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THE MAMMALS OF MÉXICO: COMPOSITION, DISTRIBUTION, AND CONSERVATION STATUS

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It is well known that México is among the most diverse countries in the world. In about 1.6% of the emerged land surface of earth, it holds about 10% of the living species (Ceballos and Navarro, 1991; Ceballos and Brown, 1995; Mittermeier and Goettsch de M., 1992; Mittermeier et al., 1997). Although in recent years several authors have compiled lists of terrestrial and marine Mexican mammals (Arita and Ceballos, 1997; Aurióles, 1993; Cervantes et al., 1994; Ramírez-Pulido et al., 1983, 1986, 1996; Salinas and Ladrón de Guevara, 1993; Torres et al., 1995), there have been many taxonomic changes, descriptions of new species, and new records of species that have signifi-

cantly increased México's mammalian inventory. In this paper we present an updated checklist that includes the complete mammal fauna of México as currently understood, identify its main affinities and species sources such as endemism and insularity, as well as the conservation status for all species. We also include a section where we discuss the introduced species that have become established in México. By updating the list of Mexican mammal species, we hope to provide a platform that stimulates additional work on the mammals of our country, and further entices research by Mexican and foreign researchers.

METHODS

To compile the list, we used as a base line the works by Ramírez-Pulido et al. (1996) and Arita and Ceballos (1997). We complemented the initial list with additional references detailed below. We excluded introduced murid rodents (*Mus musculus*, *Rattus*

norvegicus, and *Rattus rattus*) and domesticated species with feral populations, such as dogs, cats, goats, and donkeys. Our nomenclature follows Wilson and Reeder (1993). Additions and modifications are justified as follows:

- 1) We follow Hershkovitz (1992) in recognizing several families in the Order Didelphimorphia.
- 2) We follow Woodman and Timm (1999, 2000) for the rearrangement of specific names of *Cryptotis*.
- 3) We recognize three species of *Notiosorex* following Carraway and Timm (2000).
- 4) We follow Yates and Salazar (in press) in recognizing *Scapanus anthony* as a valid species, endemic to the Sierra de Juárez, Baja California.
- 5) Bats of the genus *Centronycteris* in the northern part of the range were determined to be a separate species by Simmons and Handley (1998)
- 6) The subfamily arrangement within Phyllostomidae is still in discussion. Wetterer et al. (2000) presented a purportedly strong analysis based on "total evidence", proposing the existence of seven subfamilies, but Baker et al. (2000) analyzed a different character set (DNA sequence from the recombination-activating gene-2) and their data do not support some of the proposals by Wetterer et al. (2000). There are agreements on some groups being monophyletic as Desmodontinae, Glossophaginae, and Stenodermatinae (except *Carollia*). Monophyly of those genera traditionally included within Phyllostominae remains controversial, as does the inclusion of *Carollia* within Stenodermatinae. Here, we follow the classification of McKenna and Bell (1997), recognizing the subfamily Phyllostominae with no tribe designations, and retaining *Carollia* within the Stenodermatinae.
- 7) We consider more than one genus in the previously recognized *Micronycteris* following Simmons and Voss (1998) and Wetterer et al. (2000). We concur with Simmons (1996) in that the valid name for the species of *Micronycteris* with a shallow notch on the ear band, occurring in México and northern Central America, is *M. microtis* instead of *M. megalotis*.
- 8) *Trinycteris nicefori* was recently collected in México by L. Leon and J. Arroyo Cabrales.
- 9) We follow Simmons and Voss (1998) and Wetterer et al. (2000) in recognizing *Phylloderma* as different from *Phyllostomus*.
- 10) We follow Baker et al. (2002) in recognizing *Carollia sowellii* as distinct from *C. brevicauda*.
- 11) Another controversy that has not been resolved, even with recent data analysis (Baker et al., 2000; Van Den Bussche et al., 1998; Wetterer et al., 2000) is whether *Dermanura* is a subgenus of *Artibeus*, or a sister genus. We think that until further data falsify the sister-relationships of those taxa, they should be recognized as separate genera.
- 12) The use of the subfamily Myotinae and the family Antrozoidae follows Simmons (1998).
- 13) Based on a large set of phylogenetic data for the species within the Order Primates, Groves (2001) proposed the splitting of the Family Cebidae, with the genera *Alouatta* and *Ateles*, the only two currently occurring in México, allocated within the Family Atelidae. Also, the name for the subfamily where *Alouatta* is allocated is changed from Alouattinae to Mycetinae.
- 14) *Mustela nigripes* was successfully reintroduced in the Janos - Casas Grandes region in northwestern Chihuahua recently (Pacheco et al., 2001). In the summer of 2002 we recorded the first black-footed ferrets born in the wild in México.
- 15) We follow Dragoo and Honeycutt (1997) in recognizing the Family Mephitidae as different from Mustelidae.
- 16) Records of *Mesoplodon peruvianus* near La Paz, Baja California Sur are based on Urbán-R. and Aurióles-G. (1992). An additional unidentified species of *Mesoplodon* has been recorded in México (Salinas and Ladrón de Guevara, 1993).
- 17) The Galapagos fur seal (*Arctocephalus galapagoensis*) was recently recorded in the coast of Chiapas (E. Espinosa and G. Ceballos, pers. obs.).
- 18) *Mazama pandora* from the Yucatán peninsula was given specific status, and was separated from *M. americana* by Medellín et al. (1998).

19) We did not follow Grubb (1993) and Ramírez-Pulido et al. (1996) in using *Pecari tajacu* for the collared peccary, and retain *Tayassu tajacu* because of the arguments provided by Wright (1989).

20) We follow Hall (1981) in considering *Chaetodipus anthonyi* and *Ch. dalquesti* as distinct species. Williams et al. (1993) considered them conspecific with *Ch. fallax* and *Ch. arenarius*, respectively but an analysis of their proposals was not provided.

21) We include *Chaetodipus eremicus* as different from *C. penicillatus*, as proposed by extensive analyses by Lee et al. (1996).

22) The populations of *Chaetodipus baileyi* west of the Colorado river, from southern California to the Baja California Peninsula, were recently recognized as a distinct species (*Ch. rudinoris*) on the basis of mitochondrial DNA by Riddle et al. (2000a).

23) Similarly, the populations of *Peromyscus eremicus* west of the Colorado river, from southern California to the Baja California Peninsula, were recently recognized as a distinct species (*Peromyscus fraterculus*) by Riddle et al. (2000b).

24) We recognize *Peromyscus sagax* as a valid taxon, endemic to Central Michoacan, following Bradley et al. (1996), which used molecular, cytological, and morphometric data.

25) Hafner et al. (2001) used genetic and molecular data to evaluate the status of insular species of *Peromyscus* of Baja California. We did not follow them in considering *P. stephani*, *P. interparietalis*, *P. caniceps*, and *P. dickeyi* as subspecies of *P. boylii*, *P. eremicus*, *P. fraterculus*, and *P. merriami*, respectively. Additional morphometric, karyotypic, and allozymic data should be used to determine level of difference of the island's populations.

26) We follow Edwards et al. (2001) in recognizing the *Neotoma albigula* populations east of the Conchos river as a different species (*Neotoma leucodon*).

27) Recently, Matocq (2002) analyzed morphological, mitochondrial sequence, and nuclear microsatellite data, and based on qualitative cranial, gland penes, and molecular characters data, proposed that the dusky-footed woodrat, *Neotoma fuscipes*, is countituted by two isolated taxonomic units, corresponding to those southern populations the specific name *Neotoma macrotis*, with no subspecies recognized at this time.

28) A new species of *Habromys* (*H. delicatulus*) has been recently described from Central México (Carleton et al., 2002).

29) We follow the International Commission on Zoological Nomenclature (ISCN, 1998) in recognizing the Family Cuniculidae and the genus *Cuniculus* as the valid name for *C. paca*.

30) We followed Ruedas (1998) in considering the populations of *Sylvilagus floridanus* of southern Texas and northern Coahuila as a different species (*S. robustus*).

We gathered information on distribution and zoogeographic affinities from several sources. Distributional patterns were determined using the maps of Hall (1981) and new information published since then, such as Ceballos et al. (in press), and Medellín et al. (1997). We classified Mexican mammals according to their recent geographical distribution (DIST) as follows: 1) Mexican species shared with other North American countries (NA), 2) Mexican species shared with other South American countries (SA), 3) species with wide distributional ranges that include both North and South America (AM), 4) species that are endemic to Middle America, that is, México and Central America (MA), and 5) Mexican endemics (MX).

The list of insular species (INS) was compiled from Ceballos and Rodríguez (1993), Engstrom et al. (1989), Jones and Lawlor (1965), Lawlor (1983), Ramírez-Pulido and Müdespacher (1987), Sánchez-H. (1986), and Wilson (1991). Species are described as fully insular; i.e. not present in the mainland (I), continental (C), and insular-continental (IC), species that combine the two patterns.

Conservation status was compiled from the Mexican list of species at risk (SEMARNAT, 2000), IUCN (Hilton-Taylor, 2000; see also <http://www.redlist.org/search/search-expert.php>) and CITES (2001). CITES classifies species subject to international trade in three appendices. Appendix I includes "all species threatened with extinction which are or may be affected by trade. Trade in specimens of these species must be subject to particularly strict regulation in order not to endanger further their survival and must only be authorized in exceptional circumstances." Appendix II includes "all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such

species is subject to strict regulation in order to avoid utilization incompatible with their survival, and other species must be subject to regulation specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival, and other species which must be subject to regulation in order that trade in specimens of certain species referred to in the previous paragraph may be brought under effective control." Finally, Appendix III includes "species which any Party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as needing the co-operation of other Parties in the control of trade" (see also <http://www.cites.org>).

SPECIES COMPOSITION, DIVERSITY, AND DISTRIBUTION

The mammal fauna of México includes 525 native species in 292 genera, 47 families, and 12 orders (Table 1, Fig. 1). México ranks the second in the world in terms of numbers of mammals, tied with Indonesia, and behind Brazil (Ceballos and Brown, 1995; Mittermeier et al., 1997). Rodents and bats are the most species-rich orders contributing over 77 % of all species (Table 1). Other orders contributing large numbers are carnivores, cetaceans, insectivores, and lagomorphs. On average, each genus is represented by less than two species; however, there are speciose genera like *Peromyscus* (46 spp), *Myotis* (19 spp), *Chaetodipus* (18 spp), *Neotoma* (17 spp), *Reithrodontomys* (13 spp), and *Cryptotis* (13 spp).

Thirty percent (159 spp) of all the species and four percent of the genera (*Megasorex*, *Musonycteris*, *Pappogeomys*, *Zygogeomys*, *Osgoodomys*, *Megadontomys*, *Nelsonia*, *Neotomodon*, *Xenomys*, *Hodomys*, *Romerolagus*) are endemic to the country (see also Ceballos and Rodriguez, 1993; Ceballos et al., 1998; Ramirez-Pulido and Müdespacher, 1987). Endemic species belong to 7

orders and 12 families, but the majority (112 spp; 71%) are rodents.

The remaining fauna is a combination of Neotropical, Nearctic, or shared species that contribute two-thirds of the Mexican species (see also Alvarez and de LaChica, 1974; Arita, 1993; Ortega and Arita, 1998). Similar patterns have been found in many other groups of plants and animals (Ramammorthy et al., 1993). No other continental country in the world, however, contains the complete limit between any two biogeographic regions.

The proportion of terrestrial mammal species among orders also shows that the Mexican fauna results from the combination of Nearctic and Neotropical elements. In all orders but one, the proportion of species for México is intermediate between that for the Nearctic and the Neotropical realms. The exception is for species of the order Chiroptera, which account for more than 30% of the whole Mexican fauna of terrestrial mammals, and is mainly composed of Neotropical species.

Table 1. Species diversity and composition of the mammals from Mexico.

Order	Family	Genera	Species	Endemic Species
DIDELPHIMORPHIA	3	6	8	1
XENARTHRA	2	4	4	0
INSECTIVORA	2	6	32	19
CHIROPTERA	9	64	138	15
PRIMATES	1	2	3	0
CARNIVORA	8	27	40	3
CETACEA	7	25	39	1
SIRENIA	1	1	1	0
PERISSODACTYLA	1	1	1	0
ARCTIODACTYLA	4	7	10	0
RODENTIA	8	46	234	113
LAGOMORPHA	1	3	15	7
TOTAL	47	192	525	159

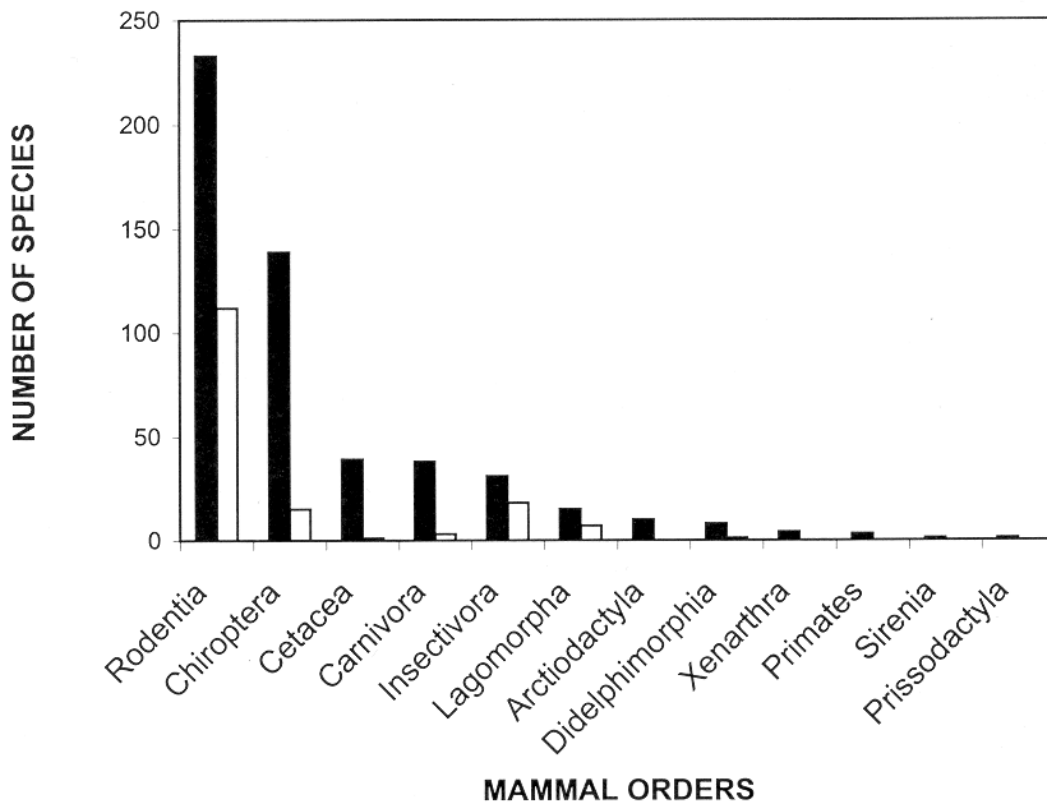


Figure 1. Number of species in the 12 orders of mammals represented in Mexico. The closed bars represent all species; the open bars represent endemic species.

	INS	DIST	SEMARNAT	IUCN/ CITES
ORDER DIDELPHIMORPHIA				
FAMILY MARMOSIDAE				
SUBFAMILY MARMOSINAE				
<i>Marmosa canescens</i> (J. A. Allen, 1893)	I C	MX		
<i>Marmosa mexicana</i> Merriam, 1897	C	MA		
FAMILY CALUROMYIDAE				
SUBFAMILY CALUROMYINAE				
<i>Caluromys derbianus</i> (Waterhouse, 1841)	C	SA	Pr	VU
FAMILY DIDELPHIDAE				
SUBFAMILY DIDELPHINAE				
<i>Chironectes minimus</i> (Zimmermann, 1780)	C	SA	P	
<i>Didelphis marsupialis</i> Linnaeus, 1757	I C	SA		
<i>Didelphis virginiana</i> Kerr, 1792	I C	AM		
<i>Metachirus nudicaudatus</i> (Desmarest, 1817)	C	SA		
<i>Philander opossum</i> (Linnaeus, 1758)	C	SA		
ORDER XENARTHRA				
FAMILY DASYPODIDAE				
SUBFAMILIA DASYPODINAE				
<i>Cabassous centralis</i> (Miller, 1899)	C	SA	P	III
<i>Dasyus novemcinctus</i> Linnaeus, 1758	I C	AM		
FAMILY MYRMECOPHAGIDAE				
<i>Cyclopes didactylus</i> (Linnaeus, 1758)	C	SA	P	
<i>Tamandua mexicana</i> (Saussure, 1860)	C	SA	P	
ORDER INSECTIVORA				
FAMILY SORICIDAE				
SUBFAMILY SORICINAE				
<i>Cryptotis alticola</i> (Merriam, 1895)	C	MX		
<i>Cryptotis goldmani</i> (Merriam, 1895)	C	MX	*	
<i>Cryptotis goodwini</i> Jackson, 1933	C	MA		

	INS	DIST	SEMARNAT	IUCN/ CITES
<i>Cryptotis griseoventris</i> Jackson, 1933	C	MA		
<i>Cryptotis magna</i> (Merriam, 1895)	C	MX	Pr	
<i>Cryptotis mayensis</i> (Merriam, 1901)	C	MA	Pr	
<i>Cryptotis merriami</i> Choate, 1970	C	MA		
<i>Cryptotis mexicana</i> (Coues, 1877)	C	MX	*	
<i>Cryptotis nelsoni</i> (Merriam, 1895)	C	MX		
<i>Cryptotis obscura</i> (Merriam, 1895)	C	MX		
<i>Cryptotis parva</i> (Say, 1823)	C	AM	*	
<i>Cryptotis peregrina</i> (Merriam, 1895)	C	MX		
<i>Cryptotis phillipsii</i> (Schaldach, 1966)	C	MX		
<i>Megasorex gigas</i> (Merriam, 1897)	C	MX	A	
<i>Notiosorex crawfordi</i> (Coues, 1877)	IC	NA	A	
<i>Notiosorex evotis</i> (Coues, 1877)	C	MX		
<i>Notiosorex villai</i> Carraway & Timm, 2000	C	MX		
<i>Sorex arizonae</i> Diersing & Hoffmeister, 1977	C	NA	P	VU
<i>Sorex emarginatus</i> Jackson, 1925	C	MX		
<i>Sorex macrodon</i> Merriam, 1895	C	MX	Pr	
<i>Sorex milleri</i> Jackson, 1947	C	MX	Pr	VU
<i>Sorex monticolus</i> Merriam, 1890	C	NA		
<i>Sorex oreopolus</i> Merriam, 1892	C	MX		
<i>Sorex ornatus</i> Merriam, 1895	C	NA	*	
<i>Sorex saussurei</i> Merriam, 1892	C	MA	*	
<i>Sorex sclateri</i> Merriam, 1897	C	MX	Pr	EN
<i>Sorex stizodon</i> Merriam, 1895	C	MX	Pr	EN
<i>Sorex ventralis</i> Merriam, 1895	C	MX		
<i>Sorex veraepacis</i> Alston, 1877	C	MA	Pr	

FAMILY TALPIDAE

SUBFAMILY TALPINAЕ

<i>Scalopus aquaticus</i> (Linnaeus, 1758)	C	NA	A	
<i>Scapanus latimanus</i> (Bachman, 1842)	C	NA	A	
<i>Scapanus anthony</i> (Allen, 1893)	C	MX	A	

ORDER CHIROPTERA

FAMILY EMBALLONURIDAE

SUBFAMILY EMBALLONURINAE

<i>Balantiopteryx io</i> Thomas, 1904	C	MA		
<i>Balantiopteryx plicata</i> Peters, 1867	IC	SA		
<i>Centronycteris centralis</i> Thomas, 1912	C	SA	Pr	
<i>Diclidurus albus</i> Wied-Neuwied, 1820	C	SA		
<i>Peropteryx kappleri</i> Peters, 1867	C	SA	Pr	
<i>Peropteryx macrotis</i> (Wagner, 1843)	C	SA		
<i>Rynchonycteris naso</i> (Wied-Neuwied, 1820)	C	SA	Pr	
<i>Saccopteryx bilineata</i> (Temminck, 1838)	C	SA		
<i>Saccopteryx leptura</i> (Schreber, 1774)	C	SA	Pr	

	INS	DIST	SEMARNAT	IUCN/ CITES
FAMILY NOCTILIONIDAE				
<i>Noctilio albiventris</i> Desmarest, 1818	C	SA	Pr	
<i>Noctilio leporinus</i> (Linnaeus, 1758)	C	SA		
FAMILY MORMOOPIDAE				
<i>Mormoops megalophylla</i> (Peters, 1864)	IC	AM		
<i>Pteronotus davyi</i> Gray, 1838	IC	SA		
<i>Pteronotus gymnonotus</i> Natterer, 1843	C	SA	Pr	
<i>Pteronotus parnellii</i> (Gray, 1843)	IC	SA		
<i>Pteronotus personatus</i> (Wagner, 1843)	IC	SA		
FAMILY PHYLLOSTOMIDAE				
SUBFAMILY MACROTINAE				
<i>Macrotus californicus</i> Baird, 1858	C	NA		
<i>Macrotus waterhousii</i> Gray, 1843	IC	MA		
SUBFAMILY MICRONYCTERINAE				
<i>Glyphonycteris sylvestris</i> Thomas, 1896	C	SA		
<i>Micronycteris brachyotis</i> (Dobson, 1879)	C	SA	A	
<i>Micronycteris microtis</i> Miller, 1898	IC	SA		
<i>Micronycteris schmidtorum</i> Sanborn, 1935	C	SA	A	
<i>Trinycteris nicefori</i> Sanborn 1949	C	SA		
SUBFAMILY DESMODONTINAE				
<i>Desmodus rotundus</i> (E. Geoffroy, 1810)	C	SA		
<i>Diaemus youngi</i> (Jentink, 1893)	C	SA	Pr	
<i>Diphylla ecaudata</i> Spix, 1823	C	AM		
SUBFAMILY VAMPYRINAE				
<i>Chrotopterus auritus</i> (Peters, 1856)	C	SA	A	
<i>Trachops cirrhosus</i> (Spix, 1823)	C	SA	A	
<i>Vampyrum spectrum</i> (Linnaeus, 1758)	C	SA	P	
SUBFAMILY PHYLLOSTOMINAE				
TRIBE PHYLLOSTOMINI				
<i>Lonchorhina aurita</i> Tomes, 1863	C	SA	A	
<i>Macrophyllum macrophyllum</i> (Schinz, 1821)	C	SA	A	
<i>Mimon cozumelae</i> Goldman, 1914	C	SA	A	
<i>Mimon crenulatum</i> (E. Geoffroy, 1810)	C	SA	A	
<i>Phylloderma stenops</i> Peters, 1865	C	SA	A	

	INS	DIST	SEMARNAT	IUCN/ CITES
<i>Phyllostomus discolor</i> Wagner, 1843	C	SA		
<i>Tonatia brasiliense</i> (Peters, 1866)	C	SA	A	
<i>Tonatia evotis</i> Davis & Carter, 1978	C	MA	A	
<i>Tonatia saurophila</i> Koopman & Williams, 1951	IC	SA	A	

TRIBE GLOSSOPHAGINI

<i>Anoura geoffroyi</i> Gray, 1838	C	SA		
<i>Choeroniscus godmani</i> (Thomas, 1903)	C	SA		
<i>Choeronycteris mexicana</i> Tschudi, 1844	C	NA	A	
<i>Glossophaga commissarisi</i> Gardner, 1962	C	SA		
<i>Glossophaga leachii</i> (Gray, 1844)	C	MA		
<i>Glossophaga morenoi</i> Martínez & Villa, 1938	C	MX		
<i>Glossophaga soricina</i> (Pallas, 1766)	C	SA		
<i>Hylonycteris underwoodi</i> Thomas, 1903	C	MA		
<i>Leptonycteris curasoae</i> Miller, 1900	IC	AM	A	VU
<i>Leptonycteris nivalis</i> (Saussure, 1860)	C	NA	A	EN
<i>Lichonycteris obscura</i> Thomas, 1895	C	SA		
<i>Musonycteris harrisoni</i> Schaldach & McLaughlin, 1960	C	MX	P	VU

TRIBE STENODERMATINI

<i>Artibeus hirsutus</i> Andersen, 1906	C	MX		VU
<i>Artibeus intermedius</i> J. A. Allen, 1897	IC	SA		
<i>Artibeus jamaicensis</i> Leach, 1821	IC	SA		
<i>Artibeus lituratus</i> (Olfers, 1818)	IC	SA		
<i>Carollia sowelli</i> Baker et al., 2002	C	MA		
<i>Carollia perspicillata</i> (Linnaeus, 1758)	C	SA		
<i>Carollia subrufa</i> (Hahn, 1905)	C	MA		
<i>Centurio senex</i> Gray, 1842	C	SA		
<i>Chiroderma salvini</i> Dobson, 1878	C	SA		
<i>Chiroderma villosum</i> Peters, 1860	C	SA		
<i>Dermanura aztecus</i> Andersen, 1906	C	MA		
<i>Dermanura phaeotis</i> (Miller, 1902)	IC	SA		
<i>Dermanura toltecus</i> (Saussure, 1860)	C	MA		
<i>Dermanura watsoni</i> Thomas, 1901	C	SA	Pr	
<i>Enchisthenes hartii</i> (Thomas, 1892)	C	SA	Pr	
<i>Platyrrhinus helleri</i> (Peters, 1866)	C	SA		
<i>Sturnira lilium</i> (E. Geoffroy, 1810)	C	SA		
<i>Sturnira ludovici</i> Anthony, 1924	C	SA		
<i>Uroderma bilobatum</i> Peters, 1866	C	SA		
<i>Uroderma magnirostrum</i> Davis, 1968	C	SA		
<i>Vampyressa pusilla</i> (Wagner, 1843)	C	SA		
<i>Vampyrodes caraccioli</i> (Thomas, 1889)	C	SA		

FAMILY NATALIDAE

<i>Natalus stramineus</i> Gray, 1838	IC	SA		
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	INS	DIST	SEMARNAT	IUCN/ CITES
FAMILY THYROPTERIDAE				
<i>Thyroptera tricolor</i> Spix, 1823	C	SA	Pr	
FAMILY VESPERTILIONIDAE				
SUBFAMILY MYOTINAE				
<i>Myotis albescens</i> (E. Geoffroy, 1806)	C	SA	Pr	
<i>Myotis auriculus</i> Baker & Stains, 1955	C	AM		
<i>Myotis californicus</i> (Audubon & Bachman, 1842)	C	AM		
<i>Myotis carteri</i> La Val, 1973	C	MX		
<i>Myotis ciliolabrum</i> Merriam, 1886	C	NA		
<i>Myotis elegans</i> Hall, 1962	C	MA		
<i>Myotis evotis</i> (H. Allen, 1864)	C	NA	*	
<i>Myotis findleyi</i> Bogan, 1978	I	MX		VU
<i>Myotis fortidens</i> Miller & Allen, 1928	C	MA		
<i>Myotis keaysi</i> J. A. Allen, 1914	C	SA		
<i>Myotis lucifugus</i> (Le Conte, 1831)	C	NA		
<i>Myotis nigricans</i> (Schinz, 1821)	C	SA		
<i>Myotis peninsularis</i> Miller, 1898	C	MX		VU
<i>Myotis planiceps</i> Baker, 1955	C	MX	P	CR
<i>Myotis thysanodes</i> Miller, 1897	C	NA		
<i>Myotis velifer</i> (J. A. Allen, 1890)	C	AM		
<i>Myotis vivesi</i> Menegaux, 1901	C	MX	P	VU
<i>Myotis volans</i> (H. Allen, 1866)	C	NA		
<i>Myotis yumanensis</i> (H. Allen, 1864)	C	NA		
SUBFAMILY VESPERTILIONINAE				
<i>Corynorhinus mexicanus</i> G. M. Allen, 1916	C	MX		
<i>Corynorhinus townsendii</i> (Cooper, 1837)	I C	NA		VU
<i>Eptesicus brasiliensis</i> (Desmarest, 1819)	C	SA		
<i>Eptesicus furinalis</i> (d'Orbigny, 1847)	C	SA		
<i>Eptesicus fuscus</i> (Beauvois, 1796)	C	AM		
<i>Euderma maculatum</i> (J. A. Allen, 1891)	C	NA	Pr	
<i>Idionycteris phyllotis</i> G.M. Allen, 1916	C	NA		
<i>Lasionycteris noctivagans</i> (Le Conte, 1831)	C	NA	Pr	
<i>Lasiurus blossevillii</i> (Lesson & Garnot, 1826)	I C	AM		
<i>Lasiurus borealis</i> (Müller, 1776)	C	NA		
<i>Lasiurus cinereus</i> (Beauvois, 1796)	C	AM		
<i>Lasiurus ega</i> (Gervais, 1856)	C	AM		
<i>Lasiurus intermedius</i> H. Allen, 1862	C	NA		
<i>Lasiurus xanthinus</i> (Thomas, 1897)	C	NA		
<i>Nycticeius humeralis</i> (Rafinesque, 1818)	C	NA		
<i>Pipistrellus hesperus</i> (H. Allen, 1864)	I C	NA		
<i>Pipistrellus subflavus</i> (F. Cuvier, 1832)	C	NA		
<i>Rhogeessa aeneus</i> Goodwin, 1958	C	MX		
<i>Rhogeessa alleni</i> Thomas, 1892	C	MX		EN
<i>Rhogeessa genowaysi</i> Baker, 1984	C	MX	Pr	VU

	INS	DIST	SEMARNAT	IUCN/ CITES
<i>Rhogeessa gracilis</i> Miller, 1897	C	MX		
<i>Rhogeessa mira</i> La Val, 1973	C	MX	Pr	EN
<i>Rhogeessa parvula</i> H. Allen, 1866	IC	MX		
<i>Rhogeessa tumida</i> H. Allen, 1866	C	SA		
FAMILY ANTROZOIDAE				
<i>Antrozous pallidus</i> (Le Conte, 1856)	IC	NA		VU
<i>Bauerus dubiaquercus</i> (Van Gelder, 1959)	IC	MA		
FAMILY MOLOSSIDAE				
SUBFAMILY MOLOSSINAE				
<i>Eumops auripendulus</i> (Shaw, 1800)	C	SA		
<i>Eumops bonariensis</i> (Peters, 1874)	IC	SA	Pr	
<i>Eumops glaucinus</i> (Wagner, 1843)	C	AM		
<i>Eumops hansae</i> Sanborn, 1932	C	SA		
<i>Eumops perotis</i> (Schinz, 1821)	C	AM		
<i>Eumops underwoodi</i> Goodwin, 1940	C	AM		
<i>Molossops greenhalli</i> (Goodwin, 1958)	C	SA	Pr	
<i>Molossus aztecus</i> Saussure, 1860	C	MA		
<i>Molossus bondae</i> J. A. Allen, 1904	C	SA		
<i>Molossus coibensis</i> J. A. Allen, 1904	C	SA		
<i>Molossus molossus</i> (Pallas, 1766)	C	SA		
<i>Molossus rufus</i> E. Geoffroy, 1805	C	SA		
<i>Molossus sinaloae</i> J. A. Allen, 1906	C	SA		
<i>Nyctinomops aurispinosus</i> (Peale, 1848)	C	SA		
<i>Nyctinomops femorosaccus</i> (Merriam, 1889)	C	NA		
<i>Nyctinomops laticaudatus</i> (E. Geoffroy, 1805)	C	SA		
<i>Nyctinomops macrotis</i> (Gray, 1840)	C	AM		
<i>Promops centralis</i> Thomas, 1915	C	SA		
SUBFAMILY TADARINAE				
<i>Tadarida brasiliensis</i> (I. Geoffroy, 1824)	C	AM		
ORDER PRIMATES				
FAMILY ATELIDAE				
SUBFAMILY MYCETINAE				
<i>Alouatta palliata</i> (Gray, 1849)	C	SA	P	VU ¹
<i>Alouatta pigra</i> Lawrence, 1933	C	MA	P	
SUBFAMILY ATELINAE				
<i>Ateles geoffroyi</i> Kuhl, 1820	C	MA	P	VU ²

	INS	DIST	SEMARNAT	IUCN/ CITES
ORDER CARNIVORA				
FAMILY CANIDAE				
<i>Canis latrans</i> Say, 1823	1 C	NA		
<i>Canis lupus</i> Linnaeus, 1758	C	NA	E	EW ³
<i>Urocyon cinereoargenteus</i> (Schreber, 1775)	1 C	AM		
<i>Vulpes macrotis</i> (Merriam, 1888)	C	NA	A	
FAMILY FELIDAE				
SUBFAMILY FELINAE				
<i>Herpailurus yaguarondi</i> (Lacépède, 1809)	C	AM	A	EN ² /I
<i>Leopardus pardalis</i> (Linnaeus, 1758)	C	AM	P	EN ² /I
<i>Leopardus wiedii</i> (Schinz, 1821)	C	AM	P	I
<i>Lynx rufus</i> (Schreber, 1777)	C	NA		II
<i>Puma concolor</i> (Linnaeus, 1771)	C	AM		
SUBFAMILY PANTHERINAE				
<i>Panthera onca</i> (Linnaeus, 1758)	C	AM	P	
FAMILY MUSTELIDAE				
SUBFAMILY LUTRINAE				
<i>Enhydra lutris</i> (Linnaeus, 1758)	C	NA	P	EN/I
<i>Lontra canadensis</i> (Schreber, 1777)	C	NA		II
<i>Lontra longicaudis</i> (Olfers, 1818)	C	SA	A	IV
SUBFAMILY MUSTELINAE				
<i>Eira barbara</i> (Linnaeus, 1758)	C	SA	P	VU ⁶ /II
<i>Galictis vittata</i> (Schreber, 1776)	C	SA	A	III
<i>Mustela frenata</i> Lichtenstein, 1831	C	AM		
<i>Mustela nigripes</i> (Audubon and Bachman, 1851)	C	NA		I
SUBFAMILY TAXIDIINAE				
<i>Taxidea taxus</i> (Schreber, 1777)	C	NA	A	
FAMILY MEPHITIDAE				
<i>Conepatus leuconotus</i> (Lichtenstein, 1832)	C	NA		
<i>Conepatus mesoleucus</i> (Lichtenstein, 1832)	C	AM		I
<i>Conepatus semistriatus</i> (Boddaert, 1784)	C	SA	*	
<i>Mephitis macroura</i> Lichtenstein, 1832	C	AM		
<i>Mephitis mephitis</i> (Schreber, 1776)	C	NA		

	INS	DIST	SEMARNAT	IUCN/ CITES
<i>Spilogale putorius</i> (Linnaeus, 1758)	C	AM		
<i>Spilogale pygmaea</i> Thomas, 1898	C	MX	A	
FAMILY OTARIIDAE				
<i>Arctocephalus galapageoensis</i> Heller, 1904	I	SA		VU/I
<i>Arctocephalus townsendi</i> Merriam, 1897	A	NA	P	VU/I
<i>Zalophus californianus</i> (Lesson, 1828)	A	AM	Pr	
FAMILY PHOCIDAE				
<i>Mirounga angustirostris</i> (Gill, 1866)	A	NA	A	
<i>Monachus tropicalis</i> (Gray, 1850)	A	MA	E	EX
<i>Phoca vitulina</i> Linnaeus, 1758	A	NA	Pr	
FAMILY PROCYONIDAE				
SUBFAMILY POTOSINAE				
<i>Potos flavus</i> (Schreber, 1774)	C	SA		III
SUBFAMILY PROCYONINAE				
<i>Bassariscus astutus</i> (Lichtenstein, 1830)	I C	NA	*	
<i>Bassariscus sumichrasti</i> (Saussure, 1860)	C	MA	Pr	III
<i>Nasua narica</i> (Linnaeus, 1776)	C	AM	*	EN ⁷ /III
<i>Procyon insularis</i> Merriam, 1898	I	MX	P	EN
<i>Procyon lotor</i> (Linnaeus, 1758)	C	AM		
<i>Procyon pygmaeus</i> Merriam, 1901	I	MX	P	EN
FAMILY URSIDAE				
SUBFAMILY URSINAE				
<i>Ursus americanus</i> Pallas, 1780	C	NA	*	
<i>Ursus arctos</i> Linnaeus, 1758	C	NA	E	EX ⁸
ORDER CETACEA				
FAMILY BALAENIDAE				
<i>Eubalaena glacialis</i> (Müller, 1776)	A	NA	P	EN
FAMILY BALAENOPTERIDAE				
<i>Balaenoptera acutorostrata</i> Lacépède, 1804	A	AM	Pr	I
<i>Balaenoptera borealis</i> Lesson, 1828	A	AM	Pr	EN/I
<i>Balaenoptera edeni</i> Anderson, 1878	A	AM	Pr	I

	INS	DIST	SEMARNAT	IUCN/ CITES
<i>Balaenoptera musculus</i> (Linnaeus, 1758)	A	AM	Pr	EN/I
<i>Balaenoptera physalus</i> (Linnaeus, 1758)	A	AM	Pr	EN/I
<i>Megaptera novaeangliae</i> (Borowski, 1781)	A	AM	Pr	VU/I
FAMILY ESCHRICHTIDAE				
<i>Eschrichtius robustus</i> (Lilljeborg, 1861)	A	NA	Pr	I
FAMILY DELPHINIDAE				
<i>Delphinus delphis</i> Linnaeus, 1758	A	AM	Pr	II
<i>Feresa attenuata</i> Gray, 1875	A	AM	Pr	II
<i>Globicephala macrorhynchus</i> Gray, 1846	A	AM	Pr	II
<i>Grampus griseus</i> G. Cuvier, 1812	A	AM	Pr	II
<i>Lagenodelphis hosei</i> Fraser, 1956	A	AM	Pr	II
<i>Lagenorhynchus obliquidens</i> Gill, 1865	A	NA	Pr	
<i>Lissodelphis borealis</i> (Peale, 1848)	A	NA	Pr	II
<i>Orcinus orca</i> (Linnaeus, 1758)	A	AM	Pr	II
<i>Peponocephala electra</i> (Gray, 1846)	A	AM	Pr	II
<i>Pseudorca crassidens</i> (Owen, 1846)	A	AM	Pr	II
<i>Stenella attenuata</i> (Gray, 1846)	A	AM	Pr	II
<i>Stenella clymene</i> (Gray, 1846)	A	AM	Pr	II
<i>Stenella coeruleoalba</i> (Meyen, 1833)	A	AM	Pr	II
<i>Stenella frontalis</i> (G. Cuvier, 1829)	A	AM	Pr	II
<i>Stenella longirostris</i> (Gray, 1828)	A	AM	Pr	II
<i>Steno bredanensis</i> (Lesson, 1828)	A	AM	Pr	II
<i>Tursiops truncatus</i> (Montagu, 1821)	A	AM	Pr	II
FAMILY PHOCOENIDAE				
<i>Phocoena sinus</i> Norris & McFarland, 1958	A	MX	Pr	CR/I
<i>Phocoenoides dalli</i> (True, 1885)	A	NA	Pr	II
FAMILY PHYSETERIDAE				
<i>Kogia breviceps</i> (De Blainville, 1838)	A	AM	Pr	II
<i>Kogia simus</i> (Owen, 1866)	A	AM	Pr	II
<i>Physeter macrocephalus</i> Linnaeus, 1758	A	AM	Pr	VU/I
FAMILY ZIPHIIDAE				
<i>Berardius bairdii</i> Stejneger, 1883	A	NA	Pr	I
<i>Hyperoodon planifrons</i> Flower, 1882	A	AM	Pr	I
<i>Mesoplodon carlhubbsi</i> (Moore, 1963)	A	NA	Pr	
<i>Mesoplodon densirostris</i> (De Blainville, 1817)	A	AM	Pr	II
<i>Mesoplodon europaeus</i> (Gervais, 1855)	A	NA	Pr	II
<i>Mesoplodon ginkgodens</i> Nishiwaki & Kamiya, 1958	A	NA	Pr	II
<i>Mesoplodon peruvianus</i> Reyes, Mead & Van Waerebeek, 1991	A	AM	Pr	II
<i>Mesoplodon</i> sp	A	NA	Pr	
<i>Ziphius cavirostris</i> G. Cuvier, 1823	A	AM	Pr	II

	INS	DIST	SEMARNAT	IUCN/ CITES
ORDER SIRENIA				
FAMILY TRICHECHIDAE				
<i>Trichechus manatus</i> Linnaeus, 1758	A	AM	P	VU/I
ORDER PERISSODACTYLA				
FAMILY TAPIRIDAE				
<i>Tapirus bairdii</i> (Gill, 1865)	C	SA	P	VU
ORDER ARTIODACTYLA				
FAMILY ANTILOCAPRIDAE				
<i>Antilocapra americana</i> (Ord, 1815)	C	NA	P	CR ⁹
FAMILY BOVIDAE				
SUBFAMILY BOVINAE				
<i>Bison bison</i> (Linnaeus, 1758)	C	NA	P	
SUBFAMILY CAPRINAE				
<i>Ovis canadensis</i> Shaw, 1804	C	NA	Pr	VU ¹⁰
FAMILY CERVIDAE				
SUBFAMILY CERVINAE				
<i>Cervus elaphus</i> Linnaeus, 1758	C	NA		
SUBFAMILY ODOCOILEINAE				
<i>Mazama americana</i> (Erxleben, 1777)	C	SA	*	
<i>Mazama pandora</i> Merriam, 1901	C	MA		
<i>Odocoileus hemionus</i> (Rafinesque, 1817)	IC	NA	*	
<i>Odocoileus virginianus</i> (Zimmermann, 1780)	IC	AM		
FAMILY TAYASSUIDAE				
<i>Tayassu tajacu</i> (Linnaeus, 1758)	IC	AM		II
<i>Tayassu pecari</i> (Link, 1795)	C	SA		II

	INS	DIST	SEMARNAT	IUCN/ CITES
ORDER RODENTIA				
FAMILY SCIURIDAE				
SUBFAMILY PETAURISTINAE				
<i>Glaucomys volans</i> (Linnaeus, 1758)	C	NA	A	
SUBFAMILY SCIURINAE				
<i>Ammospermophilus harrisi</i> (Audubon & Bachman, 1854)	C	NA		
<i>Ammospermophilus insularis</i> Nelson & Goldman, 1909	I	MX	A	
<i>Ammospermophilus interpres</i> (Merriam, 1890)	C	NA		
<i>Ammospermophilus leucurus</i> (Merriam, 1889)	C	NA		
<i>Cynomys ludovicianus</i> (Ord, 1815)	C	NA	A	
<i>Cynomys mexicanus</i> Merriam, 1892	C	MX	P	EN
<i>Sciurus aberti</i> Woodhouse, 1853	C	NA	Pr	
<i>Sciurus alleni</i> Nelson, 1898	C	MX		
<i>Sciurus arizonensis</i> Coues, 1867	C	NA	A	
<i>Sciurus aureogaster</i> F. Cuvier, 1829	C	MA		
<i>Sciurus colliaei</i> Richardson, 1839	C	MX		
<i>Sciurus deppei</i> Peters, 1863	C	MA		III
<i>Sciurus griseus</i> Ord, 1818	C	NA	A	
<i>Sciurus nayaritensis</i> J. A. Allen, 1890	C	NA		
<i>Sciurus niger</i> Linnaeus, 1758	C	NA		
<i>Sciurus oculatus</i> Peters, 1863	C	MX	Pr	
<i>Sciurus variegatoides</i> Ogilby, 1839	C	MA	Pr	
<i>Sciurus yucatanensis</i> J. A. Allen, 1877	C	MA		
<i>Spermophilus adocetus</i> (Merriam, 1903)	C	MX		
<i>Spermophilus annulatus</i> Audubon & Bachman, 1842	C	MX		
<i>Spermophilus atricapillus</i> W. E. Bryant, 1889	C	MX		
<i>Spermophilus beecheyi</i> (Richardson, 1829)	C	NA		
<i>Spermophilus madrensis</i> (Merriam, 1901)	C	MX	Pr	
<i>Spermophilus mexicanus</i> (Erxleben, 1777)	C	NA		
<i>Spermophilus perotensis</i> Merriam, 1893	C	MX	A	
<i>Spermophilus pilosoma</i> Bennett, 1833	C	NA		
<i>Spermophilus tereticaudus</i> Baird, 1858	IC	NA		
<i>Spermophilus variegatus</i> (Erxleben, 1777)	IC	NA		
<i>Tamias bulleri</i> J. A. Allen, 1889	C	MX		
<i>Tamias dorsalis</i> Baird, 1855	C	NA		
<i>Tamias durangae</i> (J. A. Allen, 1903)	C	MX		
<i>Tamias merriami</i> J. A. Allen, 1889	C	NA	Pr	
<i>Tamias obscurus</i> J. A. Allen, 1890	C	NA		
<i>Tamiasciurus mearnsi</i> (Townsend, 1897)	C	MX	A	
FAMILY CASTORIDAE				
<i>Castor canadensis</i> Kuhl, 1820	C	NA	P	

	INS	DIST	SEMARNAT	IUCN/ CITES
FAMILY GEOMYIDAE				
<i>Cratogeomys castanops</i> (Baird, 1852)	C	NA		
<i>Cratogeomys fumosus</i> (Merriam, 1892)	C	MX	A	
<i>Cratogeomys goldmani</i> Merriam, 1895	C	MX		
<i>Cratogeomys gymnurus</i> (Merriam, 1892)	C	MX		
<i>Cratogeomys merriami</i> (Thomas, 1893)	C	MX		
<i>Cratogeomys neglectus</i> (Merriam, 1902)	C	MX	A	CR
<i>Cratogeomys tylorhinus</i> (Merriam, 1895)	C	MX		
<i>Cratogeomys zinseri</i> (Goldman, 1939)	C	MX		
<i>Geomys arenarius</i> Merriam, 1895	C	NA		
<i>Geomys personatus</i> True, 1889	C	NA	A	
<i>Geomys tropicalis</i> Goldman, 1915	C	MX	A	VU
<i>Orthogeomys cuniculus</i> Elliot, 1905	C	MX	A	CR
<i>Orthogeomys grandis</i> (Thomas, 1893)	C	MA		
<i>Orthogeomys hispidus</i> (Le Conte, 1852)	C	MA		
<i>Orthogeomys lanius</i> (Elliot, 1905)	C	MX	A	
<i>Pappogeomys alcorni</i> Russell, 1957	C	MX	Pr	VU
<i>Pappogeomys bulleri</i> (Thomas, 1892)	C	MX		
<i>Thomomys bottae</i> (Eydoux & Gervais, 1836)	IC	NA		
<i>Thomomys umbrinus</i> (Richardson, 1829)	C	NA		
<i>Zygoeomys trichopus</i> Merriam, 1895	C	MX	P	
FAMILY HETEROMYIDAE				
SUBFAMILY DIPODOMYINAE				
<i>Dipodomys compactus</i> True, 1889	C	NA		
<i>Dipodomys deserti</i> Stephens, 1887	C	NA		
<i>Dipodomys gravipes</i> Huey, 1925	C	MX	P	EN
<i>Dipodomys insularis</i> Merriam, 1907	I	MX	A	CR
<i>Dipodomys merriami</i> Mearns, 1890	IC	NA	*	CR ¹³
<i>Dipodomys nelsoni</i> Merriam, 1907	C	MX		
<i>Dipodomys ordii</i> Woodhouse, 1853	C	NA		
<i>Dipodomys phillipsii</i> Gray, 1841	C	MX	*	
<i>Dipodomys simulans</i> Merriam, 1904	C	NA		
<i>Dipodomys spectabilis</i> Merriam, 1890	C	NA		
SUBFAMILY HETEROMYINAE				
<i>Heteromys desmarestianus</i> Gray, 1868	C	SA		
<i>Heteromys gaumeri</i> J. A. Allen & Chapman, 1897	C	MA		
<i>Heteromys goldmani</i> Merriam, 1902	C	MX		
<i>Heteromys nelsoni</i> Merriam, 1902	C	MX	Pr	
<i>Liomys irroratus</i> (Gray, 1868)	C	NA		
<i>Liomys pictus</i> (Thomas, 1893)	C	MA		
<i>Liomys salvini</i> (Thomas, 1893)	C	MA		
<i>Liomys spectabilis</i> Genoways, 1971	C	MX	Pr	

	INS	DIST	SEMARNAT	IUCN/ CITES
SUBFAMILY PEROGNATHINAE				
<i>Chaetodipus anthonyi</i> (Osgood, 1900)	I	MX	A	
<i>Chaetodipus arenarius</i> Merriam, 1894	C	MX	*	
<i>Chaetodipus artus</i> Osgood, 1900	C	MX		
<i>Chaetodipus baileyi</i> Merriam, 1894	IC	NA		
<i>Chaetodipus californicus</i> Merriam, 1889	C	NA		
<i>Chaetodipus dalquesti</i> (Roth, 1976)	C	MX	Pr	
<i>Chaetodipus eremicus</i> (Mearns, 1898)	C	NA		
<i>Chaetodipus fallax</i> Merriam, 1889	C	NA		
<i>Chaetodipus formosus</i> Merriam, 1889	C	NA		
<i>Chaetodipus goldmani</i> Osgood, 1900	C	MX		
<i>Chaetodipus hispidus</i> Baird, 1858	C	NA		
<i>Chaetodipus intermedius</i> Merriam, 1889	IC	NA	*	
<i>Chaetodipus lineatus</i> Dalquest, 1951	C	MX		
<i>Chaetodipus nelsoni</i> Merriam, 1894	C	NA		
<i>Chaetodipus penicillatus</i> Woodhouse, 1852	IC	NA	*	
<i>Chaetodipus pernix</i> J. A. Allen, 1898	C	MX		
<i>Chaetodipus rudinoris</i> (Elliot, 1903)	IC	NA		
<i>Chaetodipus spinatus</i> Merriam, 1889	IC	NA	*	
<i>Perognathus amplus</i> Osgood, 1900	C	NA	*	
<i>Perognathus flavescens</i> Merriam, 1889	C	NA		
<i>Perognathus flavus</i> Baird, 1855	C	NA		
<i>Perognathus longimembris</i> (Coues, 1875)	C	NA		
<i>Perognathus merriami</i> J. A. Allen, 1892	C	NA		

FAMILY MURIDAE

SUBFAMILY ARVICOLINAE

<i>Microtus californicus</i> (Peale, 1884)	C	NA	P	VU
<i>Microtus guatemalensis</i> Merriam, 1898	C	MA	A	
<i>Microtus mexicanus</i> (Saussure, 1861)	C	NA		
<i>Microtus oaxacensis</i> Goodwin, 1966	C	MX	A	
<i>Microtus pennsylvanicus</i> (Ord, 1815)	C	NA	P	
<i>Microtus quasiater</i> (Coues, 1874)	C	MX	Pr	
<i>Microtus umbrosus</i> Merriam, 1898	C	MX	Pr	
<i>Ondatra zibethicus</i> (Linnaeus, 1766)	C	NA	A	

SUBFAMILY SIGMODONTINAE

<i>Baiomys musculus</i> (Merriam, 1892)	C	MA		
<i>Baiomys taylori</i> (Thomas, 1887)	C	NA		
<i>Habromys chinanteco</i> (Robertson & Musser, 1976)	C	MX		
<i>Habromys delicatulus</i>	C	MX		
<i>Habromys lepturus</i> (Merriam, 1898)	C	MX		
<i>Habromys lophurus</i> (Osgood, 1904)	C	MA		
<i>Habromys simulatus</i> (Osgood, 1904)	C	MX		EN
<i>Hodomys alleni</i> (Merriam, 1892)	C	MX		
<i>Megadontomys cryophilus</i> (Musser, 1964)	C	MX		
<i>Megadontomys nelsoni</i> (Merriam, 1898)	C	MX		

	INS	DIST	SEMARNAT	IUCN/ CITES
<i>Megadontomys thomasi</i> (Merriam, 1898)	C	MX	Pr	
<i>Nelsonia goldmani</i> Merriam, 1903	C	MX	Pr	
<i>Nelsonia neotomodon</i> Merriam, 1897	C	MX	Pr	
<i>Neotoma albigula</i> Hartley, 1894	IC	NA	*	
<i>Neotoma angustapalata</i> Baker, 1951	C	MX		
<i>Neotoma anthonyi</i> J. A. Allen, 1898	I	MX	E	EN
<i>Neotoma bryanti</i> Merriam, 1887	I	MX	A	EN
<i>Neotoma bunkerii</i> Burt, 1932	I	MX	E	EN
<i>Neotoma devia</i> Goldman, 1927	C	NA		
<i>Neotoma fuscipes</i> Baird, 1858	C	NA		
<i>Neotoma goldmani</i> Merriam, 1903	C	MX		
<i>Neotoma lepida</i> Thomas, 1893	IC	NA	*	
<i>Neotoma leucodon</i> Merriam, 1894	C	NA		
<i>Neotoma martinensis</i> Goldman, 1905	I	MX	P	EN
<i>Neotoma mexicana</i> Baird, 1855	C	NA		
<i>Neotoma micropus</i> Baird, 1855	C	NA		
<i>Neotoma nelsoni</i> Goldman, 1905	C	MX		EN
<i>Neotoma palatina</i> Goldman, 1905	C	MX		
<i>Neotoma phenax</i> Merriam, 1903	C	MX	Pr	
<i>Neotoma varia</i> Burt, 1932	I	MX	A	EN
<i>Neotomodon alstoni</i> Merriam, 1898	C	MX		
<i>Nyctomys sumichrasti</i> (Saussure, 1860)	C	MA		
<i>Oligoryzomys fulvescens</i> (Saussure, 1860)	C	SA		
<i>Onychomys arenicola</i> Mearns, 1896	C	NA		
<i>Onychomys leucogaster</i> (Wied-Neuwied, 1841)	C	NA		
<i>Onychomys torridus</i> (Coues, 1874)	C	NA		
<i>Oryzomys alfaroi</i> (J. A. Allen, 1891)	C	SA		
<i>Oryzomys chapmani</i> Thomas, 1898	C	MX		
<i>Oryzomys couesi</i> (Alston, 1877)	IC	AM		
<i>Oryzomys melanotis</i> Thomas, 1893	C	MX		
<i>Oryzomys nelsoni</i> Merriam, 1898	I	MX	E	EX
<i>Oryzomys palustris</i> (Harlan, 1837)	C	NA	*	
<i>Oryzomys rhabdops</i> Merriam, 1901	C	MA		
<i>Oryzomys rostratus</i> Merriam, 1901	C	MA		
<i>Oryzomys saturatior</i> Merriam, 1901	C	MA		
<i>Osgoodomys banderanus</i> (J. A. Allen, 1897)	C	MX		
<i>Otonyctomys hattii</i> Anthony, 1932	C	MA	A	
<i>Ototylomys phyllotis</i> Merriam, 1901	C	MA		
<i>Peromyscus aztecus</i> (Saussure, 1860)	C	MA		
<i>Peromyscus beatae</i> Thomas, 1903	C	MX		
<i>Peromyscus boylii</i> (Baird, 1855)	IC	NA	*	
<i>Peromyscus bullatus</i> Osgood, 1904	C	MX	Pr	EN
<i>Peromyscus californicus</i> (Gambel, 1848)	C	NA		
<i>Peromyscus caniceps</i> Burt, 1932	I	MX		
<i>Peromyscus crinitus</i> (Merriam, 1891)	IC	NA	*	
<i>Peromyscus dickeyi</i> Burt, 1932	I	MX		
<i>Peromyscus difficilis</i> (J. A. Allen, 1891)	C	MX		
<i>Peromyscus eremicus</i> (Baird, 1858)	IC	NA	*	
<i>Peromyscus eva</i> Thomas, 1898	C	MX	A	
<i>Peromyscus fraterculus</i> (Miller, 1892)	C	NA		
<i>Peromyscus fuvvus</i> J. A. Allen & Chapman, 1897	C	MX		

	INS	DIST	SEMARNAT	IUCN/ CITES
<i>Peromyscus gratus</i> Merriam, 1898	C	NA		
<i>Peromyscus guardia</i> Townsend, 1912	I	MX	P	
<i>Peromyscus guatemalensis</i> Merriam, 1898	C	MA		
<i>Peromyscus gymnotis</i> Thomas, 1894	C	MA		
<i>Peromyscus hylocetes</i> Merriam, 1898	C	MX		
<i>Peromyscus hooperi</i> Lee & Schmidly, 1977	C	MX		
<i>Peromyscus interparietalis</i> Burt, 1932	I	MX	*	
<i>Peromyscus leucopus</i> Rafinesque, 1818	IC	NA	*	
<i>Peromyscus levipes</i> Merriam, 1898	C	MX		
<i>Peromyscus madrensis</i> Merriam, 1898	I	MX		VU
<i>Peromyscus maniculatus</i> (Wagner, 1845)	IC	NA	*	
<i>Peromyscus megalops</i> Merriam, 1898	C	MX		
<i>Peromyscus mekisturus</i> Merriam, 1898	C	MX	A	VU
<i>Peromyscus melanocarpus</i> Osgood, 1904	C	MX		
<i>Peromyscus melanophrys</i> (Coues, 1874)	C	MX		
<i>Peromyscus melanotis</i> J. A. Allen & Chapman, 1897	C	NA		
<i>Peromyscus melanurus</i> Osgood, 1909	C	MX		VU
<i>Peromyscus merriami</i> Mearns, 1896	C	NA		
<i>Peromyscus mexicanus</i> (Saussure, 1860)	C	MA		
<i>Peromyscus nasutus</i> (J. A. Allen, 1891)	C	NA		
<i>Peromyscus ochraventer</i> Baker, 1951	C	MX		
<i>Peromyscus pectoralis</i> Osgood, 1904	C	NA		
<i>Peromyscus pembertonii</i> Burt, 1932	I	MX	E	EX
<i>Peromyscus perfulvus</i> Osgood, 1945	C	MX		
<i>Peromyscus polius</i> Osgood, 1904	C	MX		VU
<i>Peromyscus pseudocrinatus</i> Burt, 1932	I	MX	A	CR
<i>Peromyscus sagax</i> Elliot, 1903	C	MX		
<i>Peromyscus sejugis</i> Burt, 1932	I	MX	A	
<i>Peromyscus simulus</i> Osgood, 1904	C	MX	Pr	
<i>Peromyscus slevini</i> Mailliard, 1924	I	MX	A	CR
<i>Peromyscus spicilegus</i> J. A. Allen, 1897	C	MX		
<i>Peromyscus stephani</i> Townsend, 1912	I	MX		
<i>Peromyscus truei</i> (Shufeldt, 1885)	C	NA		
<i>Peromyscus winkelmanni</i> Carleton, 1977	C	MX	Pr	
<i>Peromyscus yucatanicus</i> J. A. Allen & Chapman, 1897	C	MX		
<i>Peromyscus zarhynchus</i> Merriam, 1898	C	MX	Pr	VU
<i>Reithrodontomys burti</i> Benson, 1939	C	MX		
<i>Reithrodontomys chrysopsis</i> Merriam, 1900	C	MX		
<i>Reithrodontomys fulvescens</i> J. A. Allen, 1894	C	NA		
<i>Reithrodontomys gracilis</i> J. A. Allen & Chapman, 1897	IC	MA	*	
<i>Reithrodontomys hirsutus</i> Merriam, 1901	C	MX		
<i>Reithrodontomys megalotis</i> (Baird, 1858)	C	NA		
<i>Reithrodontomys mexicanus</i> (Saussure, 1860)	C	SA		
<i>Reithrodontomys microdon</i> Merriam, 1901	C	MA	A	
<i>Reithrodontomys montanus</i> (Baird, 1855)	C	NA		
<i>Reithrodontomys spectabilis</i> Jones & Lawlor, 1965	I	MX	A	EN
<i>Reithrodontomys sumichrasti</i> (Saussure, 1861)	C	MA		
<i>Reithrodontomys tenuirostris</i> Merriam, 1901	C	MA		
<i>Reithrodontomys zacatecae</i> Merriam, 1901	C	MX		
<i>Rheomys mexicanus</i> Goodwin, 1959	C	MX	Pr	

	INS	DIST	SEMARNAT	IUCN/ CITES
<i>Rheomys thomasi</i> Dickey, 1928	C	MA	Pr	
<i>Scotinomys teguina</i> (Alston, 1877)	C	MA	Pr	
<i>Sigmodon alleni</i> Bailey, 1902	C	MX		
<i>Sigmodon arizonae</i> Mearns, 1890	C	NA		
<i>Sigmodon fulviventor</i> J. A. Allen, 1889	C	NA		
<i>Sigmodon hispidus</i> Say & Ord, 1825	C	AM		
<i>Sigmodon leucotis</i> Bailey, 1902	C	MX		
<i>Sigmodon mascotensis</i> J. A. Allen, 1897	C	MX		
<i>Sigmodon ochrognathus</i> Bailey, 1902	C	NA		
<i>Tylomys bullaris</i> Merriam, 1901	C	MX	A	CR
<i>Tylomys nudicaudus</i> (Peters, 1866)	C	MA		
<i>Tylomys tumbalensis</i> Merriam, 1901	C	MX	Pr	
<i>Xenomys nelsoni</i> Merriam, 1892	C	MX	A	CR
FAMILY ERETHIZONTIDAE				
<i>Coendu mexicanus</i> (Kerr, 1792)	C	MA	A	III
<i>Erethizon dorsatum</i> (Linnaeus, 1758)	C	NA	P	
FAMILY CUNICULIDAE				
<i>Coniculus paca</i> (Linnaeus, 1776)	1 C	SA		III
FAMILY DASYPROCTIDAE				
<i>Dasyprocta mexicana</i> Saussure, 1860	C	MX		
<i>Dasyprocta punctata</i> Gray, 1842	1 C	SA		III
ORDER LAGOMORPHA				
FAMILY LEPORIDAE				
SUBFAMILY LEPORINAE				
<i>Lepus alleni</i> Mearns, 1890	1 C	NA	*	
<i>Lepus californicus</i> Gray, 1837	1 C	NA	*	
<i>Lepus callotis</i> Wagler, 1830	C	NA		
<i>Lepus flavigularis</i> Wagner, 1844	C	MX	P	EN
<i>Lepus insularis</i> W. Bryant, 1891	I	MX	Pr	
<i>Romerolagus diazi</i> (Ferrari- Perez, 1893)	C	MX	P	EN/I
<i>Sylvilagus audubonii</i> (Baird, 1858)	C	NA		
<i>Sylvilagus bachmani</i> (Waterhouse, 1839)	1 C	NA	*	
<i>Sylvilagus brasiliensis</i> (Linnaeus, 1758)	C	SA		
<i>Sylvilagus cunicularius</i> (Waterhouse, 1848)	C	MX		
<i>Sylvilagus floridanus</i> (J. A. Allen, 1890)	C	AM		
<i>Sylvilagus graysoni</i> (J. Allen, 1877)	I	MX	A	EN
<i>Sylvilagus insonus</i> Nelson, 1904	C	MX	P	CR
<i>Sylvilagus mansuetus</i> Nelson, 1907	I	MX	Pr	
<i>Sylvilagus robustus</i> (V. Bailey, 1905)	C	NA		

* Indicates some subspecies are listed under some risk category in the Mexican legislation. Categories are endangered (P), threatened (A), and special protection (PR).

Under the IUCN column only those species listed under one of the categories at risk (i.e., Vulnerable (VU), Endangered (EN), Critically Endangered (CR), Extinct in the Wild (EW), and Extinct (E)) are included.

¹ Only the subspecies *Alouatta palliata mexicana*.

² Only the subspecies *Ateles geoffroyi yucatanensis*.

³ Only the Mexican wolf, *Canis lupus baileyi*.

⁴ Only the subspecies *Herpailurus yaguarondi cacomitli*.

⁵ Only the subspecies *Leopardus pardalis albescens*.

⁶ Only the subspecies *Eira barbara senex*.

⁷ Only the subspecies *Nasua narica nelsoni*.

⁸ Only the subspecies *Ursus arctos nelsoni*.

⁹ The subspecies *A. a. peninsularis* is considered critically endangered and *A.a. sonoriensis* endangered.

¹⁰ The subspecies *O. c. cremnobates* is considered endangered, *O.c. mexicana* vulnerable, and *O. c. weemsi* critically endangered.

¹¹ Only the subspecies *O. h. cerrosensis*.

¹² Only the subspecies *D. m. margaritae*.

CONSERVATION STATUS

The mammals from México face severe environmental problems that affect their long-term survival. At least eight species have either been eradicated or become extinct, and 229 (44%) are classified as facing conservation problems (Ceballos, 1993; Ceballos et al., in press). The numbers and proportions of extinct and endangered taxa indicate that México is also among the top countries in the world in these categories (Baillie and Groombridge, 1996; Ceballos and Brown, 1995; Hilton-Taylor, 2000).

Documented extinct or eradicated species include four insular species of rodents, a pinniped and two carnivores. All the rodents, including *Peromyscus pembertonii* from San Pedro Nolasco island, *Neotoma anthonyi* from Todos Santos island, *Neotoma bunkerii* from the Coronados islands, and *Oryzomys nelsoni* from the Tres Mariás islands, disappeared as a consequence of the introduction of domestic rats (*Rattus* spp), mice (*Mus musculus*), and cats (*Felis catus*) (Ceballos and Navarro, 1991; Lawlor, 1983; Mellink, 1992; Smith et al., 1993; Wilson, 1991). We have data that suggest that two additional species; *Peromyscus guardia* from Angel de la Guarda, Mejia, Granito, and Estanque islands (Mellink et al., 2002), and *Dipodomys gravipes* from the San Quintin Valley

in Baja California may be extinct (Ceballos and Rodríguez, 1993; E. Mellink, pers. com.). The Caribbean monk seal (*Monachus tropicalis*), which inhabited in the waters of Cuba, Jamaica and the Yucatán Peninsula, became extinct around 1952 (Cole et al., 1994; Villa-R. et al., 1986). The last Mexican Grizzly bear (*Ursus arctos horribilis*) was killed in the 1960's in the Sierra del Nido, Chihuahua (Brown, 1985). The Mexican wolf (*Canis lupus baileyi*) is extinct in the wild, but a few survive in captivity (Ceballos and Navarro, 1991). Additionally, *Myotis planiceps* and *M. milleri* are considered extinct by the IUCN (Hilton-Taylor, 2000). However, there are no recent studies to evaluate the conservation status of *M. planiceps*, and *M. milleri* is considered a subspecies of *M. evotis* (Manning, 1993).

Although six species were considered extirpated from México by Ceballos and Navarro (1991), one of them was re-encountered, one has been successfully reintroduced, and another has spontaneously recolonized México. Until recently, the bison (*Bison bison*) was believed to be extirpated from México (Anderson, 1972; Ceballos and Navarro, 1991; Leopold, 1965); however, a wild remnant population along the

Chihuahua-New Mexico border was rediscovered in the early 1990's (G. Ceballos, pers. obs.). However, the species should be considered critically endangered. The elk (*Cervus elaphus*) was probably extirpated near the beginning of the last century (Leopold, 1959); however, it has been successfully reintroduced in Coahuila (Robles Gil et al., 1993). The sea otter (*Enhydra lutris*) disappeared from Mexican waters at the beginning of this century (Ceballos and Navarro, 1991); interestingly, a few dispersing individuals have been found off Cedros Island and Maria Magdalena Bay off Baja California Peninsula (Gallo, 1997; Rodríguez-Jaramillo and Gendron, 1996). By 1950 the northern river otter (*Lontra canadensis*) had disappeared from the Colorado and Bravo (Grande) rivers (Ceballos and Navarro, 1991); but there are recent records in Tamaulipas (G. Ceballos, pers. obs.; Gallo, 1997).

Mexican mammals are underrepresented in the international lists of species of concern. Two hundred and twenty-nine species are considered by new

Mexican legislation as endangered, threatened, or under special protection (SEMARNAT, 2002), whereas only 58 Mexican mammals are included in CITES, and 83 in the lists of IUCN. The most obvious differences are in those cases regarding small mammals. For example, 38 bats and 17 insectivores are considered by SEMARNAT, whereas none is included in CITES and 19 (15 bats and 4 insectivores) in IUCN. Similarly, CITES considers four Mexican rodents, IUCN includes 35, and SEMARNAT lists 88 species of concern. Conversely, most Mexican cetaceans are included in CITES, while they are underrepresented in the IUCN list. Bias in CITES listing is undoubtedly related to the objective of CITES to protect only those species that are subjected to international trade, overwhelmingly large species. International regulations protect some key species of Mexican mammals, but they are clearly inadequate if protection of the diversity of the country is the conservation goal.

INTRODUCED SPECIES

In México there are established populations of domestic mammals including dogs, cats, donkeys, pigs, goats, sheep, and rabbits. Additionally, there are feral populations of three introduced species, including the African Barbary sheep (*Ammotragus lervia*), the European boar (*Sus scrofa*), and the South American coypu (*Myocastor coypus*; Arita and Ceballos, 1997). The Barbary sheep was introduced three decades ago, and it is presently distributed in the states of Nuevo León, Coahuila, and San Luis Potosí; its geographic range is still increasing (Gray and Simpson, 1980; E.

Mellink, pers. com.). Established populations of European boar are known in the Sierra del Nido, Chihuahua (G. Ceballos, pers. obs.), the Mapimí Biosphere Reserve, Durango (Weber, 1995), and northwestern Durango (R. Muñiz M., pers. com.). The coypu is native to South America; populations were accidentally introduced to Louisiana in USA, and dispersed to Texas. They have recently colonized the Rio Bravo from the delta up to the Big Bend National Park (Texas) - Maderas del Carmen (Coahuila) and the Laguna Madre in Tamaulipas (J. Carrera; R. Soto, pers. com.).

CONCLUSION

México has 525 mammal species, which account for the inclusion of the country into the World megadiverse realm (more than 10% World-wide biological species account). Although knowledge of mammals in México has a long tradition and has grown rapidly in recent years, more studies are required to understand the biology of those species and their conservation status. Because of the degree of knowledge of mammals as a whole, it is expected that at the very

least 247 new species of mammals will be described in the World by the year 2032 (Medellín and Soberón 1999). Other researchers have shown that we are still far from attaining a realistic estimate of the numbers of living species of mammals (Patterson, 2001). This issue, coupled with the relatively limited, biased level of faunal knowledge at the local scale in México (Bojórquez-Tapia et al. 1994), is a virtual guarantee that the number of mammal species recorded from

México (and the entire world) will continue to increase in coming years. The advent of specialized techniques in molecular genetics studies has allowed a much more comprehensive and realistic approach to understanding phylogenetic affinities and evolutionary relationships of the different groups. These techniques have allowed the determination of sister species otherwise indistinguishable by earlier methods. As new techniques continue to evolve and be refined, it is likely that the number of species will also climb.

The number of native species of Mexican mammals is 525 as of this publication. Other countries with

similar numbers include Indonesia, Brazil, and China. This puts the Mexican mammal fauna among the top countries in the world in terms of species numbers. These numbers are likely to change in the near future because of the reasons described above, although it is clear that México will remain as a megadiverse country containing about 12% of the mammal species in about 1.6% of the world's emerged land surface. The next 30 years will likely prove dynamic for numbers of species recognized in vertebrates and higher plants; the real number of species of mammals is, however, almost within our grasp.

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It was through the efforts of Horn Professor J Knox Jones, as director of Academic Publications, that Texas Tech University initiated several publications series including the Occasional Papers of the Museum. This and future editions in the series are a memorial to his dedication to excellence in academic publications. Professor Jones enjoyed editing scientific publications and served the scientific community as an editor for the Journal of Mammalogy, Evolution, The Texas Journal of Science, Occasional Papers of the Museum, and Special Publications of the Museum. It is with special fondness that we remember Dr. J Knox Jones.

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