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OPILIONES

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INTRODUCTION

The Opiliones or harvestmen are known in Spanish as “falangia” or “opilión”. In Mexico, they are generally called “arañas patonas” or “tanganas.” Regionally they are known as “pinacates” in Jalisco and in Morelos and Tlaxcala as “sacabuches.” This group constitutes the fourth largest order of the Arachnida (following Araneae, Acari, and Pseudoscorpiones). They are one of the more widely distributed groups of organisms, occurring in most terrestrial habitats and on all continents except Antarctica proper. In North America, they occur well past the Arctic Circle as far north as 73°N. Even so, these often populous, conspicuous and common animals are generally little studied or understood. This is especially true for the taxa occurring in Mexico.

Historical account

While Simon (1879) was the first to describe a species, which is now known to occur in México, his species were originally recorded from the USA. The first author to describe a harvestman from México was Sorensen (1884). In the following year, Dugès (1885) described the third species. Like Simon, Weed (1893) described a species from the USA which was later reported from south of that country’s border. (Table 6.1).

Banks described further Mexican species in 1894 and years to follow into the early 1900’s. Since the turn of the century only about a dozen authors have named taxa which are now known to occur in Mexico.

Pocock (1903) described a new genus and several new species of Gagrellinae from Central and
Table 6.1. Authors of harvestmen species descriptions occurring in Mexico.

<table>
<thead>
<tr>
<th>Dates of publications</th>
<th>Authors</th>
<th>Nationality</th>
<th>Numbers of species</th>
</tr>
</thead>
<tbody>
<tr>
<td>1879</td>
<td>Eugène Simon</td>
<td>French</td>
<td>1</td>
</tr>
<tr>
<td>1884, 1932</td>
<td>William Sørensen</td>
<td>Danish</td>
<td>4</td>
</tr>
<tr>
<td>1884</td>
<td>Alfredo Dugès</td>
<td>Mexican</td>
<td>1</td>
</tr>
<tr>
<td>1893</td>
<td>Clarence Weed</td>
<td>American</td>
<td>1</td>
</tr>
<tr>
<td>1894-1910</td>
<td>Nathan Banks</td>
<td>American</td>
<td>15</td>
</tr>
<tr>
<td>1903</td>
<td>Reginald Pocock</td>
<td>English</td>
<td>1</td>
</tr>
<tr>
<td>1904, 1905</td>
<td>Frederick Octavius Pickard-Cambridge</td>
<td>English</td>
<td>33</td>
</tr>
<tr>
<td>1910-1956</td>
<td>Carl-Friedrich Roewer</td>
<td>German</td>
<td>27</td>
</tr>
<tr>
<td>1916</td>
<td>Theodore Cockerell</td>
<td>American</td>
<td>1</td>
</tr>
<tr>
<td>1925</td>
<td>Ralph Chamberlin</td>
<td>American</td>
<td>1</td>
</tr>
<tr>
<td>1933, 1944</td>
<td>Candido de Mello-Leitão</td>
<td>Brazilian</td>
<td>2</td>
</tr>
<tr>
<td>1942-1977</td>
<td>Clarence Goodnight &amp; Marie Goodnight</td>
<td>American</td>
<td>124</td>
</tr>
<tr>
<td>1974-1977</td>
<td>Vladimir Silhavy</td>
<td>Czech</td>
<td>9</td>
</tr>
<tr>
<td>1977</td>
<td>William Shear</td>
<td>American</td>
<td>1</td>
</tr>
<tr>
<td>1981, 1984</td>
<td>James Cokendolpher</td>
<td>American</td>
<td>3</td>
</tr>
<tr>
<td>1988</td>
<td>Carlos R. Beutelspacher</td>
<td>Mexican</td>
<td>3</td>
</tr>
<tr>
<td>1997</td>
<td>Ignacio Vázquez &amp; James Cokendolpher</td>
<td>Mexican &amp; American</td>
<td>1</td>
</tr>
</tbody>
</table>

South America. One of these species has now been taken in Mexico (Roewer, 1923).

In the monumental series "Biologia Centrali-Americana", published in England, Pickard-Cambridge (1904-1905) described many Mexican Opiliones, mainly Cosmetidae. Many of the type specimens are in the British Museum of Natural History, London (BMNH) and are still mounted dried on pins.

Cockerell (1916) described a single Nemastomatidae species which he and his wife collected on one of the islands of Baja California. This species has not been recollected in Mexico, but it is well known from numerous inland sites in southern California, USA.

Chamberlin (1925a) studying material from the Expedition of the California Academy of Sciences to the Gulf of Mexico in 1921, described a new Leiobuninae (Fig. 6.1) and recorded another species, and later (1925b) created the cosmetid genus Ketontes for a species earlier described by Banks.

The posthumous work by Sørensen (1932) contained descriptions of a few Cosmetidae and Stygnopsidae collected by Fritsche and deposited in the Zoologisk Museum, University of Copenhagen, and material from the Keyserling collection (BMNH) and Simon collection (Muséum National d'Histoire Naturelle, Paris, MNHN). Sørensen provided long-winded, Latin, unillustrated descriptions.

Mello-Leitão (1933) described a new species of Gagrellinae from Mexico and renamed (1944) one of Pickard-Cambridge’s Metopilio species which was preoccupied.

Caporiazzo (1938) described the genus Paraneolina and recorded a few species of Laniatores and Palpatores from Jalisco and Michoacán, collected by an expedition of Prof. Ghigi (Istituto di Zoolo gia della R. Università di Bologna) in 1932.

For about 50 years, Roewer was the world authority on Opiliones. In a bulky series of papers, following his 1923 review of the harvestmen of the world, he described an astonishing large number of species and monotypic genera. The Mexican material originated from scattered collections. He never did a comprehensive study of the Mexican opiliofauna.

Clarence and Marie Goodnight had a fairly large array of articles published on the Mexican fauna. In the first paper (1942a) they studied material from the American Museum of Natural History and also reviewed some material of Banks in
the Museum of Comparative Zoology. The second paper (Goodnight & Goodnight, 1942b) treated material collected by Cándido Bolívar y Pieltain (Instituto de Enfermedades Tropicales, México, DF), Federico Bonet (Escuela Nacional de Ciencias Biológicas, México, DF), L. I. Davis and H. Hoogstraal. The third paper (1944a) was published by the Mexican journal *Ciencia*. The fourth paper (1944b), along with material from Bolívar and Bonet, treated the material from the collection of Dr. Helmut Wagner. The fifth paper (1945) dealt with more material from Bolívar and Bonet, and for the first time recognized the validity of Sørensen’s *Stygdnopsinae*, today *Stygdnopsidae*, an important component of the Mexican Laniatorean fauna. Going further with this series, Goodnight & Goodnight (1946) described material from Bolívar, Bonet and a small collection by T. C. Schneir- la from Chiapas and Veracruz. More species, mainly of Palpatores, were described (Goodnight & Goodnight, 1947) from collections gathered by Ivan Sanderson and Henry Dybas from numerous Mexican states. After a good deal of collecting in Quintana Roo, Tabasco and Yucatán, a monographic review of the *Stygnommatidae* was published (Goodnight & Goodnight, 1951). In 1953, Goodnight & Goodnight published a large paper on the fauna of Chiapas, which became famous for an immense synonymy proposed for more than 60 genera of *Cosmetidae*. In 1954, Goodnight & Goodnight studied the fauna of the San Martín volcano, near San Andrés Tuxtla in Veracruz, both in the rainforest of the slope and in the low, shrubby forest of the summit. Given material from the speleological expeditions by James Reddell, Robert Mitchell and the Association for Mexican Cave Studies (AMCS), the Goodnights published more papers on the cavernicolous Mexican Opiliones (1971, 1973, 1977). Altogether, the Goodnights described more than a hundred species of Opiliones from Mexico, and contributed, although in a rather inaccurate way, to enhance the knowledge of this important fauna. (Figs. 6.2, 6.3).

Silhavy (1974) treated the material collected by the Italian speleologists Roberto Argano and Valerio Sbordoni during the two Italian Expeditions to México (1969 and 1971). Later (1977), he did the same with the material from another expedition by the Accademia Nazionale dei Lincei (1973) to Mexican karst regions. In these two papers, nicely illustrated, mainly Laniatores were described. Silhavy was the first to describe a harvestman from México that can be confidently recognized by today’s specialists. Previous researchers

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**Fig 6.1.** Accumulation of about 70,000 *Leiobunum* sp in a 4-5 m tall candelabra cactus (*Stenocereus* sp) in Jalisco (slightly modified from Wagner, 1954). a, cross-section through opilions and cactus; b, side view of cluster; c, view of entire cactus.
failed to note the diagnostic importance of the genitalia, especially that of the male.

Shear (1977) described the first and only known Cyphophthalmi from México. It is remarkable in its troglobitic features. Like so many other cavernicolus known from Mexico, the only known specimens were collected by members of the AMCS. Shear & Gruber (1983) redescribed the known ortholasmaites with the first (and only up to present) SEM photographs of a harvestmen from Mexico. Their descriptions are excellent and the species can be easily recognized.

Cokendolpher (1981, 1984) revised the taxonomy of Trachyrhinus, provided new records, and described a new genus and several new species from Mexico. A few other new records can be found scattered in other papers by Cokendolpher et al., which dealt with non-taxonomic aspects of the Opiliones. These records, as well as all others known to them were reviewed by Cokendolpher & Lee (1993). Unfortunately, they were unaware of the contents of the unpublished theses by Ramos (1962) and Morales Soto (1980). These two theses were produced at the UNAM. Neither was published and the later thesis was only uncovered by those outside of México in 1997. It is hoped that all future theses produced at the UNAM on Opiliones be published. Vázquez & Cokendolpher (1997) described a new troglobitic Laniatores.

Beutelspacher discovered, in a study on the fauna of a bromeliad (as part of his doctoral thesis), a new species of cosmetid, which he later described along with two others from Mexican collections (Beutelspacher, 1988). Like the earlier descriptions of cosmetids by Roewer and the Goodnights, the diagnostic features of the genitalia were not discussed or illustrated.
Fig. 6.3. Proportion of the contributions of each author in the number of described species of Mexican Opiliones (total = 283).

Composition of the fauna
The opiliofauna of México consists of 283 known species (one species of Cyphophthalmi, 139 Palpatores, and 143 Laniatores), of which 56 are still unnamed. Catalogues are given for all species of Opiliones so far recorded from México, arranged in lists by states and taxons in Appendices 6.1 and 6.2, respectively.

The majority (77%) of the Mexican species is endemic. Of those species known from other countries, 25% show affinities with the Nearctic region and 75% show affinities with the Neotropical region (Table 6.2). No cosmopolitan or introduced species are known from México. Almost 20% of the species are troglobites or troglophiles.

The suborder Cyphophthalmi is represented in México by a single species. These small harvestmen are not very mobile and tend to become easily isolated geographically. Extensive sampling of the soil and litter layers of México should reveal a few additional species. World-wide this suborder is represented by less than 50 species in six families. Five species are known from the USA and six species are known from the Americas south of México (Chile, Colombia, Brasil).

Relatively recent estimates of the number of species of the suborder Palpatores list 1000-2000 described species world-wide. The number of families is uncertain, but most authors currently accept about 15. The Mexican fauna consists of 139 species in four families. There are 92 species in nine families known from North America, north of México. There are about 230 species from four families of Palpatores from Central and South America and 30 species from one family from the West Indies. No member of the Phalangiidae is apparently present in México, although they are common in the remainder of the Holarctic region and in Africa. Members of this family are well-known tramps and have been introduced around the globe. Members of the Holarctic family Sabaconidae are also absent from México and apparently reach their southern limit in the New World in central California. The vast majority of Palpatores from México belong to the Sclerosomatidae (127 species). The remaining 11 species are members of the Caddidae, Nemastomatidae, and Protolophidae.

The suborder Laniatores has about 5000 species in the world. The Neotropical Laniatores number about 2300 species, belonging to 18 families. The Mexican fauna encompasses 143 species of Laniatores. The four Neotropical families of the superfamily Travunioidea are absent from México. The most species rich (about 860 species) family of the New World - the Gonyleptidae - is not represented in the Mexican fauna, in spite of mistaken ascriptions done by some authors in the past. The Cranidae, Manaosbiidae and Stygnidae are also absent. The bulk of the Mexican Laniatores is constituted by the Cosmeti-
Figs 6.4–6.10. Examples of some opilionid families which occur in México, schematic habitus, dorsal view. Distalmost segments of legs omitted in many cases. 4. Neogoveidae (Neogovea sp); 5. Acropsopilionidae (Acropsopilio chomulae); 6. Nemastomatidae (Ortholasma bolivari); 7. Sclerosomatidae (Gecaya sp); 8. Samoidae (Akalima vomerii); 9. Stygnopsidae (Karos sp); 10. Cosmetidae (Cynorta sp).

dae (about 70 species) and Stygnopsidae (about 50 species). The other represented families – Samoidae, Phalangodidae, Stygnomatidae and Zalmoxidae contribute only about 20 species altogether.

The Stygnopsidae, together with the Cosmetidae, are members of the superfamily Gonyleptoidea (Kury, 1994). The Stygnopsidae, present only in México, southern USA, Guatemala and Honduras, are the sister group of all other New World Gonyleptoidea, which are typically distributed from Costa Rica southwards. The Cosmetidae are the single exception, since they are found as far north as the northcentral USA. Other than the incongruent distribution of the Cosmetidae, this pattern represents a vicariant pattern occurring also in fishes, of a Central American component versus a South American one.

The Samoidae, Stygnomatidae and Zalmoxidae are members of the superfamily Zalmoxoidea, which includes also the Biantidae and Podoctidae (Kury, 1994). All these families occur in the Oriental and/or Afrotropical regions, as well as in the New World. The Zalmoxidae are also well represented in the Australian region. The exclusively Neotropical Minuidae have not been recorded from México yet.

What is the proportion of undescribed species?

This question is very much like that often asked “how many more kilometers of unexplored caves exist in México?” Only after the caves are discovered and mapped will this be known. A simple answer would be that many remain to be discovered and described. But at the same time many
have and will continue to be lost before they are ever discovered. The number of new species recorded in the appendices is very low compared to the possible number of existing taxa. These simply represent some of the easily recognized species which the authors have discovered during preliminary revisions of selected taxa.

Examination of several genera which have been revised (some only partially in unpublished studies) reveals some indication of the possible percentage of undescribed species. Relatively recent (within the last 20 years) studies of Palpatores genera with species in Mexico and/or the southern USA reveal on average that 53% of the total number of species of each genus are undescribed prior to the revisionary studies: Dalquesitia (67% new), Eumesosoma (50% new), Eurybunus (64% new), Metopilio (30% new), Ortholasma (38% new), Trachydrinus (67% new). Unfortunately, no recent revisions of Laniatores are available for México. A cursory examination of specimens housed at a single museum in the USA (Texas Memorial Museum, Austin — TMM) over a decade ago revealed that an average of 46% of the total number of species of each genus are undescribed: Hoplobunus (52% new) and Karos (39% new). Both of these genera are predominated by troglobilphic/troglobitic species and the curator of the TMM has recently informed us that many additional new species have been obtained since the preliminary studies of the 1980’s. Exploration of new cave regions in México are revealing a variety of new species. Vast karst regions of México remain to be collected. An example of the amazing number of cavernicoles was revealed by a 1992 revision of a southwestern USA endemic Laniatores genus, Texella Goodnight & Goodnight. This revision revealed that only 14% of the 21 species were described and 16 of the species were cavernicoles. Several additional new species of Texella have since been discovered in caves in Texas. Detailed study of Opiliones as part of the Mexican litter fauna has not begun. Many smaller cryptic species certainly await discovery in the soil and litter.

**What is the species richness in each state?**

The numbers of species known from each state are listed in Appendix 6.1 and mapped in Fig. 6.12. Their apparent biogeographic affinities are listed in Fig. 6.11.

Neogoea belongs to a family represented in West Africa (Paragoea Hansen) and in the Neotropics (Neogoea + Metagoea Rosas Costa), constituting an Afro-Neotropical component. This same distribution pattern is seen in the related family Ogoveidae. The sister group of Neogoeiidae + Ogoveidae are the Stylocelloidea, which are distributed in the Oriental region. This makes a typical Tropical Gondwanian component (superfamily Stylocelloidea). Neogoea has species in the Brazilian Amazonia and in Guyana, and none north of Mexico in North America. The occurrence of a species of Neogoea in México represents the northernmost extension of this genus in the Neotropics.

The occurrence of the endemic genus Guerrubunus in México represents the southernmost limit of the occurrence of true Phalangodidae in the New World. This family is typically distributed in the Holarctic Region and has 79 species recorded in the USA. This is the single example of penetration of typical Nearctic laniatorid fauna into México. The other two genera of Laniatores which reach the southern USA are Vonones and Hoplobunus, both typical members of the Neotropical opiliofauna, their maximum northern extension being here. Of the other 40 laniatorid genera,
Fig. 6.11. Relationships of Mexican species of Opiliones to the Nearctic and Neotropical faunas at species level.

all have closest relations with the Neotropical fauna, including the 16 endemic genera.

Acropsopilio is a relictual Palpatores genus occurring in widely separated localities in eastern North America, South America, Japan, Australia, and New Zealand. Although the species from México has only been described from a juvenile, it appears that it is more closely related to the species from the Southern Hemisphere than to those from the north. Two genera (Metopilio and Ortholasma) have mixed affinities. The three endemic genera belong to subfamilies with mixed relations. Approximately half of the remaining Palpatores have closest relations with the Nearctic and half have closest relations with the Neotropics. Eight genera show affinities with the Neotropics and nine have relations with the north; of which seven show affinities with the Nearctic faunas and two (Leiobunum and Nelima) are Holarctic (primarily Temperate). All of the genera having affinities with the Nearctic have congeneres in the southwestern portion of the USA, except for Hadrobunus. The two species of Hadrobunus described from México are not described in sufficient detail to assign them to that genus with confidence.

Cokendolpher has examined specimens from Nuevo León that might be conspecific with one of the Goodnights species assigned to Hadrobunus, but it is not that genus, it appears to be close to the central USA genus Eumesosoma Cokendolpher, but in light of more recent studies even that genus needs to be better defined. Three genera are endemic.

Which are the regions that most need study?
All regions of the country need further study, but the same amount of effort spent in two regions or habitats or season will not result in similar rewards. For example, collections in the desert are best timed during the rains. Extensive collecting for weeks during the dry periods will not capture as many animals and species as a single day collecting following a good rain. Because harvestmen prefer moist habitats, extensive collecting in the desert will never yield the number and diversity of species which can be obtained with the same effort in moister habitats. But new species remain to be described from arid environments, so no habitat should be overlooked. Even the better known regions need to be sampled further because pre-
vious collections were generally random and not extensive. Furthermore, most described taxa are not known by both sexes or juveniles. While hand collecting is a good census method, many species (especially the small cryptic forms) cannot be obtained easily without pitfall traps or Berlese funnels. Caves should continue to be investigated as they are proving to harbor a variety of endemic species. The greatest number of new species will probably be cryptic species occurring in caves and litter of forest trees.

Number of collections, literature, taxonomists in and out of México
Collections of Opiliones in México are rare and generally small and unidentified. By far the largest and most important collection of harvestmen in México is the Colección Nacional de Arácnidos (CNAR), Instituto de Biología, UNAM. It contains the types of Beutelspacher and some unidentified material. The harvestmen collection of Dra. Anita Hoffmann has been permanently deposited with CNAR and contains paratypes of 34 species described from the country by the Goodnights as well as part of the specimens studied by Morales Soto. In the past, some of the curators were hesitant or refused to loan material as they feared the material would not be safely returned. Loans can now be made to qualified researchers. However, due to a lack of confidence in the country’s postal system, loans are generally (especially for types) hand-carried. Researchers are encouraged to visit the collection and grant writers should budget such trips, including a return visit.

Samples of the Mexican fauna are present in a limited way in many foreign collections. Virtually every major university or museum collection of arachnids in the USA has at least a few opilions from México, especially those located in the southern USA. A lot of these specimens was collected by students and researchers that collected them incidentally to other activities or as general collections made while they traveled in México. Many student collections corresponded to “Spring Break” vacations in México. The most prominent collection appears to be that of the American
with an interest and at least one publication on the group. Of these, 17 have published at least one paper on harvestmen from the New World.

The future for the study of Opiliones of México does not look good. There are only six individuals currently looking at any specimens from Mexico and none receive funding to conduct research on them.

William A. Shear (Hampden-Sydney College, USA) has a manuscript started on some new Ortoholasmatinae, including a new genus and several new species. He has little time to devote to this study and it is uncertain when it will be completed. He received the first specimen of the new genus about 20 years ago. His current research funding is for the study of millipedes.

Ignacio Vázquez (Instituto de Biología, UNAM) is interested in cavernicolous Opiliones and hopes to continue his studies of these taxa from México. He receives no funding and progress will be slow and difficult. Because Vázquez is also interested in several other arachnid orders, his time and efforts will have to be split with studies on these other groups.

Abel Pérez González and Luis F. de Armas (Instituto de Ecología y Sistemática, Habana, Cuba) have begun work on the opilios fauna of the state of Quintana Roo.

Kury is studying Mexican Stygnopsidae in connection with a larger project on the phylogeny of Laniatores, but this study is aimed at higher relationships and not to the descriptions of new species.

Cokendolpher has numerous manuscripts (generic revisions) in various stages of completion sitting on the shelf as he has limited free time and no funding to finish the studies. Some of the manuscripts were started almost two decades ago. The only study likely to be finished anytime soon is a description of a single new Dalquestia sp Cokendolpher is the leading authority on Mexican Opiliones but has not received any funding for research on Opiliones for over 15 years. While co-writing the chapter on the status and needs of arachnology in North America (Coddington et al., 1990), Cokendolpher was unemployed. Since then, he has not been able to obtain a position in an institution which would promote research on arachnids nor training of students.

Are there databases of the collections?
There are no national databases dealing with the Opiliones of México or any other non-European country. Some museums have started to create databases of their arachnid holdings but these are generally incomplete. The Opiliones holdings of the Texas Memorial Museum, Austin, USA are catalogued but not yet available via Internet. We are not aware of other collections which are completely databased.

State of the art in the taxonomy
The 227 species of named Mexican Opiliones are listed in two catalogues (Cokendolpher & Lee, 1993; Kury, MS). The only general review of the order in México (Morales Soto, 1980) is now outdated, incomplete, and was never published. Keys for identifications of the genera and species are likewise not available, except for a few in the work by Morales Soto. Only about 20 species of harvestmen known from México have been adequately described for at least one sex, including the genitalia. All except for these few taxa need to be redescribed and illustrated. Only ten species have been adequately described from both sexes and no detailed descriptions of juveniles are available. Previous studies (most unpublished) have revealed that ages (adult versus immature) and sexes stated in the original descriptions by some earlier authors (which did not study the genitalia) are incorrect. The generic classifications of many of the Mexican harvestmen will undoubtedly be changed as taxonomic revisions, including the study of genitalia, are undertaken. No genetic data are available for any harvestman species from México. Ultrastructural studies are essentially non-existent; a few SEM illustrations are available of three Ortoholasma species. Likewise, biochemical data on the defensive gland secretions are limited to that of only two unrelated species. The vast majority of species recorded from México are known only from one or only a few specimens and little is known about morphological variation. In short, the only way most specimens of opiliones from Mexico can be identified with certainty is by comparison to either topotypes or type specimens (a practice not suitable outside of taxonomic revisions).
Museum of Natural History (AMNH), New York, which holds the majority of type specimens of species described from México. Other museums holding type specimens are: British Museum of Natural History, London; California Academy of Sciences (CAS), San Francisco; Field Museum of Natural History, Chicago (FMNH); Florida State Collection of Arthropods (FSCA), Gainesville; Museu Nacional, Universidade Federal do Rio de Janeiro; Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts (MCZ); Muséum National d’Histoire Naturelle, Paris; Senckenberg Natur Museum, Senckenberg am Main; Smithsonian Institution (United States National Museum-USNM), Washington; Texas Memorial Museum, Austin (TMM); Zoological Institute, Rome University (ZIRU); Zoologische Museum, Berlin; Zoologisk Museum, Copenhagen. A few paratypes are in the private collection of James Cokendolpher (JCC).

Significant unsorted/unidentified collections are available at the FMNH and TMM. The FMNH has unsorted Berlese-funnel samples which may contain harvestmen from: Michoacán, Oaxaca, Puebla (23 samples collected by Anderson); Nuevo León, Quintana Roo, San Luis Potosí (55 samples collected by Peck); and Hidalgo, Jalisco, México, Veracruz (71 samples collected by Newton). There are also 85 general collections by S. Ashe from Veracruz, Hidalgo, Querétaro, and San Luis Potosí at the FMNH. The TMM has many general surface collections made by Mundel while recollecting Chamberlin’s type localities for centipedes and general Mexican collections. Also present are collections made by Reeder and Riechert during a trip through Mexico to central America. The Association for Mexican Cave Studies (AMCS) collections made since about 1980 are now at TMM. Earlier collections of AMCS are either in AMNH, TMM, or JCC. Most of the material reported in the literature to be deposited in the Texas Tech University, Lubbock, collection was transferred to the TMM; a few to JCC. Other significant holdings of general collections from México are in the AMNH, CAS, FMNH, JCC, and MCZ. The largest collections from caves have been made by members of the AMCS. Other significant collections of cave species have been made by the Italian Zoological Missions to México (sponsored by the National Academy of Lincei) and the Sociedad Mexicana de Exploraciones Subterráneas. The collections from these two groups are deposited in ZIRU and UNAM, respectively.

The literature on harvestmen of México appears in a diverse selection of world-wide publications. Many are difficult to obtain, even in the best libraries. Cokendolpher & Lee (1993) listed all the literature up to 1993. The only significant publications not appearing in that work are those by: Morales Soto (1980) and Vázquez & Cokendolpher (1997). Cokendolpher currently is offering a world-wide bibliography via Internet. A permanent URL has yet to be established, but a link to the bibliography is available from the Arachnology Homepage at http://www.ufsia.ac.be/Arachnology/Arachnology.html.

Alfredo Dugès, a resident of Guanajuato, described the second species of Opiliones from México in 1885. It was 103 years before another resident of the country (Carlos R. Beutelspacher B. of México City) would describe another member of the order. The only other Mexican to name a species of harvestmen from México is Ignacio M. Vázquez (Vázquez & Cokendolpher, 1997). There are two theses produced by students at UNAM which deal with Opiliones (Ramos E., 1962 and Morales Soto, 1980), but neither study has been published. We are not aware of further studies on the systematics of Opiliones being conducted by Mexicans, except for the general study of cavernicolous Opiliones by I. Vázquez. A native of Michoacán, Dr. Rogelio Macías-Ordóñez recently concluded his Ph.D. dissertation (1997) on the mating system of a USA Leiobunum sp. He will continue his studies in mating systems and ecology in general of opilions at the Instituto de Ecología-UNAM, Campus Morelia.

According to the Centre International de Documentation Arachnologique (C.I.D.A., 1995) there are 34 members of that group world-wide which list systematics of Opiliones as an area of interest. Of these, one is now deceased and three have never published anything (systematic or otherwise) on the order. We are aware of six additional scientists that are not on the CIDA list — Chemini (Italy), Crawford (USA), Holmberg (Canada), Kury (Brazil), Martens (Germany), Vázquez (México). This brings to a total of 36 individuals world-wide
by suborder in the remainder of the text; they are for ease of presentation arranged here in alphabetical order by family.

MÉXICO (country only) (total species = 1).
SCLEROSOMATIDAE: Prionostemma albibalpe.

aguascalientes (total species = 1). nemastomatidae: New genus n. sp. 1.

Baja california (total species = 8). cosmetidae: kevnones mexicanus. nemastomatidae: ortholasma coronadense. sclerosomatidae: eurybycuss sp 2, eurybycuss sp 3, Leuroychus pacificus, Protolophus sp 1, Protolophus sp 2, Trachyrhinus marmoratus.

Baja california sur (total species = 3). Sclerosomatidae: Eurybycuss sp 4, Eurybycuss sp 5, Leobunum escondidum.


Chihuahua (total species = 5). Sclerosomatidae: Eurybycuss spinosus, Dalguesta concho, Leobunum townsendi, Leobunum n. sp. 5, Metopilus n. sp 3.

coahuila (total species = 3). Sclerosomatidae: Metopilus n. sp 6, Trachyrhinus marmoratus, Trachyrhinus rectipalpus.


distrito federal (total species = 15). nemastomatidae: Ortholasma boliviari. Sclerosomatidae: Geaya ephippiata, Leobunum desertum, Leobunum insignitum, Leobunum...

APPENDIX 6.1.

List of species by state

Listing of species of Opiliones from México by state or district. Although the taxa are arranged...
Acknowledgments
We thank James R. Reddell (Texas Memorial Museum), Daniel Summers (Field Museum of Natural History), and Tila M. Pérez and Ignacio M. Vázquez (Instituto de Biología and Facultad de Ciencias, Universidad Nacional Autónoma de México) for sharing information about the collections housed at their institutions. Abel Pérez González is thanked for sharing information about the studies he and Dr. Armas have underway. I. Vázquez is further thanked for his help obtaining literature and information about Opiliones and those that have studied them from México.

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ischionotatum luteovittatum, Leibunum potosum, Metopilios albispinulatus, Metopilios hispidus, Metopilios n sp 1, Nelia mexicana, Prionostemma fulvum, Prionostemma genufacium, Prionostemma nigrum, Prionostemma perlucidum. **STYGNOSIDAE**: Hoplobunus mexicanus.

**Durango** (total species = 3). **SCLEROSOMATIDAE**: Dalquestia concho, Leibunum townsendi, Trachyrhinus marmoratus

**Edu. de México** (total species = 18). **COMITIUM**: Metavonones hispidus. **NEMASTOMATIDAE**: Ortholasma bolivari. **PHALANGIDIDAE**: Guerobunos arganoi, Guerobunos vallensis. **SCLEROSOMATIDAE**: Duguetinus raptator, Geayorranna plana, Leibunum bruchi, Leibunum consimilis, Leibunum ischionotatum, Leibunum mexicanum, Metopilios armigerus, Metopilios australis, Metopilios hispidus, Metopilios spinulatus, Metopilios n sp 4, Nelia tenticula, Paranalima albalinea, Paranalima lutzi.

**Guanajuato** (total species = 4). **NEMASTOMATIDAE**: Ortholasma bolivari. **SCLEROSOMATIDAE**: Leibunum ischionotatum, Leibunum nycticorpus, Metopilios spinulatus.

**Guerrero** (total species = 30). **COMITIUM**: Cynorta cardenasii, Cynorta lineata, Metavonones hispidus, Paravonones biserratus, Paravonones claviger, Paravonones quadratus. **PHALANGIDIDAE**: Guerobunos minutus. **SCLEROSOMATIDAE**: Cosmobunus auratus, Geaya davisi, Globipes schultzei, Hadrobus davisi, Krusa annulata, Krusa n sp 2, Krusa n sp 3, Leibunum bolivari, Leibunum consimilis, Leibunum guererrerosis, Leibunum marmoratum, Leibunum metalicum, Leibunum tascum, Leurochus fulviventris, Metopilios acanthipes, Metopilios armigerus, Metopilios cambridgei, Metopilios maculatipes, Metopilios spinigerus, Prionostemma coriaceum, Prionostemma fulvum, Prionostemma genuticus, Prionostemma nigrum.

**Hidalgo** (total species = 21). **COMITIUM**: Cynorta formosa. **NEMASTOMATIDAE**: Ortholasma bolivari, Ortholasma n sp 3. **SCLEROSOMATIDAE**: Dalquestia grasshoffii, Geaya esperanza, Krusa flavus, Krusa metallica, Krusa n sp 5, Leibunum nycticorpus, Leibunum rouli, Leibunum viridorum, Leibunum n sp 1, Leibunum n sp 3, Metopilios maculatipes, Paranalima albalinea, Paranalima lutzi. **STYGNOSIDAE**: Karos barbarykos, Karos unispinosus, Karos n sp 4, Karos n sp 5, Hoplobunus barretti.

**Jalisco** (total species = 12). **COMITIUM**: Cynorta quadrinacula, Cynorta macroptera, Cynorta metatarsalis, Metavonones hispidus, Vomorana conspersa, Vomorana scabrii. **NEMASTOMATIDAE**: Ortholasma bolivari. **SCLEROSOMATIDAE**: Cosmobunus auratus, Leibunum bruchi, Leibunum consimilis, Leibunum potosum, Metopilios maculatipes, Metopilios n sp 2, Nelia mexicana, Paragayora n sp 1, Paranalima albalinea, Paranalima lutzi, Trachyrhinus marmoratus. **STYGNOSIDAE**: Hoplobunus n sp 2, Hoplobunus n sp 7, Hoplobunus n sp 1.

**Querétaro** (total species = 8). **SAMOIDEAE**: Pelloobunus mexicanus. **SCLEROSOMATIDAE**: Leibunum metalicum, Leibunum viridorum. **STYGNOSIDAE**: Hoplobunus queretarius, Hoplobunus n sp 2, Hoplobunus n sp 1, Karos depressus, Karos n sp 7.

**Quintana Roo** (total species = 4). **COMITIUM**: Erginus clavatibialis, Holobunones compressus, SCLEROSOMATIDAE: Geaya yucatana. **STYGNOSMATIDAE**: Stygnumma spiniferus tanchense.

**San Luis Potosí** (total species = 26). **COMITIUM**: Cynorta davisi, Cynorta formosa, Cynorta guadalupensis, Cynorta jameyemi, Cynorta triangulata, Cynortexoides albiaeperus. **NEMASTOMATIDAE**: New gemen n sp 2. **SCLEROSOMATIDAE**: Leibunum mesopunctatum, Leibunum metalicum,
Leiobunum ncticorpus, Leiobunum potosum, Leiobunum royalii, Leiobunum viridorsum, Trachyrhinus marmoratus. 

**Stygnoptidae**: Hoplobubus boneti, Hoplobubus planus, Hoplobubus n sp 2, Hoplobubus n sp 3, Hoplobubus n sp 6, Hoplobubus n sp 8, Hoplobubus n sp 9, Karos dybasi, Karos gratiosus, Karos parvus, Karos projectus, Karos n sp 1.

**Sinaloa** (total species = 2). **Sclerosomatidae**: Diguetinus n sp, Leiobunum bogetri.

**Sonora** (total species = 2). **Sclerosomatidae**: Eurybubus n sp 1, Trachyrhinus marmoratus.

**Tabasco** (total species = 13). **Cosmetidae**: Erginlus clavipes, Erginlus clavatibialis, Heterovenones incrassatus, Holovenones compressus. **Family uncertain (Laniatores)**: Metaconomma femorale. **Sclerosomatidae**: Leiobunum dromedarium, Prionostemma fooveolatum, Prionostemma fulvum. **Stygnommatidae**: Stygnomma teapense. **Stygnoptidae**: Paramitraceras femoralis, Paramitraceras granulatus. **Zalmoxidae**: Metapachylus gracilis, Pachylycus acutus.

**Tamaulipas** (total species = 34). **Cosmetidae**: Cyorta jamesoni, Cyorta triangulata, Erginipera mexicana, Erginlus centralis, Vonones sayi. **Nemastomatidae**: Ortholasma bordonii, Ortholasma n.sp. **Sclerosomatidae**: Dalgestia n sp 1, Geaya lampicona, Holobunus mexicanus, Krusa n sp 1, Krusa n sp 4, Leiobunum flavum, Leiobunum ncticorpus, Leiobunum viridorsum, Leiobunum n sp 3, Leiobunum n sp 4, Metopilio mexicanus, Metopilio multispinulatus, Nellima n sp 1, Prionostemma splendens, Trachyrhinus rectipalpus, N. G. n sp 1. **Stygnommatidae**: Stygnomma tuberculatum. **Stygnoptidae**: Hoplobubus boneti, Hoplobubus mexicanus, Hoplobubus n sp 1, Hoplobubus n sp 4, Hoplobubus n sp 5, Karos parvus, Karos n sp 2, Karos n sp 3, Tampiconus phillipii, Troglostygnopis inops.

**Tlaxcala** (total species = 1). **Sclerosomatidae**: Paranelima albinata.

**Veracruz** (total species = 50). **Cosmetidae**: Acromares banksi, Cyorta cruzensis, Cyorta damphi, Cyorta forina, Cyorta goodnightorum, Cyorta gregaria, Cyorta josecarlosi, Cyorta skoearae, Cyortula wheeleri, Erginlus clavatibialis, Erginlus leviarcatus, Erginlus pulchirus, Eucnyorta macolusa, Eucynortoides maculatus, Metavenones hispidus, Meterginus basalis, Paecilaema lucifugum, Poala mexicana, Vonones pelaezi. **Family uncertain (Laniatores)**: Philora tuxtlae. **Nemastomatidae**: Ortholasma bolitari, Ortholasma n sp 2. **Sclerosomatidae**: Geaya auruginia, Geaya tezonapa, Geaya weneli, Krusa mexicana, Leiobunum collinae, Leiobunum consilulis, Leiobunum dromedarium, Leiobunum nigrigenum, Leiobunum veracruzensis, Metopilio australis, Parageya albifrons, Parageya n sp 1, Prionostemma albofasciatum, Prionostemma coriaceum, Prionostemma coxale, Prionostemma scintillans, Prionostemma wagneri. **Stygnommatidae**: Stygnomma annulipes, Stygnomma bispinatum. **Stygnoptidae**: Hoplobubus neglectus, Karos brignolii, Karos rugosus, Karos n sp 6, Stygnopsis robusta, Stygnopsis valida, Troglostygnopis anophthalma. **Zalmoxidae**: Ethobunus acanthotibialis, Pachylycus acutus.

**Yucatán** (total species = 10). **Cosmetidae**: Erginlus bimaculatus, Erginlus clavatibialis, Erginlus gervaisii, Erginlus roeweri, Holovenones compressus. **Sclerosomatidae**: Geaya yucatana, Leiobunum dromedarium, Prionostemma tekoma. **Stygnommatidae**: Stygnomma maya. **Zalmoxidae**: Pachylycus acutus.

**Zacatecas** (total species = 1). **Sclerosomatidae**: Trachyrhinus marmoratus.

**APPENDIX 6.2.**

**List of species with distribution**

Taxonomic listing of species of Opiliones from México and their distribution in and outside of México. Records reported in an unpublished thesis by Morales Soto (1980) have not been incorporated into this list because we are unable to determine the validity of those records. The regional and faunal associations are defined as:

endemic = endemic to state(s) listed, not occurring outside of Mexico,

Nearctic affinities = occurring in México and further north in countries and states listed,

Neotropical affinities = occurring in México as well as further south in countries listed,

troglobitic = obligate cavernicoles; restricted to and modified for living in caves,

troglophilic = non-troglophilic cave-dweller, facultative cavernicoles, species often found living in caves but capable of surviving and completing their life cycle outside of caves,

troglophilic-troglobitic? = undescribed species from caves which need further study to determine their relationship with caves.

Abreviations: Goodnight & Goodnight = G & G; Pickard-Cambridge = P-C, Banks = B; Roewer = R y Silhavy = S.

**CYPHOPHTHALMI**

**Neogoveidae**

**Neogovea mexaca** Shear, 1977. OAX (endemic, troglobitic).

**PALPATORES**

**Caddoidea**

**Caddidae**

**Acropsopilio chomulae** (G & G, 1948). CHIS (endemic).
Ischyropsalidoidea
Nemastomatidae
New genus n sp 1. AGS (endemic).
New genus n sp 2. SLP (endemic).
Ortholasma bolivari (G & G, 1942). DF GTO HGO
JAL MEX MOR PUE VER (endemic).
Ortholasma coronadense Cockerell, 1916. BC
(Nearctic affinities: USA, California).
Ortholasma sordronii S, 1974. TAMPS (endemic, troglobitic).
Ortholasma n sp 1. NL TAMPS (endemic, troglobitic).
Ortholasma n sp 2. VER (endemic).
Ortholasma n sp 3. HGO MICH (endemic).

Phalangioida
Sclerosomatidae
Gagrellinae
Geyara aurigina G & G, 1942. OAX VER (endemic).
Geyara davisi G & G, 1942. GRO (endemic).
Geyara esperanza G & G, 1942. CHIS HGO (endemic).
Geyara lineata G & G, 1953. CHIS (endemic).
Geyara plana G & G, 1942. MEX (endemic).
Geyara tampaconia R, 1953. TAMPS (endemic).
Geyara tezontana G & G, 1947. VER (endemic).
Geyara yucatana G & G, 1947. CAMP QROO YUC
(endemic, troglobitic).

Holcocobus mexicanus R, 1953. TAMPS (endemic).
Krusa annullata G & G, 1945. GRO (endemic).
Krusa flavia G & G, 1946. HGO (endemic).
Krusa metallica G & G, 1946. HGO (endemic).
Krusa stellata G & G, 1946. MICH (endemic).
Krusa tuberculata G & G, 1946. MICH (endemic).
Krusa n sp 1. NL, TAMPS (endemic).
Krusa n sp 2. GRO (endemic).
Krusa n sp 3. GRO (endemic).
Krusa n sp 4. TAMPS (endemic).
Krusa n sp 5. HGO (endemic).
Parageyara alibifrons G & G, 1942. VER (endemic).
Parageyara n sp 1. PUE, VER (endemic, troglobitic).
Parageyara n sp 2. CHIS, OAX (endemic, troglobitic).
Prionostemma albipalpe (B., 1898). México [country
only] (endemic).
Prionostemma albofasciatum (P-C, 1905). VER
(endemic).
Prionostemma coriaceum (P-C, 1905). CHIS, GRO,
JAL, MOR, OAX, VER (endemic).
Prionostemma coxale (B., 1909). VER (Neotropical
affinities: Costa Rica).
Prionostemma foveolatum (P-C, 1905). CHIS, TAB
(endemic).
Prionostemma fulvum (P-C, 1905). CHIS, DF, GRO,
JAL, TAB (endemic).
Prionostemma genufascrum R, 1910. DF, GRO
(endemic).
Prionostemma lubea G & G, 1946. CHIS (endemic).
Prionostemma nigrum R, 1910. DF, GRO
(Neotropical affinities: Panama).
Prionostemma perlucidum R, 1910. DF (Neotropical
affinities: Costa Rica, El Salvador).
Prionostemma scintillans Pocock, 1903. VER
(NEotropical affinities: Guatemala).
Prionostemma splendens R, 1953. TAMPS (endemic).
Prionostemma victoriae G & G, 1946. CHIS
(endemic).
Prionostemma wagneri G & G, 1944. CHIS, VER
(endemic).
Romera bicolor G & G, 1944. CHIS (endemic).
Romera catharina G & G, 1944. CHIS (endemic).
Trachyrhinus marmoratus B, 1894. BC, COAH, DGO,
PUE, SLP, SON, ZAC (Nearctic affinities: central
USA states to almost Canada).
Trachyrhinus rectipalpus Cokendolpher, 1981.
COAH, TAMPS (Nearctic affinities: USA, Texas).

Leiobuninae
Cosmoboxus auratus G & G, 1946. GRO, MOR, OAX,
PUE (endemic).
Hadrobus davisi G & G, 1942. GRO (endemic).
Hadrobus knighti G & G, 1942. NL (endemic).
Leiobunum alvarezi G & G, 1945. MOR (endemic).
Leiobunum bogerti G & G, 1942. JAL, NAY, SIN,
(endemic).
Leiobunum bolivari G & G, 1945. GRO, MICH
(endemic).
Leiobunum bruchi Mello-Leitão, 1933. MEX, PUE
(endemic).
Leiobunum "cactorum" Wagner, 1955, nomen
nudum. JAL (endemic).
Leiobunum colinae G & G, 1945. COL, VER
(endemic).
Leiobunum consimilis B, 1900. GRO, JAL, MEX,
MOR, PUE, VER (endemic).
Leiobunum denticulatum B, 1900. MOR (endemic).
Leiobunum desertum G & G, 1944. DF, MOR
(endemic).
Leiobunum dromedarium P-C, 1905. CAMP, CHIS,
TAB, VER, YUC (endemic).
Leiobunum escondidum Chamberlin, 1925. BCS
(endemic).
Leiobunum flavum B, 1894. TAMPS (Nearctic
affinities: central and eastern USA)
Leiobunum fuscorum B, 1910. CHIS (Neotropical
affinities: Guatemala).
Leiobunum guerrerensis G & G, 1946. GRO (endemic).
Leiobunum hoogstraali G & G, 1942. MICH (endemic).
Leiobunum insignitum R, 1910. DF (endemic).
Leiobunum ischionotatum (Dugès, 1885). GTO, MEX,
MICH (endemic).
Leiobunum ischionotatum luteovittatum R, 1912. DF
(endemic).
Leiobunum marmoratum P-C, 1905. GRO (endemic).
Leiobunum mesopunctatum G & G, 1942. SLP (endemic).
Leiobunum metallicum R, 1932. GRO, QRO, SLP, TAMPS (endemic, troglphilic).
Leiobunum mexicanum B, 1898. MEX (endemic).
Leiobunum nigrogrum G & G, 1945. VER (endemic).
Leiobunum nycticorpus G & G, 1942. GTO, HGO, JAL, SLP, TAMPS (endemic).
Leiobunum putzquarum G & G, 1942. MICH, NL (endemic).
Leiobunum potosum G & G, 1942. DF, PUE, SLP (endemic).
Leiobunum roseni G & G, 1946. HGO, SLP (endemic).
Leiobunum tascum G & G, 1945. GRO (endemic).
Leiobunum townsendi Weed, 1893. CHIH, DGO (Nearctic affinities: USA, Texas, New Mexico, Arizona)
Leiobunum viridorsum G & G, 1942. HGO, NL, QRO, SLP, TAMPS (endemic, troglphilic).
Leiobunum n sp 1. HGO (endemic).
Leiobunum n sp 2. TAMPS (endemic).
Leiobunum n sp 3. HGO (endemic).
Leiobunum n sp 4. NL, TAMPS (endemic).
Leiobunum n sp 5. CHIH (endemic).
Leuronyx gruloventre (P-C, 1905). GRO (endemic).
Leuronyx grulus pacificus (B, 1894). BC (Nearctic affinities: USA and Canada Pacific coastal states)
Nelima mexicana G & G, 1942. DF, PUE (endemic).
Nelima tancitaro G & G, 1942. MEX, CHIH (endemic).
Nelima n sp 1. TAMPS (endemic).
Paranetana albilimata G & G, 1942. HGO, MEX, MOR, PUE, TLAX (endemic).
Paranetana erronea G & G, 1942. MICH (endemic).
Paranetana correa G & G, 1945. MICH (endemic).
Paranetana lutzi (G & G, 1942). HGO, PUE (endemic).
Paranetana mexicana (G & G, 1942). MICH (endemic).
New genus n sp 1. NL, TAMPS (endemic).

Undescribed subfamily
Dalquestia concho Cokendolpher, 1984. CHIH, DGO (endemic).
Dalquestia formosa (B, 1910). NL. (Nearctic affinities: USA, Texas)
Dalquestia grashoffi Cokendolpher, 1984. HGO (endemic).
Dalquestia n. sp. 1 TAMPS (endemic).
Diguetinus raptator R, 1912. JAL, MEX, MICH (endemic).
Diguetinus sp. SIN (endemic).
Eurybunus spinosus B, 1895. CHIH (Nearctic affinities: USA, California)
Eurybunus n sp 1 SON (endemic).
Eurybunus n sp 2 BC (endemic).
Eurybunus n sp 3 BC (endemic).
Eurybunus n sp 4 BCS (endemic).
Eurybunus n sp 5 BCS (endemic).
Globipes schultzei R, 1932. GRO (endemic).
Globipes n sp 1. NL (endemic).
Metopilus australis (P-C, 1905). GRO (endemic).
Metopilus albuspinulatus G & G, 1944. DF, MOR (endemic).
Metopilus armatus G & G, 1953. CHIH (endemic).
Metopilus armigerus (P-C, 1905). GRO, MEX, MOR (endemic).
Metopilus australis (B, 1909). MEX, CHIH, VER (Neotropical affinities: Costa Rica)
Metopilus cambridgei Mello-Leitão, 1944. GRO, CHIH (endemic).
Metopilus diazi G & G, 1945. MICH (endemic).
Metopilus maculatipes (P-C, 1905). GRO, HGO, PUE (endemic).
Metopilus multispinulatus G & G, 1944. MOR, TAMPS (endemic).
Metopilus niger G & G, 1942. MOR (endemic).
Metopilus spinigerus (P-C, 1905). GRO (endemic).
Metopilus spinulatus (B, 1898). GTO, JAL, MEX, CHIH, NAY (endemic).
Metopilus n sp 1. DF (endemic).
Metopilus n sp 2. PUE (endemic).
Metopilus n sp 3. CHIH (endemic).
Metopilus n sp 4. MEX (endemic).
Metopilus n sp 5. JAL, NAY (endemic).
Metopilus n sp 6. COAH (endemic).

Protolophidae
Protolophus sp 1 BC (endemic).
Protolophus sp 2 BC (endemic).

Laniatores
Cosmetidae
Remark — Many of the monotypic genera created by Roever have been synonymized under Vonones, Cynorta or Paecilaema (G & G, 1953), but we have decided not to follow that extensive and poorly founded synonymy.
Acromares banksi G & G, 1942. OAX, VER (endemic).
Boneta bilineata G & G, 1944. NL (endemic).
Colima multimaculata G & G, 1945. COL, MICH (endemic).
Cynorta arborescens G & G, 1953. CHIH (endemic).
Cynorta blasi G & G, 1953. NAY (endemic).
Cynorta cardenasi G & G, 1945. GRO (endemic).
Cynorta casa G & G, 1953. CHIH (endemic).
Cynorta churubuschi G & G, 1953. CHIH (endemic).
Cynorta cruzensis G & G, 1947. VER (endemic).
Cynorta dampfi R, 1931. VER (endemic).
Cynorta davisi G & G, 1942. SLP (endemic).
Cynorta formosa G & G, 1946. HGO, SLP (endemic).
Cynorta fortina G & G, 1945. VER (endemic).
Cynorta goodnightorum Beutelspacher, 1988, emended. VER (endemic). [In the original description, Beutelspacher (1988) dedicated the specific name to "los esposos Goodnight." Therefore the termination of the specific name should be "orum", not "i" as used in the original publication.]
Cynorta palmarum G & G, 1953. NAY (endemic).
Cynorta skvarrae R, 1931. VER (endemic).
Cynorta triangulata G & G, 1942. SLP, TAMPS (endemic).
Cynortoides albiadspersus G & G, 1946. SLP (endemic).
Cynortula quadrimaculata R, 1912. PUE (endemic).
Cynortula wheeleri R, 1931. VER (endemic).
Erginulus centralis (Sørensen, 1932). TAMPS (endemic).
Erginulus clavipes (P-C, 1905). CHIS, TAB (Neotropical affinities: Guatemala).
Erginulus clavotibialis (P-C, 1905). CAMP, CHIS, OAX, QRO, TAB, VER, YUC (Neotropical affinities: Belize, Guatemala).
Erginulus erectispinus (P-C, 1904). CHIS (Neotropical affinities: Guatemala).
Erginulus gervaisii (Sørensen, 1932). YUC (endemic).
Erginulus leviarcuatus (Sørensen, 1932). VER (endemic).
Erginulus pulchrus G & G, 1942. VER (endemic).
Erginulus serratipes (P-C, 1905). CHIS (Neotropical affinities: Belize, Guatemala, troglobilphic).
Erginulus subserialis gertschi (G & G, 1942). CHIS (endemic).
Eucynorta maculosa (G & G, 1942). VER (endemic).
Eucynortoides maculatus R, 1912. PUE, VER (endemic).
Eucynortula metatarsalis R, 1912. NAY, PUE (endemic).
Guerrona lineata G & G, 1942. GRO (endemic).
Heterovonones incrassatus (P-C, 1904). CHIS TAB (endemic).
Kevonones mexicanus (B, 1898). BC (endemic).
Metacynorta gracilipes P-C, 1904. CHIS (Neotropical affinities: Guatemala).
Metacynorta vokesi G & G, 1942. NAY (endemic).
Metaxonones hispidus P-C, 1904. GRO, MEX, MICH, MOR, PUE, VER (endemic).
Meterginus apicalis P-C, 1905. CHIS (Neotropical affinities: Guatemala).
Meterginus basalis P-C, 1905. VER (endemic).
Meterginus dorsalis P-C, 1905. CHIS (Neotropical affinities: Guatemala).
Michella hoogstraali G & G, 1942. MICH (endemic).
Paccilaema rastellifer P-C, 1905. CHIS (endemic).
\( ? \).Palpinus laevis P-C, 1905. JAL (identity?). [This genus and species is unrecognizable because it is based upon juveniles. Caporiacco (1938), unaware that this taxa was based upon a juvenile, recorded the species from Jalisco. His record is the only one for the family from Jalisco. Until further specimens are collected, the true identifications can not be determined.]
Paravonones biserratus P-C, 1904. GRO, MICH (endemic).
Paravonones claviger P-C, 1904. GRO (endemic).
Paravonones quadratus P-C, 1904. GRO (endemic).
Poala granulosa G & G, 1942. MOR (endemic).
Poala mexicana (B, 1898). VER (endemic).
Prosontes phalattes G & G, 1945. COL (endemic).
Vononana conspersa R, 1947. PUE (endemic).
Vonones circumlinearis G & G, 1953. CHIS (endemic).
Vonones longipes (G & G, 1942. OAX (endemic).
Vonones malkini G & G, 1953. NAY (endemic).
Vonones pelaezi (G & G, 1942). VER (endemic).
Vonones petrunkevitychi (G & G, 1942). CHIS (endemic).
Vonones sayi (Simon, 1879). NL, TAMPS (Nearctic affinities: central USA states).
Vonones scabrisimus (R, 1912). PUE (endemic).

Family uncertain
Metaconomma femorale P-C, 1905. JAL, TAB (endemic).

Phalangodidae

Samoidae
Arganotus macrochelis (G & G, 1953). CHIS (endemic, troglobitic).

Stygnommatidae
Stygnomma annulipes (G & G, 1947). VER (endemic).
Stygnomma bispinatum G & G, 1953. CHIS, VER (endemic).
Stygnomma maya G & G, 1951. YUC (endemic).
Stygnomma planum G & G, 1953. CHIS.  
Stygnomma spinipalpis G & G, 1953. CHIS (endemic).
Stygnomma teapalpis G & G, 1951. CHIS, TAB (endemic).

Stygnopsidae
Remark — Mexotroglinus, Paramitraceras, Sbordonia and Tampiconus are current included in Phalangodidae, and are herein newly removed to the Stygnopsidae following the cladistic analysis of Kury (1994).
Hoplobunus barretti B, 1900. HGO, MOR (endemic).
Hoplobunus boneti (G & G, 1942). SLP, TAMPS (endemic, troglobitic).
Hoplobunus mexicanus (R, 1915). DF, OAX, TAMPS (endemic, troglobitic).
Hoplobunus neglectus new name. VER (endemic).
Hoplobunus neglectus is a new name for Isaev mexicanus Sørensen, 1932 which is a junior secondary homonym of Halmelina mexicana R, 1915. Hoplobunus mexicanus G & G, 1953 [by implication] is a synonym of H. neglectus. The specific replacement name comes from Latin, and means “forgotten”, since it has not been cited since the original description.
Hoplobunus osoi (G & G, 1944. NL (endemic, troglobitic).
Hoplobunus queretarius S, 1974. QRO (endemic, troglobitic).

Hoplobunus n sp 1. NL, TAMPS (endemic, troglobitic).
Hoplobunus n sp 2. PUE, SLP (endemic, troglobitic).
Hoplobunus n sp 3. SLP (endemic, troglobitic).
Hoplobunus n sp 4. TAMPS (endemic, troglobitic).
Hoplobunus n sp 5. TAMPS (endemic, troglobitic).
Hoplobunus n sp 6. SLP (endemic, troglobitic).
Hoplobunus n sp 7. PUE (endemic, troglobitic).
Hoplobunus n sp 8. SLP (endemic, troglobitic).
Hoplobunus n sp 9. SLP (endemic, troglobitic).

Karos barbarikos G & G, 1944. HGO (endemic).
Karos brignolii S, 1974. VER (endemic, troglobitic).
Karos depressus G & G, 1971. QRO (endemic, troglobitic).
Karos dybasi (G & G, 1947). SLP (endemic, troglobitic).
Karos gratiosus G & G, 1971. OAX, SLP (endemic, troglobitic).
Karos parvu G & G, 1971. SLP, TAMPS (endemic, troglobitic).
Karos tuberculatus (G & G, 1944). NL (endemic).
Karos unispinosus (G & G, 1946). HGO, NL (endemic).
Karos n sp 1. SLP (endemic, troglobitic).
Karos n sp 2. TAMPS (endemic, troglobitic).
Karos n sp 3. TAMPS (endemic, troglobitic).
Karos n sp 4. HGO (endemic, troglobitic).
Karos n sp 5. HGO (endemic, troglobitic).
Karos n sp 6. VER (endemic, troglobitic).
Karos n sp 7. QRO (endemic, troglobitic).
Paramitraceras femoralis G & G, 1953. CHIS, TAB (endemic).
Paramitraceras granulatus P-C, 1905. CHIS, OAX, TAB (Neotropical affinities: Guatemala).
Paramitraceras hispidulus P-C, 1905. CHIS (Neotropical affinities: Belize, troglobitic).
Sbordonia armigera S, 1977. CHIS (endemic, troglobitic).
Sbordonia parvula (G & G, 1953). CHIS (endemic).
Stygriopsis robusta (G & G, 1971). VER (endemic, troglobitic).
Stygriopsis valida (Sørensen, 1884). VER (endemic).
Troglolosynnopsis anophtalma S, 1974. CHIS, VER (endemic, troglobitic).
Troglolosynnopsis inops (G & G, 1971). TAMS (endemic, troglobitic).
Troglolosynnopsis n. sp. OAX (endemic, troglobitic).

Zalmoxidae
Remark — Ethobunus, Metapachylus and Pachylicus are current included in Phalangodidae, and are herein newly removed to the Zalmoxidae following the cladistic analysis of Kury (1994). Ethobunus acanthotibialis (G & G, 1953) [\(=\) Cynortina acanthotibialis G & G, 1953], new combination. CHIS VER (Neotropical affinities: Belize, Guatemala, troglobitic). Before it was discovered that Cynortina Banks, 1909, was a preoccupied name, many genera (among which Ethobunus Chamberlin, 1925) fell under its synonymy. A large number of species had been described or placed in combined under Cynortina. Later, G and G (1983) chose Dapessus R, 1933 as the next older available name, overlooking Ethobunus which was eight years older. Therefore, Ethobunus should be restored with Dapessus being a junior synonym. G & G (1983) also overlooked Azaca G & G, 1942 (from Costa Rica) as a junior synonym of Cynortina. It too should now be listed as a junior synonym of Ethobunus.
Ethobunus pilosus (G & G, 1953) [\(=\) Cynortina pilosa G & G, 1953], new combination. CHIS (endemic). See comments above for the reason of the new combination.
Metapachylus gracilis P-C, 1905. TAB (endemic).
Pachylus acutus (G & G, 1942). CAM, CHIS, OAX, TAB, VER, YUC (Neotropical affinities: Belize, Guatemala).

APPENDIX 6.3.
List of biogeographical affinities of the genera
The high endemism of species of Opiliones makes it difficult at a glance to ascertain the relationships of the Mexican fauna when species are used as units for comparison. When genera are compared, this high proportion of endemics drops a little and more useful comparisons can be obtained. It should be noted, however, that many genera are not deemed monophyletic and their true relationships will have to await taxonomic revisions.
Abreviations: Goodnight & Goodnight = G & G; Pickard-Cambridge = P-C; Banks = B; Roeyer = R y Silhavy = S.

CYPHOPHTHALMII
Neogovea Hinton, 1938: (Neotropical affinities: Brazil, Guiana).

PALPATORES
Acropsipilio Silvestri, 1904: (Mixed affinities: northeastern USA, southeastern Canada, Japan, Australia/New Zealand, Argentina, Chile, Brazil, Venezuela).
Cosmobunus Simon, 1879": (Neotropical affinities: misidentified, Mexican species congeneric with species from Central America. True Cosmobunus known only from Spain and adjacent areas).
Dalquestia Cokenolpher, 1984: (Nearctic affinities: southwestern USA).
Diguetinus R, 1912: (endemic).
Eurybunus B, 1893: (Nearctic affinities: southwestern USA).
Geaya R, 1910: (Neotropical affinities: South America, Central America, West Indies).
Globipes B, 1893: (Nearctic affinities: southwestern USA).
Hadrobunus B, 1900: (Nearctic affinities: eastern USA).
Holcobunus R, 1910: (Neotropical affinities: northern South America, Central America).
Krusa G & G, 1947: (Neotropical affinities: Peru, Colombia, Bolivia, Brazil).
Leiobunum C. Koch, 1839: (Holarctic, primarily Temperate).
Leuromynus B, 1900: (Nearctic affinities: western USA, western Canada).
Metopilus R, 1911: (Mixed affinities: southwestern USA, Central America).