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Annotated check-list of the mammals of Iran

Komentovaný soupis savců Iranu

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Abstract. Early attempts to document Iranian mammals date back to the 18th century and coincide with the classical works by Linnaeus (1758), Gmelin (1774) and Pallas (1780). First compilation by Blanford (1876) with 78 species reported for "Eastern Persia" was followed by Ellerman & Morrison-Scott (1951) who list for Iran 128 species, and by Misonne (1959) who provided a descriptive zoogeographical analysis of the region which was based on distributional ranges of the 112 mammal species he recognized. The most outstanding single contribution to the mammals of Iran is by Lay (1967) who elaborated an extensive collection resulting from the Street expedition of 1962–1963 to Iran. Here we present a list of species in which all changes following Lay (1967) are included. We list 191 species in 93 genera and 10 orders; two species are exterminated already (*Panthera tigris* and *P. leo*), while two species are clear introductions (*Procyon lotor* and *Myocastor coypus*). Rodents (38.2% of species) are the most diverse order, followed by bats (23.6%) and carnivores (16.7%).

Key words. Mammals, Iran, diversity, taxonomy.

PREFACE

Iran, lying on the crossroad of several biogeographic regions, supports a diverse mammal fauna. Although being located entirely in the SW Palaearctic, it is geographically close enough to the Oriental region on one hand and the Afrotropical region on the other, to receive elements from both of them as well. First attempts to document Iranian mammals date back to the 18th century and coincides with the classical works by Linnaeus (1758), Gmelin (1774) and Pallas (1780). Further information collected during the 19th century together with the material deposited in the British Museum (Natural History) enabled Blanford (1876) to report 78 species for "Eas-

tern Persia". Many of his names appeared later in synonymy of various other taxa, however, 66 of them still represented valid names in 1960s (Lay 1967). Information, together with the newly established names, continue to accumulate for nearly the entire century to follow, and the next comprehensive review was by Ellerman & Morrison-Scott (1951) who list for Iran 128 species in their *Checklist of the Palaearctic and Indian Mammals*. Shortly afterwards, Misonne (1959) provided a descriptive zoogeographical analysis of the region which was based on distributional ranges of the 112 mammal species he recognized; Lay (1967) increased this number to 126. The most outstanding single contribution to the mammals of Iran is by Lay (1967) who elaborated an extensive collection resulting from the Street expedition of 1962–1963 to Iran; specimens are housed in the National Museum of Natural History (Smithsonian) and in the Field Museum of Natural History Chicago. Lay (1967) provided a detailed list of material and localities, and cited historical records and comments on species' habitat and status. Later on, Etemad (1978, 1985) published a two-volume synopsis in Farsi with distribution maps for each species. DeBlase (1980) brought numerous new data on Iranian bats and reviewed their distribution and taxonomy. Another three attempts to summarize the actual knowledge on the Iranian mammals are by Harrington (1977), Humphreys & Kahrom (1995) and Firouz (2005). A history of mammal research in Iran is summarized in Lay (1967) and Anderson (2002).

Here we present a list of species in which all changes from the state presented in the last comprehensive check-list by Lay (1967) are included. We feel that revisions and new records of mammalian taxa found in Iran following Lay (1967) justify compiling a new list of mammals for the country. Few examples of these include first records for the country of a shrew *Crocidura katinka* (Hutterer & Kock 2002), a mole *Talpa caucasica* (Kryštufek & Benda 2002), bats *Hypsugo arabicus* and *Barbastella barbastellus* (Benda et al. 2008), a mole vole *Ellobius talpinus* (Tarahomi & Darvish 1999), and a gazelle *Gazella gazella* (Karami & Groves 1993),

Table 1. Summary of mammals occuring in Iran according to orders. Species of uncertain occurrence or of possible presence are added after '+'
Tab. 1. Přehled řádů a druhů savců, kteří se vyskytují v Iranu. Druhy nejistého výskytu či druhy možného výskytu jsou doplněny za '+'

	Lay (1967)		this survey	
orders	genera	species	genera	species
Erinaceomorpha	3	5	3	4
Soricomorpha	5	9	5	14 + 1
Chiroptera	16	31 + 1	17	45 + 3
Carnivora*	16	28 + 1	20	32
Cetacea	1	1	7	9
Sirenia			1	1
Perissodactyla	1	1	1	1
Artiodactyla	7	9	7	9
Rodentia	23	40	30 + 2	73 + 6
Lagomorpha	2	2	2 + 1	3 + 1
total	74	126 + 2	93 + 3	191 + 11

* includes extirpated tiger and lion

as well as descriptions of taxa new to science: voles *Micotus kermanesis* (de Roguin 1988) and *M. qazvinensis* (Golenischev et al. 2002b), a mouse *Apodemus avicennicus* (Darvish et al. 2006d), two jerboas *Allactaga toussi* (Darvish et al. 2008) and *Jaculus thaleri* (Darvish & Hosseinie 2005), two new subspecies of chinkara gazelles *Gazella bennetti* (Groves 1993) and so on. More mammalian taxa are expected to be found in Iran based on what is reported from neighboring countries as Turkey and Iraq.

In compiling the following list we have relied on taxonomic nomenclature of Wilson & Reeder (2005) and extensive literature review. We have also provided additional references on distribution, conservation and other relevant aspects in "comment" section for each species. Since taxonomy of many species continues to be little understood, we cite recent revisions and comment on taxonomic status when appropriate. Common names follow Wilson & Reeder (2005) where available.

Division to provinces and province names spelling follows Firouz (2005).

We list 191 species in 93 genera and 10 orders (Table 1). Two species are clear introductions (*Procyon lotor* and *Myocastor coypus*). Considering Lay (1967) who reports only two thirds of that number (126 species), great advance in Iranian mammalogy over the last decades is evident. The list is far from being complete and at presence of at least five more mammals is likely in Iran. Besides, critical reexamination of museum specimens, together with newly acquisited material and studies of karyotypes and genetic markers will certainly uncover new taxa in Iran, among them most probably also some not known to science so far. Rodents (38.2% of species) are the most diverse order, followed by bats (23.6%) and carnivores (16.7%).

LIST OF SPECIES

Hedgehogs and Moonrats, Order Erinaceomorpha Gregory, 1910

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

Type Locality. Turkey, near Trabzon.
Comments. Reported by Lay (1967) as *E. europaeus* Linnaeus, 1758 from W Iran (Azarbaijan & Lurestan). Revised by Kryštufek (2002a).

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

Type Locality. Russia, Astrakhan' Region.
Comments. Lay (1967) distinguished two long-eared hedgehogs: *H. auritus* from N and W Iran (Golestan, Khorasan, Khuzestan, Kordestan, Qazvin) and *H. megalotis* (Blyth, 1845) from SW Iran (Kerman, Seistan & Baluchestan). The latter is now considered to be a subspecies of *H. auritus*, following Morshed & Patton (2002) who found a small genetic distance between the two within Iran (Hutterer 2005a).

Desert Hedgehog, *Paraechinus aethiopicus* (Ehrenberg, 1832)

Type Locality. Sudan.
Comments. Lay (1967) reported desert hedgehog from two sites, Kuh-i-Hezar in SE Iran (Kerman) and the island of Tanb, Persian Gulf (Hormozegan). Species borders are in need of revision (Hutterer 2005a).

Brandt's Hedgehog, *Paeaechinus hypomelas* (Brandt, 1836)

Type Locality. S Kazakhstan.
Comments. Lay (1967) reported Brandt's hedgehog from S Iran (Bushehr, Fars, Hormozegan, Kerman, Seistan & Baluchestan), including the islands of Tanb and Kharg in the Persian Gulf. Morshed & Patton (2002) added further records from Kerman.

Caspian Shrew, *Crocidura caspica* Thomas, 1907

Type Locality. Iran, S coast of the Caspian Sea.
Comments. Listed by Lay (1967) under *C. russula* (Herman, 1780) while Kryštufek & Vohralík (2001) suggest it to be conspecific with *C. leucodon*. Currently, this shrew is considered to be endemic to S coast of the Caspian Sea in Iran (Hutterer 2005b).

Katinka's Shrew, *Crocidura katinka* Bate, 1937

Type Locality. Israel, Tabun Cave, Pleistocene.
Comments. Not listed by Lay (1967). A yet unreported specimen from SW Iran appears to represent this species (Hutterer 2005b), which was known until recently only from fossil layers (Hutterer & Kock 2002).

Bicoloured Shrew, *Crocidura leucodon* (Hermann, 1780)

Type Locality. France, Bas Rhin, Vicinity of Strasbourg.
Comments. Lay (1967) reported bicoloured shrew from N Iran (Azarbaijan, Golestan, Khorasan). Includes *persica* Thomas, 1907 (type locality: Iran, Elbruz Mts. near Demavend; Hutterer 2005b).

Lesser Shrew, *Crocidura suaveolens* (Pallas, 1811)

Type Locality. Russia, Crimea, Khersones, near Sevastopol.
Comments. Partly included under *C. russula* by Lay (1967), who reported *C. suaveolens* from N Iran (Golestan, Khorasan) and *C. russula* also from other parts of N and W Iran (Azarbaijan, Gilan, Golestan, Khorasan, Kordestan, Lorestan, Mazandaran, Tehran); the southernmost record is from Fars (Esmaeili et al. 2008a). Accoding to Dubey et al. (2007a), Iranian populations of *C. suaveolens* belong to three separate evolutionary lineages, two of them they indetified with subspecies *C. s. suaveolens* from NE Iran, and *C. s. gueldenstaedti* (Pallas, 1811) (type locality: Georgia, near Dushtet) from W Iran; the third yet unnamed form occurs in C Iran.

Iranian Shrew, *Crocidura susiana* Redding et Lay, 1978

Type Locality. Iran, 8 km SSW of Dezful.
Comments. Descriptin postdates Lay (1967). Endemic to Iran and known only from the vicinity of Dezful, Khuzestan, W Iran (Redding & Lay 1978, Hutterer 2005b).

Zarudny's Rock Shrew, *Crocidura zarudnyi* Ognev, 1928

Type Locality. Iran, Baluchestan (border).
Comments. Not listed by Lay (1967), who however, reported *C. pergrisea* Miller, 1913 instead. Records are available only from SE Iran (Lay 1967, de Roguin 1988, Dubey et al. 2007b).

Gmelin's White-toothed Shrew, *Crocidura gmelini* (Pallas, 1811)

Type Locality. Iran, Khorasan, 85 km W Bujnurd, Dasht.
Comments. Not listed by Lay (1967). Goodwin (1940) identified shrews from Dasht as *C. gmelini* which Hutterer (2005b) considered a valid name. The species is unsufficiently known.

Etruscan Shrew, *Suncus etruscus* (Savi, 1822)

Type Locality. Italy, Pisa.
Comments. Iranian distribution is poorly documented; Lay (1967) gives records from N Iran (Golestan, Mazandaran). Further records are available from NE Iran (NE Khorasan), W Iran (Kermanshah, Khuzestan) (Benda et al., unpubl.), and C Iran (Fars) (Esmaeili et al., 2008a).

Mediterranean Water Shrew, *Neomys anomalus* Cabrera, 1907

Type Locality. Spain, Madrid Province, Jarama River, San Martin de la Vega.

Comments. Lay (1967) reported it from a single locality in N Iran (Golestan). Rather isolated new record from Sherpir spring, SW Iran (Fars) was reported by Esmaeili et al. (2008b).

Transcaucasian Water Shrew, *Neomys teres* Miller, 1908

Type Locality. Turkey, 25 mi N of Erzurum.
Comments. Not listed by Lay (1967). Endemic to the Caucasus (where reported as *N. schelkovnikovi* Satunin, 1913; type locality: Georgia, Ushkul) and N Turkey (Kryštufek et al. 1998). Known in NW Iran from a single specimen (Hutterer 2005b).

Caucasian Pygmy Shrew, *Sorex volnuchini* Ognev, 1922

Type Locality. Russia, NW Caucasus Mts., Adygea, Kisha River.
Comments. Listed by Lay (1967) as *S. minutus* Linnaeus, 1766, for Dasht, Khorasan; Goodwin (1940) is quoted what is evidently an error. Hutterer (2005b) reported the Caucasian pygmy shrew for N Iran.

Levant Mole, *Talpa levantis* Thomas, 1906

Type Locality. Turkey, Trabzon, Altindere.
Comments. Listed by Lay (1967) as *T. caeca* Savi, 1822, and reported for N and W Iran (Gilan, Mazandaran, Kordestan). Material revised by Kryštufek (2001a, b); record from Sakkez in Kordestan is dubious (Kryštufek 2001b).

Caucasian Mole, *Talpa caucasica* Satunin, 1908

Type Locality. Russia, Stavropol.
Comments. Not listed by Lay (1967). Known only from the Talysh Mts., NW Iran (Gilan) (Kryštufek & Benda 2002). Iranian locality is 350 km to the SE of the continuous range in the Caucasus Region.

Père David's Mole, *Talpa davidiana* (Milne-Edwards, 1884)

Type Locality. Turkey, SW of Gaziantep, Meydanekbes.
Comments. Listed by Lay (1967) as *T. streetorum* Lay, 1965 (type locality: Iran, Kordestan, Hezar Darreh). *T. streeti* Lay, 1965 and *T. streetorum* (unjustified ammendation of *streeti*) are junior synonyms of *T. dividiana* (Kryštufek et al. 2001). Père David's mole is the least known mole in W Palaearctic, known in Iran from two localities.

Bats, Order Chiroptera Blumenbach, 1779

Egyptian Rousette, *Rousettus aegyptiacus* (Geoffroy, 1810)

Type Locality. Egypt, Giza.
Comments. Lay (1967) reported it from three separated areas of central S Iran (Fars, Hormozegan) including the island of Qeshm in the Persian Gulf. Etemad (1969) and Benda et al. (2008) added records from SE Iran (Seistan & Baluchestan). Subspecies *R. a. arabicus* Anderson, 1902 (type locality: Yemen, Aden) has been reported for Iranian populations, but see Benda et al. (2008).

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

Type Locality. India, West Bengal.
Comments. Lay (1967) reported it from various parts of S Iran (Fars, Kerman, Khuzestan, Seistan & Baluchestan). Additional data are available from SW Iran and the coast of Persian Gulf (Bushehr, Hormozegan, Khuzestan, Lorestan) (DeBlase 1980, Benda et al. 2006). Hulva et al. (2007a) found significant differences in genomic traits within traditionally recognised Afro-Asian species of *R. hardwickii* and identified the Iranian populations as the westernmost fringe of the range of Indian species, *R. hardwickii* s.str., specifically distinct from the Afro-Arabian *R. cystops* Thomas, 1903.

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

Type Locality. Egypt, Giza.

Comments. Lay (1967) reported only two sites of occurrence in SW Iran (Fars, Khuzistan), however, DeBlase (1980) summarised a number of records from S portion of the country (Fars, Hormozegan, Ilam, Khuzestan, Seistan & Baluchestan). Two subspecies were recognised in the country by Schlitter & DeBlase (1974): *R. m. microphyllum* and *R. m. harrisoni* Schlitter et DeBlase, 1974 (type locality: Iran, Fars, 10 km SE of Kazerun). However, status of the latter form, reported solely from Iran (DeBlase 1980), was doubted by Van Cakenberghe & De Vree (1994) who considered it a synonym of the nominotypical subspecies.

Small Mouse-tailed Bat, *Rhinopoma muscatellum* Thomas, 1903

Type Locality. Oman, Muscat, Wadi Bani Ruha.
Comments. Not listed by Lay (1967). Specific status of *R. muscatellum* from Iran was first proposed by DeBlase et al. (1973) who showed it to be distributed over SW, S and SE Iran (Fars, Hormozegan, Ilam, Khuzestan, Seistan & Baluchestan). Additional distribution data are available from W and SE Iran (Hormozegan, Khuzestan, Seistan & Baluchestan) including the island of Hormoz in Persian Gulf (Benda et al. 2004a).

Naked-rumped Tomb Bat, *Taphozous nudiventris* Cretzschmar, 1830

Type Locality. Egypt, Giza Pyramids.
Comments. Although Lay (1967) reported only two sites of its occurrence in W Iran (Khuzestan, West Azarbaijan), DeBlase (1980) reviewed scattered records from whole W portion of Iran (Khuzestan, Tehran, West Azarbaijan) including N part of the Dasht-e Kavir Desert. Iranian populations are ascribed to subspecies *T. n. magnus* von Wettstein, 1913 (type locality: Iraq, Basra) (DeBlase 1980, Benda et al. 2006).

Egyptian Tomb Bat, *Taphozous perforatus* Geoffroy, 1818

Type Locality. Egypt, Kom Ombo.
Comments. Not listed by Lay (1967). DeBlase (1971) reported two records from S Iran (Hormozegan).

Blasius's Hoseshoe Bat, *Rhinolophus blasii* Peters, 1867

Type Locality. Italy, Milan and Triest.
Comments. Lay (1967) reported it from C and NE Iran (Chahar Mahal & Bakhtiary, Esfahan, Kerman, Khorasan, Markazi). DeBlase (1980), de Roguin (1988) and Benda et al. (2006) added many records widely scattered across Iran (East & West Azarbaijan, Fars, Khorasan, Qom, Seistan & Baluchestan, Yazd). The populations of NE Iran are referred to Afghani subspecies *R. b. meyeroehmi* Felten, 1977 (Felten et al. 1977), but see Benda et al. (2006).

Central Asian Horseshoe Bat, *Rhinolophus bocharicus* Kashchenko et Akimov, 1917

Type Locality. Turkmenistan, Murgab River.
Comments. Not listed by Lay (1967). Known only from one site, Chelmir in NE Iran (Khorasan) (Farhang-Azad 1969). Previously often reported under *R. clivosus* Cretzschmar, 1828 (e.g. Koopman 1993).

Mediterranean Horseshoe Bat, *Rhinolophus euryale* Blasius, 1853

Type Locality. Italy, Milan.
Comments. Although Lay (1967) reported it only from three sites in W Iran (Chahar Mahal & Bakhtiary, Fars, West Azarbaijan), DeBlase (1980) mapped numerous additional records of this bat in N and W Iran (Fars, Hamadan, Khorasan, Khuzestan, Kordestan, Lorestan, Mazandaran). However, material from two sites reported by Lay (1967) was shown to belong to *R. mehelyi* Matschie, 1901 (DeBlase 1972).

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

Type Locality. France.
Comments. Lay (1967) reported this horseshoe bat from few quite scattered sites across Iran (Bushehr, Esfahan, Fars, Gilan, Khorasan, West Azarbaijan). Numerous additional records given by DeBlase (1980) and Benda et al. (2006) are within the broad range delineated by the above records (Fars, Golestan,

Kerman, Kermanshah, Khorasan, Khuzestan, Lorestan, Markazi, Mazandaran, West Azarbaijan). Two subspecies are reported from Iran, besides the nominotypical one living in Mediterranean habitats also *R. f. irani* Cheesman, 1921 (type locality: Iran, Fars, Shiraz) from rather arid areas of Iran as well as the Near East (DeBlase 1980, Benda et al. 2006). Karataş et al. (2006) described karyotype from specimens originated in NW Iran.

Lesser Horseshoe Bat, *Rhinolophus hipposideros* (Borhausen, 1797)

Type Locality. France.
Comments. Reports by Lay (1967) are mainly from NW Iran (Mazandaran, West Azarbaijan), plus a single isolated record from Jask, Persian Gulf, SE Iran (Hormozegan). The latter site represents the type locality of *Rhinolophus midas* Andersen 1905, a name used to assign the form living throughout Iran or even the Middle East (see the review by Benda et al. 2006). Another name was described from Iran, *R. h. billanjani* DeBlase, 1972 (validated by Felten et al. 1977) which, however, represents a nomen nudum (Benda et al. 2006). DeBlase (1980) summarised numerous additional records from W portion of Iran (Fars, Kermanshah, Markazi, Mazanadaran, West Azarbaijan).

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

Type Locality. Romania, Bucharest.
Comments. Not listed by Lay (1967), who however misinterpreted two *R. mehelyi* records as of *R. euryale* (DeBlase 1972). This species was first reported from Iran by DeBlase (1972) from four sites throughout the Zagros Mts. in W Iran (Chahar Mahal & Bakhtiary, Fars, Kordestan, West Azarbaijan).

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

Type Locality. Egypt, Thebes.
Comments. Lay (1967) reported several sites scattered throughout S Iran (Bushehr, Fars, Kerman, Khuzestan, Seistan & Baluchestan). DeBlase (1980) summarised further records from approximately the same area (Fars, Hormozegan, Ilam, Khuzestan, Seistan & Baluchestan). Additional data are avilable from Khuzestan (Benda et al. 2006). Iranian specimens are ascribed to subspecies *A. t. murraiana* (Anderson, 1881) (type locality: Pakistan, Sind, Karachi).

Persian Leaf-nosed Bat, *Triaenops persicus* Dobson, 1871

Type Locality. Iran, Fars, Shiraz.
Comments. Lay (1967) reported two sites in SW Iran (Bushehr, Fars), including the type locality. DeBlase (1980) added further two localities in SW and SE Iran (Bushehr, Seistan & Baluchestan).

Western Barbastelle, *Barbastella barbastellus* (Schreber, 1774)

Type Locality. France, Burgundy.
Comments. Not listed by Lay (1967). First reported from N Iran (E Golestan) by Benda et al. (2008), who also referred to this species a specimen mentioned by DeBlase (1980) as *B. leucomelas darjelingensis*, coming from the same area of easternmost Golestan.

Eastern Barbastelle, *Barbastella darjelingensis* (Hodgson, 1855)

Type Locality. India, Darjeeling.
Comments. Not listed by Lay (1967), who however, named the respective bats as *B. leucomelas* (Cretzschmar, 1830) (type locality: Egypt, S Sinai). Under the latter name it was known from Iran since Etemad (1964). DeBlase (1980) summarised three records (as *B. l. leucomelas*) from C Iran (Markazi, Semnan, Tehran).

Alpine Long-eared Bat, *Plecotus macrobullaris* Kuzjakin, 1965

Type Locality. Russia, North Ossetia, Ordžonikidze (= Vladikavkaz).
Comments. Not listed by Lay (1967) nor DeBlase (1980). Both these authors assigned all Iranian *Plecotus* populations to *P. austriacus* (Fischer, 1829), however, most of Iranian records of *Plecotus* should be

classified to *P. macrobullaris* (Spitzenberger et al. 2006). The revised records of *P. macrobullaris* are known from W Iran (Ardabil, Chahar Mahal & Bakhtiary, Hamadan, Tehran, West Azarbaijan) (Juste et al. 2004, Benda et al. 2004b, 2006, Spitzenberger et al. 2006). Besides the new ones, these records cover all those summarised by DeBlase (1980). Probably only the record from Nikshahr (Seistan & Baluchestan) remains the only *Plecotus* record from Iran uncertain from the taxonomic point of view.

Brown Long-eared Bat, *Plecotus auritus* (Linnaeus, 1758)

Type Locality. Sweden.
Comments. Not listed by Lay (1967) nor DeBlase (1980) (see under *P. macrobullaris*). The only specimen was reported by Steiner & Gaisler (1994) from Assalem, NW Iran (Gilan). Although its identification predates the recognition of *P. macrobullaris* as a species of its own (see above), according to the dimensions given by Steiner & Gaisler (1994) the determination sounds correct.

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

Type Locality. Nile Valley, between Khondek, Sudan, and Aswan, Egypt.
Comments. Lay (1967) reported a single site, the type locality of *O. cinereus* Satunin, 1909 [= *O. h. cinerea*], from SE Iran: Nukenzhaga (= Nauk-i-Jahan, Seistan & Baluchestan). Etemad (1969) showed the type locality to be incorrect and restricted it to Zurakkuh Country, SE Khorasan. Farhang-Azad (1969) added a record from NE Iran (NE Khorasan). As shown by Benda et al. (2006), *O. hemprichii* is occurring throughout the arid regions of Iran (Esfahan, Hormozegan, Seistan & Baluchestan).

Anatolian Serotine, *Eptesicus anatolicus* Felten, 1971

Type Locality. Turkey, Alanya.
Comments. Not listed by Lay (1967), although he reported three records of *E. anatolicus* from SW Iran (Bushehr, Khuzestan) as *E. bottae* (Peters, 1869) (see below). DeBlase (1980) reported it as a subspecies of *E. bottae* and added another site in S Iran (Fars). Additional distribution data are available from SW (Kermanshah, Lorestan) and SE Iran (Kerman) (Benda et al. 2006).

Bobrinskoi's Serotine, *Eptesicus bobrinskoi* Kusjakin, 1935

Type Locality. Kazakhstan, 65 km E of Aralsk, Tyulek Wells in the Aral Karakum Desert.
Comments. Lay (1967) reported a single site, Guter Su, NW Iran (Ardabil), following Harrison (1963). Although Hanák & Horáček (1986) doubted such a species affiliation of the respective specimens, a thorough revision as well as new records from the same site confirmed the previous identification (Benda & Reiter 2006).

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

Type Locality. W Yemen, between Al Hudayda, Ta'izz and Al Mukha.
Comments. Lay (1967) reported it from three sites in SW Iran (Bushehr, Khuzestan), however, the respective specimens were reidentified as *E. anatolicus* (DeBlase 1971, Benda et al. 2006). Specimens of true *E. bottae* were first published by Fahrang-Azad (1969) from NE Iran (Khorasan) and de Roguin (1988) from SE Iran (Seistan & Baluchestan). The latter author described from SE Iran a subspecies of its own, *E. b. taftanimontis* de Roguin, 1988 (type locality: Iran, Kuh-e-Taftan, Kusheh). This subspecies remains documented only from Iran (also from Kerman Province; see Benda et al. 2006), The populations from Khorasan are assigned to *E. b. ognevi* Bobrinskoj, 1918 (type locality: Tajikistan, Sohta-Chinar). In SW Iran (Khuzestan) the Mesopotamian subspecies *E. b. hingstoni* Thomas, 1919 (type locality: Iraq, Baghdad) should be also distributed.

Sind Bat, *Eptesicus nasutus* (Dobson, 1877)

Type Locality. Pakistan, Sind, Shekarpur, E of Rohri.
Comments. Lay (1967) reported a single site, Ahwaz in SW Iran (Khuzestan). Additional records are available from SW (Khuzestan) and SE Iran (Hormozegan, Seistan & Baluchestan) (DeBlase 1980, Benda & Reiter 2006).

Northern Bat, *Eptesicus nilssoni* (Keyserling et Blasius, 1839)

Type Locality. Sweden.
Comments. Lay (1967) reported single specimen from northern slope of the Elborz Mts., N Iran (Mazandaran). This record represents the only yet known occurrence of this species in Iran.

Common Serotine, *Eptesicus serotinus* (Schreber, 1774)

Type Locality. France.
Comments. Lay (1967) reported numerous records throughout W, N and S Iran (West Azarbaijan, Fars, Mazandaran, Qazvin, Tehran, Zanjan). DeBlase (1980) assigned most of these records to the nominotypical subspecies, while an isolate from S Iran (Fars) to *E. s. shiraziensis* (Dobson, 1871) (type locality: Iran, Fars, Shiraz). Farhang-Azad (1969) documented another population from deserts of NE Iran (Khorasan), which DeBlase (1980) referred to *E. s. turcomanus* (Eversmann, 1840) (type locality: Kazakhstan/Uzbekistan, between Caspian and Aral Seas).

Particoloured Bat, *Vespertilio murinus* Linnaeus, 1758

Type Locality. Sweden.
Comments. Lay (1967) reported two sites in central (Markazi) and N Iran (W Khorasan). The former record is dubious (Etemad 1969, DeBlase 1980). Additional record is available from C Iran (Lorestan) (DeBlase 1980).

Giant Noctule, *Nyctalus lasiopterus* (Schreber, 1780)

Type Locality. N Italy, ?Pisa.
Comments. Not listed by Lay (1967). Known from a single specimen collected in N Iran (Gilan) (Etemad 1970).

Leisler's Noctule, *Nyctalus leisleri* (Kuhl, 1817)

Type Locality. Germany, Hessen, Hanau.
Comments. Not listed by Lay (1967), who however mentioned three specimens from N Iran (Mazandaran) under *N. noctula* (Schreber, 1774) (Neuhauser & DeBlase 1974). DeBlase (1980) added findings coming mostly from N Iran (Khorasan, Mazandaran), although one record is available from C Iran (Fars).

Noctule, *Nyctalus noctula* (Schreber, 1774)

Type Locality. France.
Comments. Lay (1967) reported several sites in N Iran (Gilan, Mazandaran). Although some of Lay's (1967) specimens were identified as *N. leisleri* by Neuhauser & DeBlase (1974), additional data confirmed the distribution of *N. noctula* to be confined to forest zone of the Elburz Mts., N Iran (Gilan, Mazandaran) (DeBlase 1980).

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

Type Locality. Italy, Triest.
Comments. Lay (1967) reported numerous sites throughout Iran (Bushehr, Esfahan, Fars, Kerman, Kermanshah, Khorasan, Khuzestan, Seistan & Baluchestan, Tehran). DeBlase (1980) in his review confirmed *P. kuhlii* to be distributed throughout Iran by adding records from East Azarbaijan, Gilan, Hormozegan, Lorestan, and Mazandaran, although presence in N Iran is rather scarce. Lay (1967) synonymised *Pipistrellus aladdin* Thomas, 1905 (type locality: Iran, Esfahan, Derbent) with *P. kuhlii*. However, Neuhauser & DeBlase (1971) showed the former name to be a junior synonym of *P. pipistrellus* (Schreber, 1774). DeBlase (1980) considered Iranian populations to belong to *P. kuhlii lepidus* (Blyth, 1845) (type locality: Afghanistan, Kandahar), Mayer et al. (2007) suggested species status for the latter form. If the conclusion by Mayer et al. (2007) is confirmed, the name *lepidus* will replace *P. kuhlii* in the Iranian fauna.

Common Pipistrelle, *Pipistrellus pipistrellus* (Schreber, 1774)

Type Locality. France, Normandy, Beauvais Cathedral.

Comments. Lay (1967) reported several sites in N Iran (Golestan, Khorasan, Mazandaran, West Azarbaijan). DeBlase (1980) summarised numerous additional records from northern and mountainous W Iran (Chahar Mahal & Bakhtiary, Esfahan, Fars, Gilan, Ilam, Kerman, Kermanshah, Khorasan, Lorestan, Mazandaran, West Azarbaijan). Hulva et al. (2004) confirmed the species identification by genetic markers using samples from Yazd, C Iran. DeBlase (1980) recognised two subspecies in Iran, the nominotypical one in N Iran and *P. p. aladdin* Thomas, 1905 in W, SW and NE portions of the country; results of preliminary revision by Hulva et al. (2004) failed to support such a division.

Soprano Pipistrelle, *Pipistrellus pygmaeus* (Leach, 1825)

Type Locality. United Kingdom, Bath and North East Somerset, Chew Valley.
Comments. Not listed by Lay (1967) nor DeBlase (1980). First reported from N Iran (Gilan) by Hulva et al. (2007b).

Savi's Pipistrelle, *Hypsugo savii* (Bonaparte, 1837)

Type Locality. Italy, Pisa.
Comments. Not listed by Lay (1967). First reported from NE Iran (NE Khorasan) by Farhang-Azad (1969). Few additional records are scattered throughout mountainous Iran (Chahar Mahal & Bakhtiary, Khorasan, Seistan & Baluchestan, West & East Azarbaijan) (DeBlase 1980, de Roguin 1988, Benda et al. 2006).

Arabian Pipistrelle, *Hypsugo arabicus* (Harrison, 1979)

Type Locality. Oman, Wadi Sahtan.
Comments. Not listed by Lay (1967) nor DeBlase (1980). First reported by Benda et al. (2008) from SE Iran (Seistan & Baluchestan).

Golden Myotis, *Myotis aurascens* Kusjakin, 1935

Type Locality. Russia, North Ossetia, Kurkužin.
Comments. Not listed by Lay (1967) nor DeBlase (1980). First reported by Benda & Tsytsulina (2000) from NW Iran (Ardabil) based on specimens prevously reported by Harrison (1963) as *M. mystacinus* (Kuhl, 1817).

Bechstein's Myotis, *Myotis bechsteinii* (Kuhl, 1817)

Type Locality. Germany, Hessen, Hanau.
Comments. Not listed by Lay (1967). DeBlase (1980) indicated a record from N Iran (Golestan).

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

Type Locality. India, ?Rajasthan, Nasirabad.
Comments. Lay (1967) reported specimens from W and N Iran (Ardabil, Chahar Mahal & Bakhtiary, Esfahan, Fars, Gilan, Khuzestan, Mazandaran, West Azarbaijan). DeBlase (1980) and Benda et al. (2006) provide numerous additional records originating throughout whole Iran (Fars, Golestan, Ilam, Kermanshah, Khorasan, Khuzestan, Kohgeluye & Boyer Ahmad, Kordestan, Lorestan, Markazi, Mazandaran, Tehran, West Azarbaijan, Zanjan). Two names described from Iran are junior synonyms of *M. blythii*, viz. *M. myotis omari* Thomas, 1906 (type locality: Iran, 50 mi W of Esfahan, Derbent) and *M. myotis risorius* Cheesman, 1921 (type locality: Iran, Fars, Shiraz); the former name is considered to assign the subspecies from the Middle East (see Benda et al. 2006 for a review). Karataş et al. (2008) described karyotypes from specimens originated in W Iran.

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

Type Locality. Italy, Sicily.
Comments. Lay (1967) reported a single site from SW Iran (Fars). DeBlase (1980), Benda et al. (2006) and Sharifi & Akmali (2006) added further sites roughly from the same area of Iran (Fars, Kermanshah, Khuzestan).

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

Type Locality. France, Ardennes, Charlemont.
Comments. Lay (1967) reported four localities scattered through the E portion of Iran (Khorasan, Mazandaran, Seistan & Baluchestan). DeBlase (1980) added further records mostly from W part of Iran (Bushehr, Fars, Kermanshah, Khorasan, Markazi, Mazandaran) and Benda et al. (2006) from S (Hormozegan) and N Iran (Golestan, Mazandaran, Qazvin). According to the revision by Benda et al. (2006), populations from Iran, the Caucasus Region and Central Asia belong to a separate subspecies, *M. e. desertorum* (Dobson, 1875) (type locality: Iran, Baluchestan, Jalk).

Whiskered Bat, *Myotis mystacinus* (Kuhl, 1817)

Type Locality. Germany, Hessen.
Comments. Lay (1967) reported localities from N Iran (Ardabil, Golestan, Mazandaran, West Azarbaijan). DeBlase (1980) summarised new records from N and NW Iran (Gilan, Kermanshah, Khorasan, Mazandaran, Tehran). The occurrence of *M. mystacinus* s.str. in Iran, however, was questioned by Benda & Tsytsulina (2000). According to their revision only two species newly established from the former *M. mystacinus* rank, *M. aurascens* Kusjakin, 1935 and *M. nipalensis* (Dobson, 1871), were found in Iran, however, the populations inhabiting forested areas of N Iran remain in a need of taxonomic revision.

Nepalese Myotis, *Myotis nipalensis* Dobson, 1871

Type Locality. Nepal, Katmandu.
Comments. Not listed by Lay (1967) nor DeBlase (1980). First reported by Benda & Tsytsulina (2000) from NW Iran (West Azarbaijan).

Schaub's Myotis, *Myotis schaubi* Kormos, 1934

Type Locality. Hungary, Vilány 3 (Upper Pliocene).
Comments. Not listed by Lay (1967) and DeBlase (1980), who, however, mentioned *M. nattereri* (Kuhl, 1817) from W Iran (Ardabil, Chahar Mahal & Bakhtiary, West Azarbaijan). The respective specimens were re-identified by Horáček & Hanák (1984) as *M. schaubi*, which was originally described on fossil material. Horáček & Hanák (1984) consider *M. nattereri araxenus* Dahl, 1947 (type locality: Armenia, Vajkskij Range, Amagu) to be part of *M. schaubi*. In addition to the above mentioned sites, *M. schaubi araxenus* was documented also from other two sites in West Azarbaijan (Benda et al. 2006).

Schreibers's Long-fingered Bat, *Miniopterus schreibersii* (Kuhl, 1817)

Type Locality. Romania, near Coronini, Kolumbacs cave.
Comments. Lay (1967) reported few sites from C and N Iran (Fars, Golestan, Khorasan, West Azarbaijan). DeBlase (1980) and Benda et al. (2006) added numerous records from W and NE Iran (East Azarbaijan, Fars, Hamadan, Ilam, Kermanshah, Khorasan, Kohgeluye & Boyer Ahmad, Kordestan, Lorestan, Markazi, Zanjan). Populations from the Middle East are often allocated to subspecies *M. s. pallidus* Thomas, 1907 (type locality: Iran, Golestan, near Bandar-i-Gaz). Karataş et al. (2008) described karyotypes from specimens originated in W Iran.

Egyptian Free-tailed Bat, *Tadarida aegyptiaca* (Geoffroy, 1818)

Type Locality. Egypt, Giza.
Comments. Not listed by Lay (1967). DeBlase (1971) reported it from S Iran (Hormozegan).

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

Type Locality. Italy, Sicily.
Comments. Lay (1967) reported two sites in SW (Bushehr) and N Iran (Mazandaran). DeBlase (1980) added three records from N and S Iran (Bushehr, Hormozegan, Khorasan) and de Roguin (1988) one site from SE Iran (Seistan & Baluchestan). Benda et al. (2006) reported additional findings from S Iran (Fars, Hormozegan).

Carnivores, Order Carnivora Bowdich, 1821

Golden Jackal, *Canis aureus* Linnaeus, 1758

Type Locality. Iran, Lorestan, Benna Mts.
Comments. Lay (1967) reported jackals to be common along the Caspian coast and the N Elbruz Mts. (up to 1230 m a. s. l.), scarce in Qazvin, Tehran, and Semnan; jackals also occur S of a line N Khuzistan – Seistan; cf. map in Etamad (1985) and Harrison & Bates (1991). The nominotypical subspecies lives in Iran (Ellerman & Morrison-Scott 1951).

Gray Wolf, *Canis lupus* Linnaeus, 1758

Type Locality. Sweden.
Comments. Lay (1967) assumes for wolves to "occur in all parts of Iran". On status, growth and other facets of Iranian wolf refer to Joslin (1982). Suggested Iranian subspecies is *C. l. pallipes* Sykes, 1831 (type locality: India, Deccan) (Ellerman & Morrison-Scott 1951).

Blanford's Fox, *Vulpes cana* Blanford, 1877

Type Locality. Pakistan, Gwadar.
Comments. Lay (1967) reported specimens from three localities throughout Iran (Fars, Khuzistan, Khorasan) but presumed for Blanford's fox to "be found to inhabit mountains through Iran". At the time of writing, the Blanford's fox is seemingly still known only from NE Iran (Wozencraft 2005).

Corsac Fox, *Vulpes corsac* (Linnaeus, 1768)

Type Locality. N Kazakhstan.
Comments. Known to Lay (1967) on the basis of a report by Misonne (1959) from N Iran (Golestan). Not listed for Iran by Wozencraft (2005). Iranian subspecies is *V. c. turkmenica* Ognev, 1935 (type locality: Turkmenistan, Turkmen Desert) (Ellerman & Morrison-Scott 1951).

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

Type Locality. Sudan, Dongola.
Comments. Known to Lay (1967) from five widely scattered localities in Iran (Kerman, Tehran, Mazanderan). Iranian subspecies is *V. r. zarudnyi* Birula, 1912 (type locality: Iran, Seistan & Baluchestan, Kala-i-bid, Makran (= Sargad)) (Ellerman & Morrison-Scott 1951).

Red Fox, *Vulpes vulpes* (Linnaeus, 1758)

Type Locality. Sweden, Uppsala.
Comments. Reported by Lay (1967) as widespread throughout Iran, except for the forested N slopes of Elbruz Mts. and the adjacent Caspian coastal lowlands. Witt & DeBlase (1983) recognised three subspecies in Iran, viz. *V. vulpes pusilla* Blyth, 1854 (type locality: Pakistan, Punjab, Salt Range), *V. v. flavescens* Gray, 1843 (type locality: Northern Iran) and *V. v. splendens* Thomas, 1902 (type locality: Iran, Gorgan).

Cheetah, *Acinonyx jubatus* (Schreber, 1775)

Type Locality. South Africa, Western Cape Province, Cape of Good Hope.
Comments. Lay (1967) assumed that cheetah existed "over all the basin country in Iran" prior to 1940 but supposed "to be confined to the more secluded of these areas" during his research. Etemad (1985) mapped seven records in NC and SE Iran. With respect to conservation and status in Iran see Karami (1992), Nowell & Jackson (1996) and Jackson (1998). Iranian subspecies is *A. j. venaticus* (Griffith, 1821) (type locality: India); if *raddei* Hilzheimer, 1913 (type locality: Turkmenistan, Merv) is valid, it should be applied for Iranian population (Harper 1945, Ellerman & Morrison-Scott 1951).

Caracal, *Caracal caracal* (Schreber, 1776)

Type Locality. South Africa, Table Mt. near Cape Town.

Comments. Lay (1967) reports records from Khuzistan, Kerman, and Tehran (as *Lynx caracal*). Probably widespread in Iran except for the NW and C parts (Etemad 1985, Harrison & Bates (1991). Two subspecies possibly occur in Iran (Ellerman & Morrison-Scott 1951): *C. c. schmitzi* (Matschie, 1912) (type locality: Palestine, the Dead Sea region) and *C. c. michaelis* (Heptner, 1945) (type locality: Turkmenistan, Bokourdak, western Karakum desert, 60 mi north of Ashgabad). Farhadinia et al. (2007) surveyed population in the Abbasabad Naein Reserve.

Jungle Cat, *Felis chaus* Schreber, 1777

Type Locality. Russia, NE Caucasus, Dagestan, Terek River.
Comments. Lay (1967) reported range to encompass forested and well vegetated regions in the northern slopes of Elbruz Mts. and in Iran to the S of 32° N (Fars, Kerman, Golestan, Mazanderan, Khuzistan); for maps see Etemad (1985) and Harrison & Bates (1991). The nominotypical subspecies occurs in Iran (Ellerman & Morrison-Scott 1951).

Pallas's Cat, *Felis manul* Pallas, 1776

Type Locality. Russia, SW Transbaikalia, S of Lake Baikal, Kulusutai.
Comments. Lay (1967) recorded Pallas's cat only for Mashhad and Etemad (1985) and Harrison & Bates (1991) mapped its presence in N Iran. The Iranian subspecies is *F. m. ferruginea* (Ognev, 1928) (type locality: Turkmenistan, Kopetdag Mts., Mountain ridge of Missanev) (Ellerman & Morrison-Scott 1951).

Sand Cat, *Felis margarita* Loche, 1858

Type Locality. Algeria.
Comments. Not reported by Lay (1967), but listed for Iran by Etemad (1985), Harrison & Bates (1991) and Wozencraft (2005). Etemad (1985) plots a single locality to the S of the Caspian coast. The subspecies in Iran is *F. m. thinobius* (Ognev, 1926) (type locality: Turkmenistan, Repetek).

Wild Cat, *Felis silvestris* Schreber, 1775

Type Locality. Germany.
Comments. Lay (1967) states that wild cat is widespread in Iran (Fars, Kerman, Khorassan, Golestan, Azarbaijan, Lurestan), with the exception of the S Caspian coast and the forested N slopes of the Elbruz Mts., but this contradicts a dot map in Etemad (1985) and Harrison & Bates (1991) who plotted records for N, W and S Iran (incl. the Caspian coast); the species is absent from central parts of the country. Lay (1967) reports it as *Felis catus* Linnaeus, 1758 (type locality: Sweden), but this name is mainly applied for a domesticated successor of *F. silvestris* (cf. Wozencraft 2005).

Eurasian Lynx, *Lynx lynx* (Linnaeus, 1758)

Type Locality. Sweden, Wennersborg.
Comments. Lay (1967) reported a single record from Azarbaijan. Etemad (1985) and Harrison & Bates (1991) mapped its occurrence only in NW Iran. Iranian subspecies is *L. l. dinniki* Satunin, 1915 (type locality: Russia, N Caucasus) (Ellerman & Morrison-Scott 1951).

Lion, *Panthera leo* (Linnaeus, 1758)

Type Locality. Algeria, Constantine.
Comments. Lay (1967) summarized historical records (under *Felis leo*), coming from Fars and Khuzistan. Iranian subspecies *P. l. persica* Meyer, 1826 (type locality: Iran) is extirpated in Iran, although lions still "abund in Khuzistan" in the early part of the 19th century (Kinnear 1920) while "the little valley of Dashtiarjan, thirty-five miles west of Shiraz, [was] notorious for the number of lions found in the vicinity" with four or five adult lions being killed annually (Blanford 1876). See Harper (1945) and Joslin (1988) for the past distribution of lion in SW Asia. The valley of Dasht-e-Arjan, 57 km W of Shiraz in Iran, was famous for its lions in the late 1800s (Nowell & Jackson 1996). Blanford (1876) gives an interesting account of being attacked by a lion in Miankotal area (presently Fars Province). The last known report

of lion presence in Iran was a 1942 observation of a pair near Dizful, by American engineer building a railway (Heaney 1943).

Leopard, *Panthera pardus* (Linnaeus, 1758)

Type Locality. Egypt.
Comments. Lay (1967), who was familiar with published records and voucher specimens (skins) from Kerman, Golestan, Fars, Khuzistan, and Khorassan, concluded that leopards occur throughout Iran; this is evident also from dot maps by Etemad (1985) and Harrison & Bates (1991). For current status see Kiabi et al. (2002), Joslin (1990), Nowell & Jackson (1996), Tilson & Seal (1987), and Khorozyan et al. (2005). Khorozyan & Abramov (2007) provide a review for the Caucasus. For biological information on leopards in the Bamu National Park see Ghoddousi et al. (2008). Iranian subspecies is *P. p. saxicolor* Pocock, 1927 (type locality: Iran, Gorgan); this is questioned by Khorozyan et al. (2007). For molecular phylogenetics of subspecies *saxicolor* see Miththapala et al. (1996) and Uphyrkina et al. (2001).

Tiger, *Panthera tigris* (Linnaeus, 1758)

Type Locality. India.
Comments. On the basis of historical records from Khorasan and Golestan, Lay (1967) concluded that "the tiger occurs throughout the forest zone along the northern slope of the Elbruz mountains". Caspian tiger *P. t. virgata* (Illiger, 1815) (type locality: Iran, Mazandaran) is now extinct in Iran (Herrington 1987, Kock 1990); for its past status refer to Harper (1945), Joslin (1986) and Kock (1990). Tigers were still "pretty common in the forested mountains of Mazanderan" around mid-1750s (Gmelin 1774) and "very numerous in the Caspian provinces of Persia" a century later (Blanford 1876). The Caspian subspecies was discussed by Kirk (1969). According to McDougal (1978) Persian tigers were not man eaters.

Snow Leopard, *Uncia uncia* (Schreber, 1775)

Type Locality. Altai Mts.
Comments. The only skin seen by Lay (1967) was presumably from the Kopetdag Mts., Khorasan. Not listed for Iran by Etemad (1985) and Wozencraft (2005).

Indian Gray Mongoose, *Herpestes edwardsii* (Geoffroy, 1818)

Type Locality. India, Madras.
Comments. Lay (1967), who listed records from Fars and Kerman, tentatively defined the N range border as "northern Khuzistan – city of Kerman – city of Zahedan"; cf. Etemad (1985) and Harrison & Bates (1991) for a dot map.

Small Asian Mongoose, *Herpestes javanicus* (Geoffroy, 1818)

Type Locality. Indonesia, Java.
Comments. Lay (1967) reported small Indian mongoose from Khuzistan and Kerman Provinces. Very few localities are known from the S and E of the country (Etemad 1985, Harrison & Bates 1991). West Palaearctic populations are frequently reported as *Herpestes auropunctatus* Hodgson, 1836 (type locality: Nepal), a name applied also by Lay (1967), Etemad (1985) and Harrison & Bates (1991), but considered by Wozencraft (2005) to be a junior synonym of *H. javanicus*.

Striped Hyena, *Hyaena hyaena* (Linnaeus, 1758)

Type Locality. Iran, Lorestan, Benna Mts.
Comments. Lay (1967) reported hyena for S half of Iran (Lorestan, Kerman, Fars, Khuzistan, Mazandaran). Etemad (1985) and Harrison & Bates (1991) mapped its presence also further S of the Caspian Sea.

European Otter, *Lutra lutra* (Linnaeus, 1758)

Type Locality. Sweden, Uppsala.
Comments. Lay (1967), who was familiar with published records and specimens from Esfahan, Kerman, Tehran, Golestan, Gilan, Azarbaijan, Fars, Mazandaran, and Lorestan, presumed for otter to be possibly

present in most of the perennial streams in Iran. All records, with one exception, are from the W half of Iran (Etemad 1985, Harrison & Bates 1991). See Gutleb et al. (1996), Ziaie & Gutleb (1997) and Rasooli et al. (2007) for new information on otters in Iran.

Smooth-coated Otter, *Lutrogale perspicillata* (Geoffroy, 1826)

Type Locality. Indonesia, Sumatra.
Comments. Not listed by Lay (1967). Occurs in marshes of S Iraq along the lower flow of the River Tigris (Harrison & Bates 1991) and is possibly present also in SW Iran. Listed for Iran by Etemad (1985; as *Lutra perspicillata*), but not by Wozencraft (2005).

Beech Marten, *Martes foina* (Erxleben, 1777)

Type Locality. Germany.
Comments. Known to Lay (1967) from Khuzistan, Kerman, Golestan and Azarbaijan; the beech marten remains to be known from very few widely scattered localities (Etemad 1985, Harrison & Bates 1991).

European Pine Marten, *Martes martes* (Linnaeus, 1758)

Type Locality. Sweden, Uppsala.
Comments. Known to Lay (1967) only from the Golestan Province; seemingly no localities were published afterwards (Etemad 1985).

Weasel, *Mustela nivalis* Linnaeus, 1766

Type Locality. Sweden.
Comments. Lay (1967) defined weasel's range to include Zagros Mts. Etemad (1985) and Harrison & Bates (1991) mapped somewhat wider distribution in NW Iran.

Marbled Polecat, *Vormela peregusna* (Gueldenstaedt, 1770)

Type Locality. Russia, Rostov Obl., steppes at lower Don River.
Comments. Lay (1967) tentatively estimated the range of the marbled polecat "to include most of Persia north of Seistan." Etemad (1985) and Harrison & Bates (1991) mapped occurrence for N and E Iran.

Eurasian Badger, *Meles meles* (Linnaeus, 1758)

Type Locality. Sweden, Uppsala.
Comments. Known to Lay (1967) for the Zagros Mts., the Moghan steppe and Golestan; mapped subsequently for NW Iran and Zagros Mts. (Etemad 1985, Harrison & Bates 1991).

Honey Badger, *Mellivora capensis* (Schreber, 1776)

Type Locality. South Africa, Western Cape Province, Cape of Good Hope.
Comments. Lay (1967) reported the honey badger for Khuzistan and Lorestan, and presumed its presence also for Golestan and Khorasan. According to Etemad (1985) and Harrison & Bates (1991) the range is disjunct, with records in Khuzistan and in NW Khorasan. Etemad (1985) lists two species for Iran: *M. c. wilsoni* Cheesman, 1920 (type locality: S Iran, Ram Hormuz) and *M. c. indica* (Kerr, 1792) (type locality: India). Afterwards, Baryshnikov (2000) described a new subspecies of honey badger (*M. c. buechneri*; type locality: Turkmenistan, Tedzhen) which presumably occurs also in N Iran.

Caspian Seal, *Pusa caspica* (Gmelin, 1788)

Type Locality. Caspian Sea.
Comments. Lay (1967) reported a specimen captured in 1962 near Ramsar. Listed for Iran by Etemad (1985); both authors referred to the Caspian seal as *Phoca caspica*. This seal is endemic to the Capsian Sea (Wozencraft 2005).

Brown Bear, *Ursus arctos* Linnaeus, 1758

Type Locality. N Sweden.

Comments. Lay (1967) listed reports and specimens for the Zagros and Elbruz Mts. where it was still widespread around mid-1800s. For dot maps see Etemad (1985) and Harrison & Bates (1991). For its current status see Gutleb & Ziaie (1999), who suggested relatively broad but less dense distribution in W Iran (from West Azarbaijan to Fars) and high dense distribution in mountains of N Iran (from E Azarbaijan to Golestan). In the latter area the estimated population is up to 1000 bears. Ecological remarks were recently reported by Khaleghizadeh & Khormali (2005). Etemad (1985) listed two subspecies: *U. a. syriacus* Hemprich et Ehrenberg, 1828 (type locality: Lebanon, near Bcharre, Mt. Makmel) and *U. a. caucasicus* Smirnov, 1919 (type locality: Georgia, Pasanauri, southern slope of Central Caucasus); Wozencraft (2005) synonymised *caucasicus* with *syriacus*.

Asiatic Black Bear, *Ursus thibetanus* Cuvier, 1823

Type Locality. India, Assam, Sylhet.
Comments. Reported by Lay (1967) for SE part of Kerman Province; cf. map in Etemad (1985). Wozencraft (2005) gives range as west as Afghanistan. For status see Joslin (1983) and Gutleb & Ziaie (1999). The latter authors supposed its current broad distribution in mountains of SE Iran (Kerman, Seistan & Baluchestan, perhaps Hormozegan). Frequently reported as *Selenarctos thibetanus* (Lay 1967, Etemad 1985). Iranian subspecies is *U. t. gedrosianus* Blanford, 1877 (type locality: Pakistan, Baluchistan, Tump, 70 mi N of Gwadar, Mekran coast).

Raccoon, *Procyon lotor* (Linnaeus, 1758)

Type Locality. U. S. A., Pennsylvania.
Comments. Not listed by Lay (1967). This exotic species is reported from West Caspian Basin of Gilan (Rasooli et al. 2007).

Whales, Dolphins and Porpoises, Order Cetacea Brisson, 1762

With the exception of *Sotalia plumbea*, Lay (1967) does not cover cetaceans. If not stated otherwise, our list follows Etemad (1985).

Blue Whale, *Balaenoptera musculus* (Linnaeus, 1758)

Type Locality. United Kingdom, Scotland.
Comments. Listed by Etemad (1985) as *Sibbaldus musculus*.

Fin Whale, *Balaenoptera physalus* (Linnaeus, 1758)

Type Locality. Norway, Spitsbergen Sea near Svalbard.
Comments. Listed by Etemad (1985).

Common Mink Whale, *Balaenoptera acutorostrata* Lacépède, 1840

Type Locality. France, Mancha.
Comments. Listed by Etemad (1985).

Humpback Whale, *Megaptera novaeangliae* (Borowski, 1781)

Type Locality. U. S. A., Coast of New England.
Comments. Listed by Etemad (1985).

Short-beaked Common Dolphin, *Delphinus delphis* Linnaeus, 1758

Type Locality. E North Atlantic.
Comments. Listed by Etemad (1985).

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

Type Locality. China, Guangdong Prov., Zhujiang Kou (mouth of the Canton River).

Comments. Listed as *Sotalia plumbea* (Cuvier, 1829) by Lay (1967) for the Persian Gulf coast. Etemad (1985) reported this species as *Sotalia plumbea* and *Sousa lentiginosa* (Gray, 1866); Keijl & van der Have (2002) believe that *Sousa plumbea*, living in the Persian Gulf and Indian Ocean, is a species distinct from *S. chinensis* of the Western Pacific Ocean.

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

Type Locality. Eritrea, Dahlak Arch., Belhosse Isl.
Comments. Listed by Etemad (1985); first indisputable record from the Iranian shore of Persian Gulf (Bushehr) was published by Robovský & Benda (2006).

False Killer Whale, *Pseudorca crassidens* (Owen, 1846)

Type Locality. United Kingdom, England, Stamford (subfossil).
Comments. Listed by Etemad (1985).

Finless Propoise, *Neophocaena phocaenoides* (Cuvier, 1829)

Type Locality. South Africa, Western Cape Prov., Cape of Good Hope.
Comments. Listed by Etemad (1985) as *Neomeris phocaenoides*; for seightings cf. Keijl & van der Have (2002).

Sea Cows, Order Sirenia Illiger, 1811

Dugong, *Dugong dugon* (Müller, 1776)

Type Locality. Indian Ocean, from Cape of Good Hope to the Philippines.
Comments. Not listed by Lay (1967); refer to Keijl & van der Have (2002) and references therein.

Odd-toed Ungulates, Order Perissodactyla Owen, 1821

Onager, *Equus hemionus* Pallas, 1775

Type Locality. Russia, Transbaikalia, Dauria, Tarei-Nor.
Comments. Lay (1967) summarized published evidence (Tehran, Fars, Esfahan) and reported two observations of onagers by the Street Expedition in the former Damaghan Province. Once the onager occurred in "a portion of the Persian Plateau, extending north to the Elbruz Mountains, east to Afghanistan, south to about the latitude of Seistan, Kerman, and Shiraz, and west […] to the mountain ranges extending along the line Kasbin-Ispahan-Shiraz". In Lay's time "The large herds […] that existed over much of the eastern basin two to three decades ago have disappeared from all but but its remotest regions." For a historical account see Harper (1945), for recent reintroduction of onagers to Yazd Province see Hamadanian (2001). Frequently reported as *Equus onager* Boddaert, 1785 (type locality: Iran, Qazvin, near Caspian). Zimmermann (2000) provides guidelines for husbandry of Asiatic equids.

Even-toed Ungulates, Order Artiodactyla Owen, 1848

Wild Boar, *Sus scrofa* Linnaeus, 1758

Type Locality. Germany.
Comments. Lay (1967) concluded for wild board to be widespread in Iran, except from the most barren deserts; see maps by Etemad (1985) and Harrison & Bates (1991). Suggested Iranian subspecies is *S. s. attila* Thomas, 1912 (type locality: Romania, Transylvania, Cluj) (Etemad 1985). For parasites of wild boar in Iran see Eslami & Farsad-Hamdi (1992).

Red Deer, *Cervus elaphus* Linnaeus, 1758

Type Locality. S Sweden.

Comments. Lay (1967) summarized historical reports for N Iran (Gilan, Mazandaran, Khorasan and Golestan). In Lay's times the red deer was confined to the forested N slopes of the Elbruz Mts. For dot map see Etemad (1985) who reports the subspecies as *C. e. maral* Gray, 1850 (type locality: Iran). For marals in Golestan National Park see Kiabi et al. (2004).

Fallow Deer, *Dama dama* (Linnaeus, 1758)

Type Locality. Sweden.
Comments. Reported by Lay (1967) as *D. mesopotamica*, which is currently considered as a subspecies *D. d. mesopotamica* (Brooke, 1875) (type locality: Iran, Lorestan). Originaly confined to riverine thickets in Khuzistan and Lorestan; at the time of Street Expedition survey still present along the Dez, Karkheh and Karun rivers in the vicinity of Shush (Lay 1967); for maps see Etemad (1985) and Harrison & Bates (1991). Translocated to Mazandaran (Lay 1967) and Azarbaijan (Etemad 1985). See Karami & Heidemann (1994) for status in Iran.

European Roe Deer, *Capreolus capreolus* (Linnaeus, 1758)

Type Locality. Sweden.
Comments. Present range covers the Zagros and Elbruz Mts. (Lay 1967) as far as NE Khorasan (Etemad 1985). See Hewison & Danilkin (2001) for separate specific status for European and Siberian roe deer *C. pygargus* (Pallas, 1771) (type locality: Russia, Bugulma-Belebei uplands, Samara district). Also, see Lehmann (1988) for possibility of contact zone between *C. capreolus* and *C. pygargus* in Amol, Iran. Etemad (1985) distinguished two subspecies in Iran: *C. c. armenius* Blackler, 1916 (type locality: Turkey, Sumela, Trabzon) and *C. c. coxi* Cheesman et Hinton, 1923 (type locality: N Iraq, Zakho). Grubb (2005) did not recognise any of them to be valid, although Harrison & Bates (1991) provisionally retained *coxi* for N Arabian populations.

Indian Gazelle, *Gazella bennetti* (Sykes, 1831)

Type Locality. India, Deccan.
Comments. Reported by Lay (1967) as *G. gazella* (see below) for Kerman, Khorasan and Semnan, and as *G. dorcas fuscifrons* Blanford, 1873 (type locality: E Iran, Seistan Desert) by Etemad (1985). For a review see Karami et al. (2006). Three subspecies are recognized for Iran (Groves 1993): *G. b. fuscifrons*, *G. b. karamii* Groves, 1993, and *G. b. shikarii* Groves, 1993.

Mountain Gazelle, *Gazella gazella* (Pallas, 1766)

Type Locality. Syria.
Comments. Lay's (1967) report of *G. gazella* relates to *G. bennetti* (see above). This species was first recorded by Karami & Groves (1993) for Farrur Island in the Persian Gulf where introduced (Karami et al. 2002).

Persian Gazelle, *Gazella subgutturosa* (Gueldenstaedt, 1780)

Type Locality. Azarbaijan, Steppes of E Transcaucasica.
Comments. Lay (1967) concluded for the Persian gazelle to be widespread in Iran, "except the forested north slope of the Elbruz and adjacent Caspian coast"; see maps by Etemad (1985) and Harrison & Bates (1991). The evidence with respect to number of subspecies in Iran is inconclusive (Karami et al. 2002); Etemad (1985) listed two subspecies: the nominotypical and *G. s. seistanica* Lydekker, 1910 (type locality: E Iran, Seistan).

Wild Goat, *Capra aegargus* Erxleben, 1777

Type Locality. Russia, NE Caucasus, Dagestan.
Comments. Reported by Lay (1967) as *Capra hircus* Linnaeus, 1758, a name based on domesticated stock; this name is also preferred over *aegargus* by Grubb (2005). Mapped by Etemad (1985) and Harrison & Bates (1991); see Ziaie (1997) for updates. Iranian subspecies are the nominotypical one and *C. a. blythi*

Hume, 1875 (type locality: India, Sind) (Ziaie 1997). Abbasian et al. (2004) studied dietary biology in the Khorramdasht area.

Mouflon, *Ovis orientalis* Gmelin, 1774

Type Locality. Iran, E Elborz Mts.
Comments. Lay (1967), similarly as Etemad (1985) and Harrison & Bates (1991), reported Iranian mouflouns under the name *O. ammon* Linnaeus, 1758. There is no consensus regarding the number of species in this genus. Some recognise only one (*ammon*; Haltenorth 1963), others two (*ammon*, *canadensis*; Corbet 1978), while others recognize up to seven, as do most recent reviews. Grubb (2005) considers *Ovis ammon*, *O. aries* (= *O. orientalis*), *O. canadensis*, *O. dalli* and *O. nivicola*. We follow Ziaie (1997) who recognised one species with four subspecies: *O. o. laristanica* Nasonov, 1909 (type locality: S Iran, Lorestan), *O. o. isphahanica* Nasonov, 1910 (type locality: Iran, Esfahan), *O. o. gmelinii* Blyth, 1841 (type locality: Turkey, Erzurum), and *O. o. arkal* Eversmann, 1850 (type locality: Kazakhstan/Uzbekistan, Ust-Urt Plateau). The mouflon is widespread in the mountains of Iran (Lay 1967); see maps by Etemad (1985) and Harrison & Bates (1991). For historical account see Harper (1945) and for current situation of wild sheep in Iran refer to Ziaie (1997).

Rodents, Order Rodentia Bowdich, 1821

Comments. For rodents in Iran refer to Ellerman (1948), Misonne (1959), Lay (1967, 1983), Etemad (1978), Brown (1980), Harrington (1977), Darvish (1992) and Darvish et al. (2006a). More specific literature is cited under species.

Caucasian Squirrel, *Sciurus anomalus* Gmelin, 1778

Type Locality. Georgia, Sabeka, 25 km SW of Kutaisi.
Comments. Listed by Lay (1967) for Fars province; cf. also Ellerman (1948). Harrison & Bates (1991) provide a map. The authority for this species is normaly given as Gueldenstaedt; with Gmelin, we follow Thorington & Hoffmann (2005).

Long-clawed Ground Squirrel, *Spermophilopsis leptodactylus* (Lichtenstein, 1823)

Type Locality. Uzbekistan, vicinity of Kara Ata, 140 km NW of the Old town of Bukhara.
Comments. Lay (1967) reported a single locality in Khorasan, quoting Petter et al. (1957).

Yellow Groud Squirrel, *Spermophilus fulvus* (Lichtenstein, 1823)

Type Locality. Kazakhstan, N of Aral Sea, near the Kuvandzur River, E of Mogudzhary Mts.
Comments. Lay (1967) provided evidence on the yellow ground squirrel for Zanjan, Khorasan, and Kordestan. See Darvish et al. (2006a) for further records from NE Iran, and Özkurt et al. (2007) for a map, morphology and karyotype.

Asia Minor Ground Squirrel, *Spermophilus xanthoprymnus* (Bennett, 1835)

Type Locality. Turkey, Erzurum.
Comments. Not listed by Lay (1967). Being common at Doğubayazit and Mt. Ararat (Ağri), E Turkey (Kryštufek & Vohralík 2005), it was expected for Iran already by Misonne (1959); recently reported from 27 km NW of Maku (Özkurt et al. 2007).

Northern Palm Squirrel, *Funambulus pennantii* Wroughton, 1905

Type Locality. India, Gudjarat.
Comments. Lay (1967) provided localities from the extreme southwestern portion of the Kerman province.

Small Five-toed Jerboa, *Allactaga elater* (Lichtenstein, 1828)

Type Locality. W Kazakhstan, Kirgiz Steppe.

Comments. (Lay 1967) provides records from the provinces of Fars, Khuzistan, Kerman, Khorasan, Azarbaijan, Mazandaran, and Tehran; Field Museum of Natural History holds specimens also from Markazi.

Williams' Jerboa, *Allactaga williamsi* Thomas, 1897

Type Locality. E Turkey, near Van Lake.
Comments. Lay (1967) reported Williams' jerboa for Qazvin, Azarbaijan, Kordestan, Lurestan, Hamedan, Tehran, and Zanjan. Williams' jerboa was long considered to be a junior synonym of *A. euphratica* Thomas, 1881 (type locality: Iraq), but Çolak et al. (1994) provide strong evidence against conspecificity of the two jerboas. Presence of *A. euphratica* is probable in SW Iran (Kryštufek & Vohralík 2005).

Iranian Jerboa, *Allactaga firouzi* Womochel, 1978

Type Locality. Iran, Esfahan, 18 mi S of Shah Reza (Qomisheh), 2253 m.
Comments. Recognition of the Iranian jerboa postdates Lay (1967). Known only from the type locality, a flat plain with a gravel substrate and sparse, mountain steppe vegetation (Womochel 1978). Pavlinov et al. (1995) synonymised *A. firouzi* with *A. hotsoni*.

Hotson's Jerboa, *Allactaga hotsoni* Thomas, 1920

Type Locality. Iran, Baluchestan, Sib, 20 mi. SW Kant (Kont), 3950 ft.
Comments. Lay (1967) supposed that *A. hotsoni* might be conspecific with *A. williamsi*. Range of the Hotson's jerboa covers N, C and SE Iran, SW Pakistan and S Afghanistan (Darvish et al. 2006a, Holden & Musser 2005). Iranian records are from Bejestan in Khorasan province, Varamin in the N Iran, and Yazd and Seistan & Baluchestan provinces (Darvish et al. 2006b).

Tousi Jerboa, *Allactaga toussi* Darvish, Hajjar, Moghadam, Matin, Haddad et Akbaryrad, 2008

Type Locality. Iran, Khorasan Razavi, Mashhad, Chesme Gilas (36° 38' N, 50° 19' E).
Comments. Description postdates Lay (1967). Known only from type locality where four animals were collected. Darvish et al. (2008) compared new species with *A. williamsi*, *A. hotsoni*, and *A. elater*.

Lesser Fat-tailed Jerboa, *Pygeretmus pumilio* (Kerr, 1792)

Type Locality. Kazakhstan, E shore of the Aral Sea, Kuwan Darya River.
Comments. Reported by Lay (1967) as *Alactagulus pumilio* from NW Khorasan and Golestan.

Northern Three-toed Jerboa, *Dipus sagitta* (Pallas, 1773)

Type Locality. N Kazakhstan, Pavlodarskaya Oblast, Podpusknoi.
Comments. Not listed by Lay (1967); refer to Brown (1978) for the first record in Iran. Ocurrs in N Iran (Holden & Musser 2005).

Blanford's Jerboa, *Jaculus blanfordi* (Murray, 1884)

Type Locality. Iran, Bushehr.
Comments. Reported by Lay (1967) for provinces of Bushehr, Qum, Semnan, and Khorasan; cf. also Darvish et al. (2006a). Known also from Kerman (Shafie et al. 2002), Yazd province (Siahsarvie & Darvish 2007a), Khuzistan and Seistan & Baluchestan (specimens in Field Museum of Natural History).

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

Type Locality. Egypt, Giza Pyramids.
Comments. Known to Lay (1967) from the Khuzistan Plain and "apparently [present in] the Persian Gulf coastal plain southeast at least to Ahra …" The subspecies in Iran is *J. j. loftusi* (Blanford, 1875) with a type locality in Iraq (Corbet 1978).

Thaler's Jerboa, *Jaculus thaleri* Darvish et Hosseinie, 2005

Type Locality. Iran, Khorasan, Kavir-e-Namak, Kashmar, Jafarabad.

Comments. Description postdates Lay (1967). Known from the type locality and Bandan in the S Khorasan (Darvish & Hosseinie 2005).

Zagros Mountains Calomyscus, *Calomyscus bailwardi* Thomas, 1905

Type Locality. Iran, Khuzistan, 120 km SE of Ahwaz, Izeh.
Comments. The genus *Calomyscus* Thomas, 1905, is characterised by extensive karyotypic diversity (Graphodatsky et al. 2000, Morshed & Patton 2002) therefore the species boundaries, diagnostic characters and distributional ranges of the mouse-like hamsters are poorly resolved. We follow Musser & Carleton (2005) and Somayeh et al. (2008) who list for Iran six species, while Norris et al. (2008) recognised only five. Somayeh et al. (2008) report from Aghdarband and Khajemorad (Khorasan) a new cytotype of unknown taxonomic affiliation. Lay (1967) clumped under *C. bailwardi* all Iranian samples (from Khuzistan, Fars, Khorasan, Esfahan, Tehran, and Semnan) belonging to several distinct species. As currently understood, *C. bailwardi* ocurrs in the Zagros Mts. of W Iran (Kordistan, Ilam, W Esfahan, E Khuzistan, Lorestan, Fars, and W Kerman; Musser & Carleton 2005); Morshed & Patton (2002) extended range further S to Kuh-e Geno in the Persian Gulf mountains.

Goodwin's Calomyscus, *Calomyscus elburzensis* Goodwin, 1938

Type Locality. Iran, Khorasan, Kurhud Mts., Dergermatie.
Comments. Not recognized by Lay (1967). Occurs in the mountains of NE Iran (Musser & Carleton 2005, Norris et al. 2008, Somayeh et al. 2008).

Noble Calomyscus, *Calomyscus grandis* Schlitter et Setzer, 1973

Type Locality. Iran, Tehran prov., 11 km ENE Fasham.
Comments. Recognition of this species postdates Lay (1967). Occurs in N Iran S of the Caspian Sea (Musser & Carleton 2005, Norris et al. 2008, Somayeh et al. 2008).

Hotson's Calomyscus, *Calomyscus hotsoni* Thomas, 1920

Type Locality. Pakistan, Baluchistan, Gwambuk Kaul, 50 km SW Panjgur.
Comments. Not recognized by Lay (1967). Somayeh et al. (2008) did not map this species for Iran but Musser & Carleton (2005) listed its presence for Seistan & Baluchestan Province. Norris et al. (2008) redefined the species and provided new morphological and genetical data.

Urar Calomyscus, *Calomyscus urartensis* Vorontsov et Kartavseva, 1979

Type Locality. Azerbaijan, Naxçivan, 7 km N of Culfa.
Comments. Recognition of this species postdates Lay (1967). Occurs in Azarbaijan provinces of NW Iran (Musser & Carleton 2005, Norris et al. 2008, Somayeh et al. 2008).

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

Type Locality. United Kingdom, England.
Comments. Range, as defined by Lay (1967), did not changed subsequently (cf. Shenbrot & Krasnov 2005): NW Iran in Zanjan, Khuzistan, Tehran, Gilan, Kordestan, Azarbaijan and Lorestan. Historical /Late Pleistocene/Early Holocene range covered also Zagros region as south as Yafteh and Gar Arjeneh (Hashemi et al. 2006). Until recently the Eurasian water vole was nearly uniformly reported as *A. terrestris* (Linnaeus, 1758), a name adopted also by Lay (1967).

Afghan Vole, *Blanfordimys afghanus* (Thomas, 1912)

Type Locality. Afghanistan, Badkhiz, Gulran.
Comments. Not reported by Lay (1967). Siahsarvie et al. (2005) list several localities in the NE Khorasan on both Kopetdag and Binaloud Mts.; for further records see Darvish et al. (2006a).

European Snow Vole, *Chionomys nivalis* (Martins, 1842)

Type Locality. Switzerland, Berner Oberland, Faulhorn.

Comments. Lay (1967) reports the snow vole (as *Microtus nivalis*) for Esfahan and Tehran provinces. Darvish et al. (2005) extended range to the Binaloud Mts. in NE Iran.

Southern Mole Vole, *Ellobius fuscocapillus* Blyth, 1843

Type Locality. Pakistan, Baluchistan, Quetta.
Comments. Lay (1967) ascribed all mole voles from Iran to *E. fuscocapillus*. *Ellobius* was reviewed by Gharkheloo & Kivanç (2003) who demonstrated for Iran presence of three species. *E. fuscocapillus* occurs in NE and E Iran (Tarahomi & Darvish 1999, Gharkheloo & Kivanç 2003).

Transcaucasian Mole Vole, *Ellobius lutescens* Thomas, 1897

Type Locality. E Turkey, Van.
Comments. Not recognised by Lay (1967). Occurs in NW Iran (Gharkheloo & Kivanç 2003).

Northern Mole Vole, *Ellobius talpinus* (Pallas, 1770)

Type Locality. Russia, W Bank of the Volga River, between Samara and Kostychi.
Comments. Not reported by Lay (1967). Known from a single locality in NE Iran where sympatric with *E. fuscocapillus* (Tarahomi & Darvish 1999, Darvish et al. 2006a).

Common Vole, *Microtus arvalis* (Pallas, 1778)

Type Locality. Germany.
Comments (WP). Lay (1967) was unaware of taxonomic difficulties in the genus *Microtus* Schrank, 1798, consequently he heavily underestimated species richness. *M. arvalis*, as recognised in his review, is a morphotype containing three valid species (*M. arvalis*, *M. levis*, *M. transcaspicus*). Status of species occurring in Iran is poorly known. In an earlier edition, Musser & Carleton (1993) listed for northeastern Iran *Microtus obscurus* (Eversmann, 1845), which is now considered to be conspecific with *M. arvalis*; *khorkoutensis* Goodwin, 1940 (type locality: NE Iran, Forest of Khorkout Range, Dasht, Bujnurd) and *hyrcania* Goodwin, 1940 (type locality: NE Iran, Gouladah, between Gorgan and Bujnurd) as junior synonyms of *M. arvalis* (Musser & Carleton 2005). Occurs in extreme NW Iran; for map see Shenbrot & Krasnov (2005).

East European Vole, *Microtus levis* Miller, 1908

Type Locality. Romania, Prahova, Gageni.
Comments. Not recognized by Lay (1967). *M. levis* was so far reported as *M. rossiaemeridionalis* Ognev, 1924 (type locality: Russia, Novi Kurlak, Bobrov district of the Voronež province), and is reliably distinguishable from *M. arvalis* only by chromosomal analysis. It occurs in E Anatolia (E of Van; Kryštufek & Vohralík 2005) and several specimens from Arasbaran Wildlife Refugee, Khalan, Azarbaijan (Museum A. Koenig, Bonn) correspond morphologically with *M. levis*. Both, *M. arvalis* and *M. levis* need to be studied karyologically in Iran.

Middle East Vole, *Microtus transcaspicus* Satunin, 1905

Type Locality. Turkmenistan, Kopetdag Mts., Chuli Valley, near Ashgabad.
Comments. Not recognized by Lay (1967). An isolated population from SE Iran (Kuh-e-Laleh-Zar and Kuh-e-Hazar, S of Kerman) was long considered as a separate species *Microtus kermanensis* de Roguin, 1988 (type locality: Iran, Kerman, Zahrud-e Bala, 70 km S Kerman, 2700 m) but was recently synonymised with *M. trancaspicus* (Musser & Carleton 2005). Darvish et al. (2006a) reported records from Mashhad and Shirvan. For *M. kermanensis* refer to Golenischev et al. (2000); cf. Krasnov & Shenbrot (2005) for distribution.

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

Type Locality. Kazakhstan between Volga and Ural rivers.
Comments. Lay (1967) heavily underestimated species richness in social voles of Iran, thus his *M. socialis* actually includes up to five species (also *M. irani*, *M. paradoxus*, *M. qazvinensis*, and possibly also *M.*

guentheri; see below). *M. socialis* occurs in N, NW and W Iran with an isole near Shiraz (Kryštufek & Kefelioğlu 2001b). Yiğit et al. (2006) described karyotype from NW Iran.

Iranian Vole, *Microtus irani* Thomas, 1921

Type Locality. Iran, Fars, Shiraz, Bagh-i-Rezi.
Comments. Not recognized by Lay (1967). Reported from W and N Iran by Musser & Carleton (1993) but known with certainty only from its type locality (Kryštufek & Kefelioğlu 2001a); see also Musser & Carleton (2005).

Qazvin Vole, *Microtus qazvinensis* Golenishchev, Malikov, Nazari, Vaziri, Sablina et Polyakov, 2002

Type Locality. N Iran, Qazvin, Bu'in-Zahra.
Comments. Description postdates Lay (1967). This vole shares the same diploid number of chromosomes as *M. guentheri* (see above), but in crossbreading experiments males appeared to be sterile. Known with certainty only from its type locality (Golenischev et al. 2002b) but is likely more widespread in NW Iran (Shenbrot & Krasnov 2005).

Paradox Vole, *Microtus paradoxus* (Ognev et Heptner, 1928)

Type Locality. Turkmenistan, Kopetdag Mts., near Ashgabad.
Comments. Not recognized by Lay (1967). This vole was long considered as conspecific with *M. socialis*, but is recognised currently as a species on its own right (Musser & Carleton 2005). Occurs in NE Iran (Shenbrot & Krasnov 2005, Darvish et al. 2006a, Siahsarvie et al. 2008). For morphometric comparison with *M. socialis* see Siahsarvie et al. (2008).

Schelkovnikov's Pine Vole, *Microtus schelkovnikovi* (Satunin, 1907)

Type Locality. Azerbaijan, Talysh Mts., near Dzhi.
Comments. Not specifically listed by Lay (1967) who however quoted Ellerman's (1948) report of *Pitymys subterraneus* (de Selys-Longchamps, 1836) for Kuramabad, Gilan, i.e. the type locality of *Pitymys subterraneus dorothea* Ellerman, 1948, which is a junior synonym of *M. schelkovnikovi*. Distributed in S Azarbaijan, Talysh and Elburz Mts. (Steiner 1972, Shenbrot & Krasnov 2005).

Major's Pine Vole, *Microtus majori* (Thomas, 1906)

Type Locality. Turkey, Trabzon, Meryemana.
Comments. Not listed by Lay (1967). Gromov & Erbajeva (1995) and Musser & Carleton (2005) list Major's pine vole for NW Iran.

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

Type Locality. W Kazakhstan, lower Ural River.
Comments. Lay (1967) listed number of records from Tehran, Esfahan, Kerman, Fars, Golestan, Khorasan, Azarbaijan, Zanjan, Kordestan, Lorestan, and Mazanderan; see map in Harrison & Bates (1991). Population from Zanjan is peculiar for its fundamental number of chromosomal arms (Gharkheloo 2006).

Brandt's Hamster, *Mesocricetus brandti* (Nehring, 1898)

Type Locality. Georgia, near Tbilisi.
Comments. Reported by Lay (1967) as *Mesocricetus auratus* (Waterhouse, 1839) (type locality: Syria, Halab) for several provinces in NW Iran (Zanjan, Qazvin, Azarabaijan, Kordestan, Lorestan). Yiğit et al. (2006) described karyotype from NW Iran.

Swarthy Gerbil, *Gerbillus aquilus* Schlitter et Setzer, 1972

Type Locality. Iran, 60 km W Kerman.
Comments. Description postdates Lay (1967). Distributed in SE Iran (Musser & Carleton 2005).

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

Type Locality. Iraq, Lower Euphrates near Basra.
Comments. Known to Lay (1967) from several localities in SE Iran (Kerman) and from one place in SW Iran (Khuzistan); for map see Harrison & Bates (1991).

Mesopotamian Gerbil, *Gerbillus mesopotamiae* Harrison, 1956

Type Locality. Iraq, SW of Faluja, W bank of Euphrates, near Amiriya.
Comments. Not listed by Lay (1967). Musser & Carleton (2005) report Mesopotamian gerbil for Iraq and SW Iran; for a map see Harrison & Bates (1991).

Baluchistan Gerbil, *Gerbillus nanus* Blanford, 1875

Type Locality. Pakistan, Gedrosia.
Comments. Reported by Lay (1967) for provinces in S, C, and E Iran (Kerman, Fars, Khuzistan), for map see Harrison & Bates (1991). Darvish et al. (2006a) and Siahsarvie & Darvish (2007b) extended the N range of this species up to Sabzevar and Jajarm in NE Iran. Siahsarvie & Darvish (2007b) recognized sympatric occurrence of two morphotypes (long-tailed vs. short-tailed) in Iran and reported possible presence of *G. henleyi* (de Winton, 1903).

Pygmy Gerbil, *Gerbillus henleyi* (de Winton, 1903)

Type Locality. Egypt, Zaghig, Wadi Natron.
Comments. Not reported by Lay (1967). Analyzing morphometric variation in *G. nanus*, Siahsarvie & Darvish (2007b) reported possible presence of *G.* cf. *henleyi* from the Abarkouh Desert. If confirmed, this would be significant range extension (see a map by Harrison & Bates 1991).

Sundevall's Jird, *Meriones crassus* Sundevall, 1842

Type Locality. Egypt, Sinai.
Comments. Lay (1967) reported range to be disjunct, with one population occurring throughout the Khuzistan Plain and along the Persian Gulf; the other one was known from the E Iran basin. Sundevall's jird was also reported for NE Iran (Petter et al. 1957, Darvish et al. 2006a), Central Desert (Siahsarvie & Darvish 2007a, Obuch & Krištín 2004). Although widespread S of the Caspian Sea, the Sundevall's jird is absent from throughout Zagros Mts. which makes SW populations likely isolated. See map in Harrison & Bates (1991). Comparison between *M. crassus*, *M. persicus* and *M. libycus* using Random Amplified DNA Polymorphism markers is reported by Naseri et al. (2006a).

Indian Desert Jird, *Meriones hurrianae* Jordon, 1867

Type Locality. India, Hurriana district.
Comments. Relying on published sources Lay (1967) concluded for the Indian desert jird to range from Hormozegan (Bandar Abbas) and S Kerman to the SE of Fars Province. Musser & Carleton (2005) state for *M. hurriane* to be distributed "primarily in Thar Desert in SE Iran, Pakistan, and NW India"; note that Thar Desert does not extend into Iran.

Libyan Jird, *Meriones libycus* Lichtenstein, 1823

Type Locality. Egypt, near Alexandria.
Comments. Lay (1967) found the Libyan jird to be widespread in Iran, except for the forested Caspian region; also missing from the region of Persian Gulf (Petter et al. 1957). See map in Harrison & Bates (1991). Yiğit et al. (2006) described karyotype from NW Iran. Comparison between *M. crassus*, *M. persicus* and *M. libycus* using Random Amplified DNA Polymorphism markers is reported by Naseri et al. (2006a).

Midday Jird, *Meriones meridianus* (Pallas, 1773)

Type Locality. SW Russia, Astrakhanskaya Oblast, Dosang.
Comments. Lay (1967) was familiar only with published sources for Khorasan; for subsequent reports see Neronov et al. (1974), Etemad (1978) and Darvish et al. (2006a). A report from SW of Kerman Pro-

vince (Neronov et al. 1974) is an outlier (ca. 400 km S from known southern range margin) and requires confirmation.

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

Type Locality. Iran, Kohrud Mts., N of Esfahan.
Comments. Lay (1967) states for the Persian jird to be widespread in Iran, with the exception of the Caspian forests; also missing from the border of Persian Gulf (Misonne 1959). The distribution of *M. persicus* and *M. libycus* overlap in Iran; the former, however lives on slopes, while the latter inhabits valleys (Misonne 1959). See map in Harrison & Bates (1991). Comparison between *M. crassus*, *M. persicus* and *M. libycus* using Random Amplified DNA Polymorphism markers is reported by Naseri et al. (2006a).

Tristram's Jird, *Meriones tristrami* Thomas, 1892

Type Locality. Palestine, Dead Sea region.
Comments. Lay (1967) found the Tristram's jird to be distributed in NW Iran (Azarbaijan, Qazvin, Kordestan, Tehran) ranging eastward up to E Tehran and southward up to Hamedan (Misonne 1959). For range see Harrison & Bates (1991). Yiğit et al. (2006) described karyotype from NW Iran.

Vinogradov's Jird, *Meriones vinogradovi* Hepner, 1931

Type Locality. Iran, Azarbaijan.
Comments. Lay (1967) listed records from NW Iran (Azarbaijan, Qazvin, Tehran, Zanjan). Misonne (1959) defined the eastern boundary somewhere between Qazvin and Karaj. National Natural History Museum Paris holds a specimen captured from Ahvaz (SW Iran). See map in Harrison & Bates (1991). Yiğit et al. (2006) described karyotype from NW Iran.

Zarudny's Jird, *Meriones zarudnyi* Heptner, 1937

Type Locality. Turkemenistan, Kushka.
Comments. Not recognized by Lay (1967). This species occurs in NE Iran along the borders with SE Turkmenistan and N Afghanistan (Musser & Carleton 2005). Neronov et al. (1974) reported Zarudny's jird from the Urumieh Lake region in NW Iran but this possibly relate on *M. tristrami*.

Great Gerbil, *Rhombomys opimus* (Lichtenstein, 1823)

Type Locality. Kazakhstan, Kyzyl-Ordinskaya Prov., Karakum Desert.
Comments (WP). Lay (1967) reported the great gerbil to occur in the Turkmen plains and in NE highlands from Dasht to Mashhad, Sarakhs, Baluchestan, Esfahan (cf. Misonne 1959) and through the Central Desert of Iran (Siahsarvie & Darvish 2007a). For a landscape-ecological analysis of distribution of this species in Afghanistan, Iran and Pakistan see Eliseyev & Neronov (1997).

Indian Gerbil, *Tatera indica* (Hardwicke, 1807)

Type Locality. India, United Prov., between Benares and Hardwar.
Comments. Lay (1967) reported Indian gerbil for "throughout the southern half of Iran from sea level to approximately 1370 m. above sea level." Reported in E Iran as N as Torbat-e-Jam in Khorasan (Darvish et al. 2006a). This species has been recorded from SE Turky (Misonne 1957, Yiğit et al. 2001); therefore, it may also occur in NW of Iran. Bates (1988) revised subspecific variation; Mirshamsi et al. (2007) provide data on karyotype and cranial variation in Iran.

Eastern Spiny Mouse, *Acomys dimidiatus* (Cretzschmar, 1826)

Type Locality. Egypt, Sinai.
Comments (WP). Lay (1967) listed only tree localities from Kerman and Fars Provinces. Misonne (1959) stated that this species lives in the border of Persian Gulf, from Chabahar to Bushehr, while it does not penetrate into the Iranian Plateau. This spiny mouse is reported by some authors as *A. cahirinus* (Geoffroy, 1803) (type locality: Egypt, Cairo).

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

Type Locality. Denmark, Sieland Isl.
Comments. Lay (1967) heavily underestimated species richness in genus *Apodemus* Kaup, 1829, by recognizing only *A. sylvaticus* (Linnaeus, 1758) (type locality: Sweden, Uppsala) which even does not occur in Iran (Musser & Carleton 2005). See Macholán et al. (2001), Frynta et al. (2001) and Musser & Carleton (2005) for systematics of the genus. *A. flavicollis* populates Zagros Mts. of west Iran. *A. arianus* (Blanford, 1881) (type locality: N Iran, Kohrud) belongs to *A. flavicollis* and is the oldest valid name from the Near and Middle East (Kryštufek 2002b).

Hyrcanian Field Mouse, *Apodemus hyrcanicus* Vorontsov, Boyeskorov et Mezhzherin, 1992

Type Locality. Azerbaijan, Lesser Caucasus, Astarinski District, Hirkauski Preserve, "Piavolil", 450 m.
Comments. Description postdates Lay (1967). Restricted to Hyrcanian forests along S border of the Caspian Sea and extends E to vicinity of Dasht (Musser & Carleton 2005). For morphometric comparison of Iranian population with *A. witherbyi* see Javdikar et al. (2005, 2007); see also under *A. avicennicus*.

Herb Field Mouse, *Apodemus uralensis* (Pallas, 1811)

Type Locality. Russia, S Ural Mts.
Comments (WP). Not recognised by Lay (1967). First reported by Kryštufek & Hutterer (2006) for Makidi in Arasbaran, NE Iran (East Azarbaijan).

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

Type Locality. S Iran, Fars, Shul.
Comments. Not recognised by Lay (1967). So far reported for Iran as junior synonym of *A. sylvaticus arianus* (Ellerman & Morrison-Scott 1951), as *A. arianus* (Musser & Carleton 1993, Zagorodnyuk et al. 1997) or *A. hermonensis* Filippucci, Simson et Nevo, 1989 (Macholán et al. 2001). See Kryštufek (2002b) for redescription of type specimens of *arianus* and *witherbyi*. Widespread in most of C and N Iran (Musser & Carleton 2005, Darvish et al. 2006a).

Avicenna Field Mouse, *Apodemus avicennicus* Darvish, Javidkar et Siahsarvie, 2005

Type Locality. Iran, Yazd, Shirkouh Mts.
Comments. Description postdates Lay (1967). This species was recently described by Darvish et al. (2006d) and is so far known only from its type locality in C Iran. For morphometric comparison with *A. hyrcanicus* and *A. witherbyi* see Siahsarvie & Darvish (2008). Naseri et al. (2006b) distinguished *A. avicennicus* from *A. whiterbyi* by using using Random Amplified DNA Polymorphism markers.

Indian Bush Rat, *Golunda ellioti* Gray, 1837

Type Locality. India, Dharwar.
Comments. Not listed by Lay (1967); first reported by Misonne (1990) from SE Iran.

House Mouse, *Mus musculus* Linnaeus, 1758

Type Locality. Sweden, Uppsala.
Comments. Lay (1967) reported *M. musculus* to be widespread in Iran, but his material possibly includes also *M. macedonicus*. Standard karyotype (2n=40) prevails in the Near East, incl. Iran (Gündüz et al. 2000, Yiğit et al. 2006) and the Iranian subspecies (or a species, depending on authority) is *M. m. domesticus* Schwarz et Schwarz, 1943. Darvish (1995a) distingushed two morphotypes in Khorasan and interprete them as subspecies: *M. m. bactrianus* Blyth, 1846 (S Khorasan), and *M. m. musculus* (N Khorasan). Specimens of S Khorasan and SE Iran ascribed to *M. m. bactrianus* are genetically very close to *M. m. castaneus* from India and Pakistan (Darvish et al. 2006a). It is long believed that house mice originate in the Middle East; the patterns of coalescence obtained from mitochondrial D-loop sequences corroborate the start of house mice commensalism in the Fertile Crescent, from where they expanded further west

following two routs: the Mediterranean route and the Black Sea route (Rajabi-Maham et al. 2008). For genetic transition in E Iranian Plateau see Darvish et al. (2006c).

Macedonian Mouse, *Mus macedonicus* Petrov et Ružić, 1983

Type Locality. Macedonia, near Valandovo.
Comments. Description postdates Lay (1967). Harrison & Bates (1991) plotted localities along the southern Caspian coast, but distrubutional details are little known in Iran. Darvish (1995b) reported sympatry with *M. musculus* for the vicinity of Qazvin, N Iran. As shown by mitochondrial DNA markers, this species displays low genetic diversity in Turkey and Iran (Gündüz et al. 2000) and has undergone a recent and rapid radiation in the Middle East (Macholán et al. 2007).

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

Type Locality. India [uncertain].
Comments. Lay (1967) gives range as follows: "seemingly ranges over the eastern basin region, the Turkmen plains, the southwestern Caspian coastal plain, the Khuzistan plain and the Persian Gulf coastal plain south at least to Bushehr." *N. indica* is known also from Hamedan and Ghasr-e Shirin (W Iran), Karaj and Elburz in Gorgan-Shahrud road (Misonne 1959), various localities of Khorasan (Darvish et al. 2006a), Birjand (S Khorassan; Ebrahimi & Darvish 2001), Kerman and Seistan & Baluchestan (Darvish 2001) and in Hormozgan (S Iran; R. Siahsarvie, unpubl.). Actualy, the species is present in every part of Iran, providing water and agriculture is available, but is absent from Central Desert and NW Iran.

Brown rat, *Rattus norvegicus* (Berkenhout, 1769)

Type Locality. United Kingdom.
Comments. Lay (1967), largely relying on Misonne (1959), reported brown rat for coastal plains around the Caspian Sea and Persian Gulf, Khuzistan and Turkmen plain, along the major river valleys and an "isolated introduced population" in Tehran. Harrison & Bates (1991) plot records along the Caspian coast, the Tigris River and around the Persian Gulf. It also occurs in Mashhad in NE Iran (Darvish et al. 2006a, Kayvanfar et al. in press).

Roof Rat, *Rattus rattus* (Linnaeus, 1758)

Type Locality. Sweden, Uppsala.
Comments. Lay (1967) gave same range as for *R. norvegicus*; see also map in Harrison & Bates (1991). Based on unpublished reports of the municipality of Shiraz, this species is one of the main urban pests in this city.

Himalayan Rat, *Rattus pyctoris* (Hodgson, 1845)

Type Locality. Nepal.
Comments. Lay (1967) quoted Etemad (1964) who reported Himalayan rat as *Rattus rattoides turkestanicus* (Satunin, 1903) from the Moghan village in NE Iran. Further records are listed from the vicinity of Mashhad (Seidmoosavi et al. 2001) and various places in NE Iran (Darvish et al. 2006a).

Fat Dormouse, *Glis glis* (Linnaeus, 1766)

Type Locality. Slovenia.
Comments. As stated by Lay (1967), the fat dormouse occurs in forests along the Caspian coast and on the Elbruz Mts. Iranian subspecies is *G. g. persicus* (Erxleben, 1777) (type locality: Iran, Gilan).

Forest Dormouse, *Dryomys nitedula* (Pallas, 1778)

Type Locality. Russia, Lower Volga River.
Comments. Lay (1967) reported the forest dormouse for Esfahan, Khuzistan, Tehran, Kerman, Kordestan, Mazandaran, and Azarbaijan Provinces. Subsequently it was found also in N Khorasan (Etemad 1978, Darvish et al. 2006a) and central desert of Iran (Siahsarvie & Darvish 2007a). Range is probably mosaic.

Masked Mouse-tailed Dormouse, *Myomimus personatus* Ognev, 1924

Type Locality. Turkmenistan, Kopetdag Mts., Turkemenistan-Iran border.
Comments. Not reported by Lay (1967). Present in the mountains in extreme NE Iran (Rossolimo et al. 2001).

Setzer's Mouse-tailed Dormouse, *Myomimus setzeri* Rossolimo, 1976

Type Locality. Iran, Kordestan, 4 km W of Bane.
Comments. Description postdates Lay (1967). Occurs in Kordestan (Bane, Sanandaj) and Lorestan (Boroujerd; Obuch 2001, Rossolimo et al. 2001). Obuch (2001) reported from C Zagros Mts. a form, intermediate in size to *M. personatus* and *M. setzeri*.

Indian Crested Porcupine, *Hystrix indica* Kerr, 1792

Type Locality. India.
Comments. According to Lay (1967) the Indian crested porcupine "ranges through the Turkmen Plains, the forested northern slopes of the Elbruz Mts., the Moghan steppe, the Khuzistan Plains, and the Zagros Mts. in the vicinity of Kazerun." It also occurs through the whole Iranian central plateau (Misonne 1959). Ziaie (1996) reports it from most of the localities in Iran except for Azarbaijan and Kurdestan.

Coypu, *Myocastor coypus* (Molina, 1782)

Type Locality. Chile, Santiago Prov., Rio Maipo.
Comments. Not listed by Lay (1967). Species native to South America but widely introduced around the World. Feral coypu was reported from eastern Turkey (Kryštufek & Vohralík 2001). It is believed that it has been introduced to Iran through Azerbaijan and currently occurs in NW Iran on the Aras River and in Astara (Gromov & Erbajeva 1995, Firouz 1999, Ziaie 1996).

Rabbits, Hares, and Pikas, Order Lagomorpha Brandt, 1855

Afghan Pika, *Ochotona rufescens* (Gray, 1842)

Type Locality. Afghanistan, Baber's (?) Tomb, Kabul.
Comments. Lay (1967) listed records from Esfahan, Fars, Khorasan, Mazandaran, Semnan, and Kerman, and concluded that the Afghan pika "inhabits all of the mountainous regions of Iran." Reviewed by Čermák et al. (2006) who showed that the range extends over the Zagros Mts. some 600 km to the NW as far as West Azarbaijan and NE Turkey.

European Hare, *Lepus europeus* Pallas, 1778

Type Locality. Poland, Silesia.
Comments. Lay (1967) found hares to occur throughout Iran and classified them as *Lepus capensis* Linnaeus, 1758 (type locality: South Africa, Cape of Good Hope). Taxonomy of the genus *Lepus* Linnaeus, 1758, is still poorly understood in the Middle East. We follow Hoffmann & Smith (2005) who report range of *L. capensis* to the west of the Euphrates and list for Iran *L. europaeus* and *L. tolai*. Hoffmann & Smith (2005) report European hare for W Iran and accept the eastern border ("from S Caspian Sea south to Persian Gulf") as defined by Angermann (1983). Baloutch (1978) described four subspecies from Iran (all under *L. capensis*): *astaricus* (junior synonym of *L. europeaus connori* Robinson, 1918; cf. Hoffmann & Smith 2005), *cheybani* (considered as a valid subspecies of *L. tolai* by Hoffmann & Smith 2005), *petteri* (considered as a junior synonym of *cheybani* by Hoffmann &Smith 2005) and *habibi* (junior synonym of *L. tolai buchariensis* Ognev, 1922; Hofmann & Smith 2005).

Tolai Hare, *Lepus tolai* Pallas, 1778

Type Locality. E Russia, valley of Selenga River.

Comments. Not listed by Lay (1967). Formerly included to *L. europaeus*, *L. capensis*, or *L. tibetanus* Waterhouse, 1841. Hoffmann & Smith (2005) report tolai hare to occur in "steppes north of Caspian Sea soutward along eastern shore of Caspian to E Iran".

POSSIBLE ADDITIONS TO THE SPECIES LIST

Asian House Shrew, *Suncus murinus* (Linnaeus, 1766)

Type Locality. Indonesia, Java.
Comments. Not listed by Lay (1967). Harrison & Bates (1991) report Asian house shrew for the area of Basra along the lower Tigris River in Iraq which makes its presence in the adjacent Iranian Khuzestan highly probable.

Turkmen Long-eared Bat, *Plecotus turkmenicus* Strelkov, 1988

Type Locality. Turkmenistan, Sarykamysh basin, Kurgankyr.
Comments. Not recognized by Lay (1967) nor DeBlase (1980). Spitzenberger et al. (2006) proved this form a species of its own, which inhabits deserts of W Turkmenistan and Kazakhstan. Its presence in deserts of NE Iran is thus possible.

Gobi Big Brown Bat, *Eptesicus gobiensis* Bobrinskoi, 1926

Type Locality. Mongolia, Gobi Altai Mts., Burchastei-tala.
Comments. Reported for Iran by Simmons (2005), probably based on misinterpeted findings of *E. bobrinskoi* by Hanák & Horáček (1986). However, since *E. gobiensis* occurs in Afghanistan (Felten 1971), there remains a probability of its occurrence in easternmost Iran.

Greater Mouse-eared Bat, *Myotis myotis* (Borkhausen, 1797)

Type Locality. Germany, Thuringia.
Comments. Not listed by Lay (1967). Since this species occurs in western portion of Turkey east to Artvin area (Albayrak 2003), its occurrence in most NW areas of Iran cannot be excluded (see also Sharifi et al. 2000).

Eurasian Beaver, *Castor fiber* Linnaeus, 1758
Type Locality. Sweden.
Comments. Not listed by Lay (1967). Blanford (1876) inserted beaver in the Persian fauna with some doubts which was categorically denied by Satunin (1906) and Misonne (1959). Beaver's presence in Iran is documented from the Neolithic (Legge & Rowley-Conwy 1986). Historical reports are unsubstantial also for Turkey (Harper 1945).

Günther's Vole, *Microtus guentheri* (Danford et Alston, 1880)

Type Locality. Turkey, Karamanmaraş.
Comments. Not recognized by Lay (1967). Presence in Iran is doubtfull. Social voles from NW Iran, previously ascribed to *M. irani*, posses the same diploid number of chromosomes as *M. guentheri* 2n=54 (Golenischev et al. 2002a, b). It is likely, however, that these populations all belong to *M. qazvinensis* and that *M. guentheri* is absent from Iran (Shenbrot & Krasnov 2005).

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

Type Locality. Israel, Jaffa.
Comments. So far not reported from Iran, but exists in SE Turkey. It may be present in north-western Iran (Misonne 1959, Musser & Carleton 2005).

Great Balkhan Calomyscus, *Calomyscus mystax* Kashkarov, 1925

Type Locality. SW Turkmenistan, Nibid-Dag, Bashi-Mugur.

Comments. Not recognized by Lay (1967). Reported for the Kopetdag region in Khorasan (Graphodatsky et al. 2000, Somayeh et al. 2008) but this population may belong to *C. elburzensis* (Norris et al. 2008).

Broad-toothed Field Mouse, *Apodemus mystacinus* (Danford et Alston, 1877)

Type Locality. Turkey, Adana Province.
Comments. Not reported by Lay (1967). Listed for NW Iran by Musser & Carleton (1993), but this statement was not repeated subsequently (Musser & Carleton 2005).

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

Type Locality. Iraq, Basra, Al-Qurna.
Comments. Description postdates Lay (1967). Distributed in marshes at the confluence of Tigris and Euphrates rivers in SE Iraq (Khajuria 1981); possibly occurs marginally also in Iran (Musser & Carleton 2005).

European Rabbit, *Oryctolagus cuniculus* (Linnaeus, 1758)

Type Locality. Germany.
Comments. Not listed by Lay (1967). Introduced to the Caspian islands in Russia (Bulla, Glinyanyi, Losa, Nargin, Ovlivnoy, Svinoy, Zhiloi, Zimbil'nyi; Flux & Fullagar 1992) and mapped for SW Caspian by Gibb (1990). Putative presence in Iran needs confirmation.

SOUHRN

První pokusy o studium savců současného území Iranu jsou známé z 18. století a jsou spjaty s klasickými autory (Linnaeus 1758, Gmelin 1774, Pallas 1780). První soupis savců vytvořený Blanfordem (1876) přinesl 78 druhů uváděných z "Východní Persie", následovalo kompendium palearktických a indomalajských savců Ellermana & Morrisona-Scotta (1951), kteří uvádějí pro Iran 128 druhů. Následně Misonne (1959) provedl detailní zoogeographickou analysu fauny savců regionu, která byla založena na znalosti areálů rozšíření jím rozlišovaných 112 savčích druhů. Nejvýznamnější příspěvek k fauně savců Iranu byl sepsán Layem (1967), jenž zpracoval rozsáhlou sbírku savců shromážděnou Streetovou expedicí do Iranu z let 1962–1963. V předloženém příspěvku presentujeme soupis druhů savců Iranu a připomínáme všechny změny, které ve znalosti fauny následovaly po vydání soupisu Layova (1967). Uvádíme 191 druhů ve 93 rodech a 10 řádech; dva druhy fauny jsou na území Iranu vyhubeny (tygr, *Panthera tigris* a lev, *P. leo*), zatímco jiné dva jsou introdukovány (mýval severní, *Procyon lotor*, a nutrie, *Myocastor coypus*, případně také králík divoký, *Oryctolagus cuniculus*). Hlodavci (38.2 % druhů) jsou nejdiversifikovanější skupinou fauny savců Iranu, následováni netopýry (23.6 %) a šelmami (16.7 %).

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