Quaternary mammals from Mexico

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It has been more than 400 years since the fossil remains of Pleistocene vertebrates were documented for the first time in the reports of missionaries that arrived in Mexico together with the conquerors. Among the most outstanding discoveries, due to the size of the bones, mammoths were mentioned first as “giants” and, later on, as “elephants.” Other reported animals were camel and bison, as well as marine animals thought to be related to “sirens” but that in fact were remains of seals and sea lions.

Thus far, a database has been generated that has 15,087 mammal records, representing 13 orders, 44 families, 146 genera and 286 species (Arroyo-Cabrales et al. 2002). A third of these taxa no longer occur in Mexican territory, either because they are extinct (almost 30 %) or because their distribution no longer reaches the country (9 taxa, 3.1 %). The order Proboscidea no longer exists in the Americas and neither do the families Herpestidae and Equidae. Three families have been extirpated from North America (Camelidae, Hydrochoeridae and Megalonychidae) and five families are extinct (Gomphotheridae, Mammutidae, Glyptodontidae, Megatheriidae and Mylodontidae). Of the 146 genera, 27 are extinct (18.6 %) and nine are considered extirpated (6.2 %); and at the species level, 84 are extinct (29.4 %) and 9 are extirpated from the country.

The analysis of the data clearly indicates that the fossil record is biased toward the medium-size and large animals. Considering only those species of the orders Artiodactyla, Perissodactyla and Proboscidea that are extinct, and those from the orders Xenarthra and Carnivora that weighed more than 100 kg, then out of 78 species, 63 became extinct at the end of the Pleistocene. This group includes many mega-herbivores and the megacarnivores.

The Pleistocene megafauna was formed by species of great size, many of which are now extinct. That fauna included a group of herbivore animals, typical of grasslands and savannas, that occupied most of the current Mexican Plateau. Among these were bison (Bison spp.), camel (Camelops hesternus), two types of horses (Equus spp.), at least three types of berrendos or antelopes (Antilocapra americana, Capromeryx sp. and Stockoceros conklingi), ground sloth (Nothrotheriops shastensis) and llama (Hemiauchenia sp.). More importantly, the most characteristic animal on the Pleistocene plains was the mammoth (Mammuthus columbi). Concomitant with those large herbivores were large predators, like the Pleistocene lion (Panthera atrox) and dire wolf (Canis dirus) (at least one and a half times the size of the present animals), coyote (Canis latrans), sabre-toothed cat (Smilodon gracilis), and one of the most voracious predators of the period, the short-faced bear (Arctodus spp.). Besides their carnivorous habits, these bears were also scavengers, as were the big vultures and auras of the period.

Much less is known about the medium or small animals due, among other reasons, to a bias by either the recovery methodology or the investigators that only recovered the remains of large animals (although in the last 10 years this trend has changed). Medium to small mammals included skunks (Mephitis sp. and Conepatus sp.), raccoons (Procyon lotor), foxes (Urocyon cinereargenteus, Vulpes sp.), hares (Lepus spp.), rabbits (Sylvilagus spp. and Aztlanolagus agilis), gophers (Cratogeomys spp., Orthogeomys spp., Pappogeomys spp. and Thomomys spp.), voles (Microtus spp. and Synaptomys cooperi), wood and cotton rats (Neotoma spp. and Sigmodon hispidus) and mice (Oryzomys spp. and Peromyscus spp., among others).

In the mountains, including the Neovolcanic
Axis, a group of animals adapted to the browsing of bushes and trees. Different types of deer (several of them now extinct) were present, as were mastodon (Mammut americanum), gomphotheres (Cuvieronius troopicus and Stegomastodon sp.), ground sloth (Eremotherium laurillardi) and giant armadillo (Glyptotherium spp.). Among the predators were representatives of the current species, but of larger size, such as puma (Puma concolor), jaguar (Panthera onca) and black (Ursus americanus) and grizzly bears (Ursus arctos).

In large bodies of permanent water, such as Lake Texcoco (in the Basin of Mexico) or Lake Chapala in Jalisco, species like capybaras (Neochoroeus sp.), otters (Lontra sp.) and tapirs (Tapirus haysii) coexisted. These forms indicate bodies of fresh water and a lengthy Quaternary history for the lakes.

Many species expanded their distribution to latitudes or higher or lower altitudes and had a more northern or southern distribution during the Pleistocene. The tendency in the movements of the tropical mammals was similar to mammals of temperate climates. The patterns of current distribution of several groups of species can be explained as a result of the effect of the Pleistocene glaciations.