23'N44°18'E; Shanidr Cave: 36°50'N44°13'E; Shaqlawa: 36°23'N44°18'E; Shirin Mountain: 36°58'N44°06'E; Suran (Sorani) Area: 36°39'N44°32'E.

**Karbala Province (Ka)**

Uqhaidhir (Ukhaidir): 32°26'N43°36'E; Al-Tar (Al-Tar caves): 32°28'N32°46'E; EinTamur (Shthatha): 32°33'N32°29'E.

**Kurkuk Province (Ku)**

Chamchamal-Jarmo: 35°34'N44°55'E; Alton Kobri: 35°44'N44°09'E; TaqTaq: 35°53'N44°36'E.

**Mayssan Province (Ma)**

Abusakhair: 32°32'N47°19'E; Al Kumait: 32°01'N46°43'E; Ali Gharbi: 32°28'N46°42'E; Al-Maimona: 31°41'N46°58'E; Amara: 31°50'N47°08'E; Azair: 31°20'N47°26'E; Biet Mohammad: 31°50'N37°10'E; Chahala: 31°40'N47°18'E; Daub: 31°22'N47°14'E; Hawizeh: 31°39'N47°40'E; Kut al Imara: 32°30'N45°49'E; Majar al Kabir: 31°34'N47°09'E; Musharah River: 31°50'N47°13'E; Nachr-Chasasch: 30°50'N47°10'E; QalatSalih: 31°32'N47°19'E; Sinn Abtar: 32°30'N45°49'E; Teeb: 32°03'N47°15'E; Umm-Al-Ni'aj: 31°37'N47°36'E.

**Nenawa (Nineve) Province (Ne)**

Ain Tina: 35°35'N42°43'E; Ain Zala (Ain Zalah): 36°44'N42°34'E; Almawan: 36°25'N44°13'E; Aqra (Akra): 36°45'N43°54'E; Aski-kalak: 36°16'N43°38'E; Atrosh: 36°50'N43°20'E; Cora: 36°21'N44°10'E; Fishkhaboor: 37°03'N42°22'E; Hamam Al-Alil: 36°10'N43°16'E; Hatra (Al Hadr): 35°34'N42°42'E; Jabal Sinjar: 36°23'N41°52'E; Mousel city: 36°20'N43°06'E; Narwah: 36°42'N44°10'E.

**Muthana Province (Mu)**

Busaiyah (Busaiya): 30°5'N46°7'E; Samawa: 31°18'N45°18'E.

**Najaf Province (Na)**

Bahr Al-milih (Bahr Al-Najaf): 31°59'N44°15'E; Najaf city: 31°59'N44°19'E; Seriya: 33°24'N43°41'E.

**Qadissiyah Province (Qa)**

Ad Dwaniyah: 31°58'N44°56'E; Al-Hamza: 31°43'N44°58'E; Al-Shamiyah: 31°57'N44°36'E; Ash-Shinaffya: 31°35'N44°39'E; Dalmaj (HorDalmaj): 32°9'N45°31'E; Ghamaz (Gamas): 31°44'N44°37'E.

**Salahadin Province (Sa)**

Tikrit: 34°35'N43°40'E; Ad Dawr (Daur): 34°29'N43°49'E; Ain Al-Faras: 34°16'N43°11'E; Al Alam: 34°42'N43°41'E; Al-Jezera (Jezeratt Samarra): 35°00'N42°00'E; Baiji (Beaji): 34°56'N43°29'E; Balad: 34°00'N44°09'E; Balad (Beled): 33°58'N44°11'E; Cidir: 34°44'N44°03'E; Dejalil: 33°50'N44°14'E; Dholuiya: 34°05'N44°12'E; Duz-khurmato (Tooz): 34°52'N44°37'E; Jalam (Jalam Abu Ajeel): 34°35'N43°53'E; Jabal Himreen: 34°59'N43°43'E; Makhool (Jabal Makhool): 35°07'N43°26'E; Qala't Asharqat: 35°27'N43°13'E; Samara: 34°12'N43°52'E; Sharqat: 35°29'N43°14'E; Tarmiya: 33°40'N44°22'E; Wadi Al-Tharthar: 34°16'N43°27'E.

**Sulaymaniyah Province (Su)**

Ahmad Awa: 35°17'N46°03'E; Baksai: 32°53'N46°26'E; Chamchamal: 35°32'N44°50'E; Chami-Rezan: 35°48'N45°01'E; Darbandikhan (Derbendi Khan): 35°18'N45°47'E; Halabja: 35°10'N45°59'E; Hawaraman Area: 35°13'N46°06'E; Hazar Mard: 35°30'N45°20'E; Zagarta (Jabal Zagarta; Sargat): 35°16'N46°06'E; Kalar: 34°36'N45°19'E; Kanispika: 35°27'N45°23'E; Koshek: 35°16'N45°47'E; Little Zab: 35°54'N44°58'E; Maidam: 34°55'N45°37'E; Mawat: 35°57'N45°24'E; Murdka (Mortka): 35°03'N45°49'E; Parazan: 35°35'N45°49'E; Penjwin: 35°35'N45°57'E; Peramagroon: 35°46'N45°13'E; QaraDaq (Karadagh): 35°17'N45°21'E; Qashqulai: 35°55'N44°57'E; Sulymaniyah city: 35°33'N45°25'E; Taqia: 35°37'N44°57'E; Zagros Mountains (Jabal Zagros): 36°00'N45°00'E.

**ThiQar Province (Th)**

An Nasseriyah: 31°03'N46°16'E; Abu Ajaj: 39°49'N46°36'E; Abu Zirig: 31°06'N46°38'E; Al-Eslah: 31°09'N46°36'E; Al-Fhood: 30°58'N46°43'E; All Jweaber: 30°54'N46°38'E; Al-Ta'r: 30°56'N56°50'E; Chebaeish: 30°57'N46°59'E; Hor (Hour) Al Hammar: 30°50'N47°10'E; Kamisiyah: 30°46'N46°29'E; Kermashiya: 30°47'N46°37'E; Naheat Al Hammar: 30°57'N46°50'E; QarmattBani Seed: 30°52'N46°34'E; Suq Al-Sheikh: 30°52'N46°29'E; Ur: 30°57'N46°06'E; Zichri (Az Zichri): 31°03'N47°13'E.

**Wasit Province (Wa)**

Aziziyha: 32°54'N45°05'E; Badra: 33°05'N45°59'E; Kut: 32°29'N45°50'E; Numaniyah: 32°33'N45°25'E; Sewara: 32°54'N44°47'E; Sheik Saad: 32°34'N46°17'E.

**Table 1.** List of wild mammals recorded in Iraq.

Order	Family	Genus	Species			
Erinaceomorpha	Erinaceidae	<i>Erinaceus</i>	<i>Erinaceus concolor</i>	3		
		<i>Hemiechinus</i>	<i>Hemiechinus auritus</i>			
		<i>Paraechinus</i>	<i>Paraechinus aethiopicus</i>			
Soricomorpha	Soricidae	<i>Suncus</i>	<i>Suncus murinus</i>	3		
			<i>Suncus etruscus</i>			
		<i>Crocidura</i>	<i>Crocidura suaveolens</i>			
Chiroptera	Rhinopomatidae	<i>Rhinopoma</i>	<i>Rhinopoma hardwickii</i> <i>Rhinopoma microphyllum</i>	20		
	Emballonuridae	<i>Taphozous</i>	<i>Taphozous nudiventris</i>			
	Rhinolophidae	<i>Rhinolophus</i>	<i>Rhinolophus ferrumequinum</i> <i>Rhinolophus hipposideros</i> <i>Rhinolophus euryale</i> <i>Rhinolophus mehelyi</i>			
	Hipposideridae	<i>Asellia</i>	<i>Asellia tridens</i>			
	Molossidae	<i>Tadarida</i>	<i>Tadarida teniotis</i>			
	Vespertilionidae		<i>Myotis</i>		<i>Myotis blythii</i> <i>Myotis capaccinii</i> <i>Myotis emarginatus</i> <i>Myotis nattereri</i>	
			<i>Eptesicus</i>		<i>Eptesicus anatolicus</i> <i>Eptesicus bottae</i>	
			<i>Rhyneptesicus</i>		<i>Rhyneptesicus nasutus</i>	
			<i>Pipistrellus</i>		<i>Pipistrellus kuhlii</i>	
			<i>Vansonia</i>		<i>Vansonia rueppellii</i>	
			<i>Otonycteris</i>		<i>Otonycteris hemprichii</i>	
	Miniopteridae	<i>Miniopterus</i>	<i>Miniopterus pallidus</i>		20	
	Carnivora	Canidae	<i>Canis</i>		<i>Canis aureus</i> <i>Canis lupus</i>	23
<i>Vulpes</i>			<i>Vulpes vulpes</i> <i>Vulpes rueppellii</i> <i>Vulpes zerda</i>			
Ursidae			<i>Ursus</i>	<i>Ursus arctos</i>		
			Mustelidae	<i>Martes</i>	<i>Martes foina</i>	
				<i>Vormela</i>	<i>Vormela peregusna</i>	
		<i>Mustela</i>	<i>Mustela nivalis</i>			
		<i>Meles</i>	<i>Meles canescens</i>			
		<i>Mellivora</i>	<i>Mellivora capensis</i>			
		<i>Lutra</i>	<i>Lutra lutra</i>			



Order	Family	Genus	Species	
		<i>Lutrogale</i>	<i>Lutrogale perspicillata</i>	
	Herpestidae	<i>Herpestes</i>	<i>Herpestes javanicus</i> <i>Herpestes edwardsi</i>	
	Hyaenidae	<i>Hyaena</i>	<i>Hyaena hyaena</i>	
	Felidae	<i>Felis</i>	<i>Felis silvestris</i> <i>Felis chaus</i> <i>Felis margarita</i>	
		<i>Caracal</i> <i>Lynx</i> <i>Panthera</i> <i>Acinonyx</i>	<i>Caracal caracal</i> <i>Lynx lynx</i> <i>Panthera pardus</i> <i>Acinonyx jubatus</i>	
Artiodactyla	Bovidae	<i>Capra</i> <i>Ovis</i> <i>Oryx</i> <i>Gazella</i>	<i>Capra aegagrus</i> <i>Ovis orientalis</i> <i>Oryx leucoryx</i> <i>Gazella saudiya</i> <i>Gazella subgutturosa</i>	
	Cervidae	<i>Dama</i> <i>Capreolus</i>	<i>Damadama</i> <i>Capreolus capreolus</i>	
	Suidae	<i>Sus</i>	<i>Sus scrofa</i>	8
Lagomorpha	Leporidae	<i>Lepus</i> <i>Lepus (Eulagos)</i>	<i>Lepus capensis</i> <i>Lepus (Eulagos) europaeus</i>	2
Rodentia	Sciuridae	<i>Sciurus (Tenes)</i>	<i>Sciurus (Tenes) anomalus</i>	
	Hystricidae	<i>Hystrix</i>	<i>Hystrix indica</i>	
	Dipodidae	<i>Allactaga</i> <i>Jaculus</i>	<i>Allactaga euphratica</i> <i>Jaculus jaculus</i>	
	Gliridae	<i>Eliomys</i> <i>Dryomys</i>	<i>Eliomys melanurus</i> <i>Dryomys nitedula</i>	
	Spalacidae	<i>Nannospalax</i>	<i>Nannospalax ehrenbergi</i>	
	Muridae	<i>Apodemus</i>	<i>Apodemus mystacinus</i> <i>Apodemus flavicollis</i> <i>Apodemus witherbyi</i>	
		<i>Rattus</i>	<i>Rattus rattus</i> <i>Rattus norvegicus</i>	
		<i>Mus</i> <i>Nesokia</i>	<i>Mus musculus</i> <i>Nesokia indica</i> <i>Nesokia bunnii</i>	
	Cricetidae	<i>Cricetulus</i>	<i>Cricetulus migratorius</i>	
		<i>Gerbillus</i>	<i>Gerbillus nanus</i> <i>Gerbillus dasyurus</i> <i>Gerbillus mesopotamiae</i> <i>Gerbillus cheesmani</i>	28
		<i>Tatera</i> <i>Meriones</i>	<i>Tatera indica</i> <i>Meriones persicus</i> <i>Meriones tristrami</i> <i>Meriones libycus</i> <i>Meriones crassus</i>	
		<i>Ellobius</i> <i>Arvicola</i> <i>Microtus</i>	<i>Ellobius lutescens</i> <i>Arvicola amphibius</i> <i>Microtus socialis</i>	
Cetacea	Delphinidae	<i>Sousa</i> <i>Tursiops</i> <i>Neophocaena</i>	<i>Sousa chinensis</i> <i>Tursiops aduncus</i> <i>Neophocaena phocaenoides</i>	
	Balaenopteridae	<i>Balaenoptera</i> <i>Megaptera</i>	<i>Balaenoptera musculus</i> <i>Balaenoptera edeni</i> <i>Megaptera novaeangliae</i>	
<b>Total</b>	<b>8</b>	<b>28</b>	<b>65</b>	<b>93</b>

**Table 2.** List of mammal species in Iraq evaluated by the IUCN.

	IUCN Criteria ver. 3.1 (2014)
<b>Extinct (1)</b>	
Saudi Gazelle <i>Gazella saudiya</i>	
<b>Critically Endangered (1)</b>	
Asiatic Cheetah <i>Acinonyx jubatus venaticus</i>	D
<b>Endangered (4)</b>	
Persian Leopard <i>Panthera pardus saxicolor</i>	C2a(i)
Mesopotamian Fallow Dear <i>Dama dama mesopotamica</i>	D
Long-tailed Nesokia <i>Nesokia bunnii</i>	A2c
Blue Whale <i>Balaenoptera musculus</i>	A1abd
<b>Vulnerable (8)</b>	
Mehely's Horseshoe Bat <i>Rhinolophus mehelyi</i>	A4c
Marbled Polecat <i>Vormela peregusna</i>	A2c
Smooth-coated Otter <i>Lutrogale perspicillata</i>	A2acd
Wild Goat <i>Capra aegagrus</i>	A2cd
Mouflon <i>Ovis orientalis</i>	A2cde
Arabian Oryx <i>Oryx leucoryx</i>	D1
Goitred Gazelle <i>Gazella subgutturosa</i>	A2ad ; <i>marica</i> C2a(i)
Finless Porpoise <i>Neophocaena phocaenoides</i>	A2cde
<b>Near Threatened (7)</b>	
Mediterranean Horseshoe Bat <i>Rhinolophus euryale</i>	
Pallid Long-fingered Bat <i>Miniopterus pallidus</i>	
European Otter <i>Lutra lutra</i>	
Striped Hyena <i>Hyaena hyaena</i>	
Sand Cat <i>Felis margarita</i>	
Euphrates Jerboa <i>Allactaga (Paralactaga) euphratica</i>	
Indo-Pacific Humpbacked Dolphin <i>Sousa chinensis</i>	
<b>Data Deficient (3)</b>	
Middle East Blind Mole Rat <i>Nannospalax ehrenbergi</i>	
Indo-Pacific Bottlenose Dolphin <i>Tursiops aduncus</i>	
Bryde's Whale <i>Balaenoptera edeni</i>	