

**REVIEW OF THE GENUS *Mexigonus* (Araneae, Salticidae) AND DESCRIPTION OF 59 NEW  
SPECIES**

by

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## **Abstract**

The diversity of jumping spiders in the tribe Euophryini in southern North America is still being described, especially in temperate and cloud forests located at the boundaries between Nearctic and Neotropical regions. A good example of a poorly known genus is *Mexigonus*, with only five species described. The phylogenetic placement of *Mexigonus* as the genus sister to *Pensacola* and the existence of many undescribed species provide the opportunity to review the taxonomy of the genus and its diagnosis. We performed two expeditions and borrowed material from collections to describe 59 new species and create eight new combinations. We complement our findings with photographs of type material, illustrations of the genitalia and distribution maps. The diagnosis provided by Edwards (2003) is useful to diagnose the genus at higher latitudes than the Trans Mexican Volcanic Belt. *Mexigonus* is distributed in all the major mountain chains of Mexico and its distribution goes from Sierra Nevada, USA, to Costa Rica, from elevations starting at 50 m to almost 4,000 m. *Mexigonus* shows a wide range of body shapes, with males often having striking patterns of face and leg ornamentations used during courtship.

## **Lay Summary**

Many species of spiders remain to be described, especially in the Neotropics. The family of jumping spiders include the genus *Mexigonus* is currently known to include five species. Our expeditions to Mexico and the revision of material deposited in collections of North America suggest there are 59 species of spiders previously unknown to science. I looked at these specimens to describe these new species and made detailed descriptions that include distribution maps, illustrations and photographs of what makes each species unique and gave them a name. I also revisited the literature, identified and transferred previously described species of jumping spiders into *Mexigonus*. The results of this thesis will assist future research involving studies in the evolution and ecology of this genus of spiders.

## **Preface**

I held responsibility for the logistics of the first expedition to Mexico in 2017 along with Dr. Wayne Maddison, and during Mexico 2019 I held primary responsibility on the logistics and leading of the expedition. Both expeditions were assisted by the Colección Nacional de Arácnidos from UNAM, México and several other universities through field guidance and collectors. I was responsible for the study design, analysis on data and preparation of the manuscript submission, possible through the valuable supervision and guidance from my supervisor, Dr. Wayne Maddison, and the members of my committee: Dr. Matt Pennell, Dr. Jeannette Whitton and Dr. Jill Jankowski. A version of this thesis will be submitted for publication during the year 2021 as “Review of the genus *Mexigonus* (Araneae, Salticidae) with the description of 59 new species from Mexico and Center America” (Authors: Uriel Garcilazo-Cruz, Wayne Maddison). The capture of specimens in Mexico was approved by SEMARNAT; Subsecretaría de Gestión para la protección Ambiental (SGPA/DGVS/5271/19).

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## **Dedication**

Thank you to my mother, father and sister, who remotely supported me throughout the process of my grad studies and reminded me that even in hard times away from home, the most important will always be the people and the contribution we leave behind to make their lives a little better. To my partner Else and her family for all their support and caring, for making me feel a part of their home.

## **Introduction**

The Order Araneae comprises more than 48,850 species and the number of newly described species per year shows a rapid growth, with much of this newly documented diversity coming from the Neotropics. The family Salticidae of jumping spiders is currently the most diverse within the Order and new taxa remain to be described (World Spider Catalog 2020).

## **Taxonomic history of *Mexigonus***

The genus *Mexigonus*, a member of the very diverse tribe Euophryini, has a complex taxonomic history despite having only five species to date (World Spider Catalog, 2020). These are North American species that were originally described within the genera *Habrocestum*, *Sidusa* or *Corythalia* and were later transferred into *Tylogonus*. Richman and Cutler (1978) transferred the species *arizonensis* and *morosus* from *Habrocestum* based on the male excavated chelicerae, and Simon (1903) transferred from *Sidusa* the species *dentichelis* and *minuta* described by F.O.P. Cambridge (1901). The genus was erected by Edwards (2003) who, following Galiano (1902), mentioned the difference in the habitus and genitalia of the Ecuadorian type species *Tylogonus auricapillus* Simon, 1902 to the North American species of *Tylogonus*, justifying the transfer of these Nearctic taxa into *Mexigonus* by pointing at the presence of a notch between the embolar disk and the embolus, and an embolus unraveling as a “banked road” (Edwards 2003).

## **Phylogenetic relationships of *Mexigonus***

The phylogeny of Euophryini produced by Zhang and Maddison (2013) included three species of Nearctic *Mexigonus*. These species form a well supported clade in each of the four molecular markers used in the study, both nuclear and mitochondrial under maximum likelihood and Bayesian analyses. *Mexigonus* is the sister clade of *Pensacola* based on two nuclear genes: 28S and Actin (Zhang and Maddison, 2013). *Pensacola* is morphologically distinctive from

*Mexigonus*, having somewhat rhomboidal abdomens and elevated rectangular carapaces, and the embolus of *Pensacola* is spiraled as a cork opener and mainly hidden behind the distal haematodocha. Despite these differences in morphology and genitalia, both *Pensacola* and *Mexigonus* have species where males have the dorsal face of the abdomen divided by a dark longitudinal band, which is rarely observed in other euophryines, and this character could therefore represent a synapomorphy for the clade uniting the two genera. The distribution of *Mexigonus* and *Pensacola* greatly overlaps.

### **Biogeography of *Mexigonus* and the highlands of Mexico during the Miocene**

The distribution of species currently placed in *Mexigonus* includes the western side of USA in the mountains of Sierra Nevada, the highlands of Baja California Sur, and the central area of Mexico along the volcanic belt known as the Trans Mexican Volcanic Belt.

The phylogenetic analysis of Zhang and Maddison (2013) suggests that euophryines may be old enough to have crossed to South America ca. 35 My. via a land bridge with Antarctica that remained open until the middle of the Eocene ca. 33.9 My (Hill, 2009). The expansion in the distribution of early euophryine lineages may have happened through crossing from the Southern Hemisphere into Central America during the Oligocene, much earlier than the formation of the Panamanian land bridge.

The name *Mexigonus* was given by Edwards (2003) referring to Mexico as the possible center of origin of the genus, where it can be found at cold and temperate environments ca. 2,000 m in conifer and cloud forests. The dated phylogeny of Zhang and Maddison (2013) estimates the common ancestor of Nearctic species of *Mexigonus* lived ca. 18 My during the Miocene. The ancestors of *Mexigonus* may have belonged to lineages that migrated from Central America during the Oligocene-Miocene epochs (the Mountain Mesoamerican distributional pattern of Halffter & Morrone, 2017) and diversified in temperate regions of Mexico. The expansion of

*Mexigonus* throughout North America may have been promoted by two factors: the active period of uplift and vulcanism in Mexico and Central America that includes the formation of the Trans-Mexican volcanic belt and the Chiapas-Guatemala highlands (Mastretta-Yanes et al., 2015), and the cooling environment that followed the Miocene climatic optimum generating potential dispersal corridors for cold tolerant species. A very similar pattern to the distribution of *Mexigonus* is observed in beetles of the tribe Proculini (Coleoptera, Passalidae)(Gutiérrez-Velázquez et al., 2013).

In this study we found many new taxa of *Mexigonus* that significantly increase the number of species in the genus to more than 70. Many of these species were collected during two main fieldtrips to Mexico focused on the Mexican side of the Chiapas-Guatemala Highlands, Sierra Madre del Sur, Trans Mexican Volcanic Belt, the southern part of the Sierra Madre Oriental and Sierra Madre Occidental and the east side of the Mexican plateau. This newly documented diversity contains valuable information to help our understanding of the biogeography and morphology of *Mexigonus*. The description of these taxa and the revision of the genus are the main purpose of this manuscript.

## Material and Methods

### Species collecting protocol

Two expeditions took place in Mexico in 2017 and 2019 focused on the south and east part of the country respectively. Most specimens were collected in July to August. Sampling locations and coordinates are summarized in Table 1 of the Appendix.

A team of around seven people worked near a sampling point. A sampling area point was established if the vegetation composition of a locality was complex enough to provide cryptic habitats suitable for *Mexigonus*, especially well drained leaf litter in pine or oak forests over the 2,000 m. Although well preserved forests were preferred, some sampling points were located on the side of the highway when moving between provinces or localities. The elevational range of collecting effort focused mainly from 1,000 to 3,000 m, covering the following orographic systems (Mastretta-Yanes\_et al. 2015): central and eastern part of the Trans Mexican Volcanic Belt, Sierra Madre del Sur, Sierra Madre de Chiapas and the Chiapan Guatemalan Highlands, which together encompass a latitudinal range from 15° to 20° N. The collecting protocol consisted in beating branches and sweeping over leaf litter hanging from dead branches or on the ground helped by a beating sheet. A preliminary assortment of the specimens into morphospecies allowed selecting alive specimens as photovouchers.

Distribution dot maps were created using all the coordinates available for each species, including specimens from expeditions and museums.. The maps were generated through a python script, which exported the sorted coordinates from each species from an excel spreadsheet into a .txt file ready to be imported by ArcMap 10.1 ©. The elevation map of Mexico was generated using the elevation metadata available at INEGI (2011).

## **Taxonomic decisions and species concept**

We justify our species delimitations under the historical genealogical species concept, in which a species is defined as a reticulated ancestry of lineages diverging semi-independently from one another, with their members having a closer relationship with one another than with any member of a different ancestry. We consider the morphological evidence we provide as a small but important subset of the totality of characters that give 'exclusivity' to each of our species in nature, and as a guidance to delimit species. We choose these morphological characters based on our best understanding on the biology of spiders, and although not all of them might be easily justified as direct contributors or by-products of speciation, they do seem to retain strong diagnostic value at least within the genus.

The names provided to each of the newly described species in this document are tentative and preceded by the symbol '\$' to avoid the final species names to appear in a thesis before their publication in a scientific journal.

## **Elaboration of species descriptions and use of laboratory materials**

A preliminary list of species and the assessment of the richness of tentative *Mexigonus* species in the field revealed a high number of possible new species, which are hard to compile using the standard descriptions that are found in literature on spider taxonomy. We opted for turbo taxonomy while making efforts to preserve as many elements as possible from those mentioned in traditional spider descriptions. We developed a pipeline in python to achieve this goal. The script takes an excel table with information on specimens and a species name and produces a paragraph with the material examined, type material, photovoucher information, etc., aimed to look as close as possible to what traditional descriptions look like. In contrast, the descriptions remain short, focusing on diagnostic features and trimming elements that are rarely looked at when identifying a specimen (e.g. the spination pattern of each leg or most measurements).

The terminology and abbreviations used in the descriptions are standard for Araneae (fig. 1). The structures are described from anterior to posterior and proximal to distal sides of the body. Colour was described using the image of the type specimen when alive whenever a photovoucher was available. Specimens were examined from the collections of the Museum of Comparative Zoology at Harvard University (MCZ); Colección Nacional de Arácnidos at Universidad Nacional Autónoma de México (CNAN), Spencer entomological collection at the University of British Columbia (UBC-SEM) and the Museum of Natural History of Senckenberg (SMF). Additional photographed material was taken by W. Maddison at the Museum of Natural History of London (MNHL).

The specimens in alcohol were observed and measured under a microscope OLYMPUS SZ61. Drawings were made assisted by a drawing tube mounted over a compound microscope ME600 using a micrometer to take measurements. Four to six drawings were made for each species depending on the availability of females: ventral view of left palp, embolus view from anterior prolateral view, retrotibial apophysis, male chelicerae, epigynum in dorsal and ventral views. The epigynum was dissected and digested using pancreatin following the protocol of Álvarez-Padilla and Hormiga (2007), and mounted over a slide covered in clove oil to clear the structure following a modified protocol from Coddington (1983). The type specimens will be deposited in one or more of the aforementioned museums.

The photographs and illustrations were refined, trimmed, resized and compiled into plates using the software Adobe Photoshop© and Adobe InDesign 2018 ©. Scalebars are given in millimeters and standardized as follows: embolus, palp, RTA and spermathecae at .2 mm, and chelicerae at .4 mm. Scalebars at different scales are specified next to their respective bar in the species plates.

## Results: Taxonomy

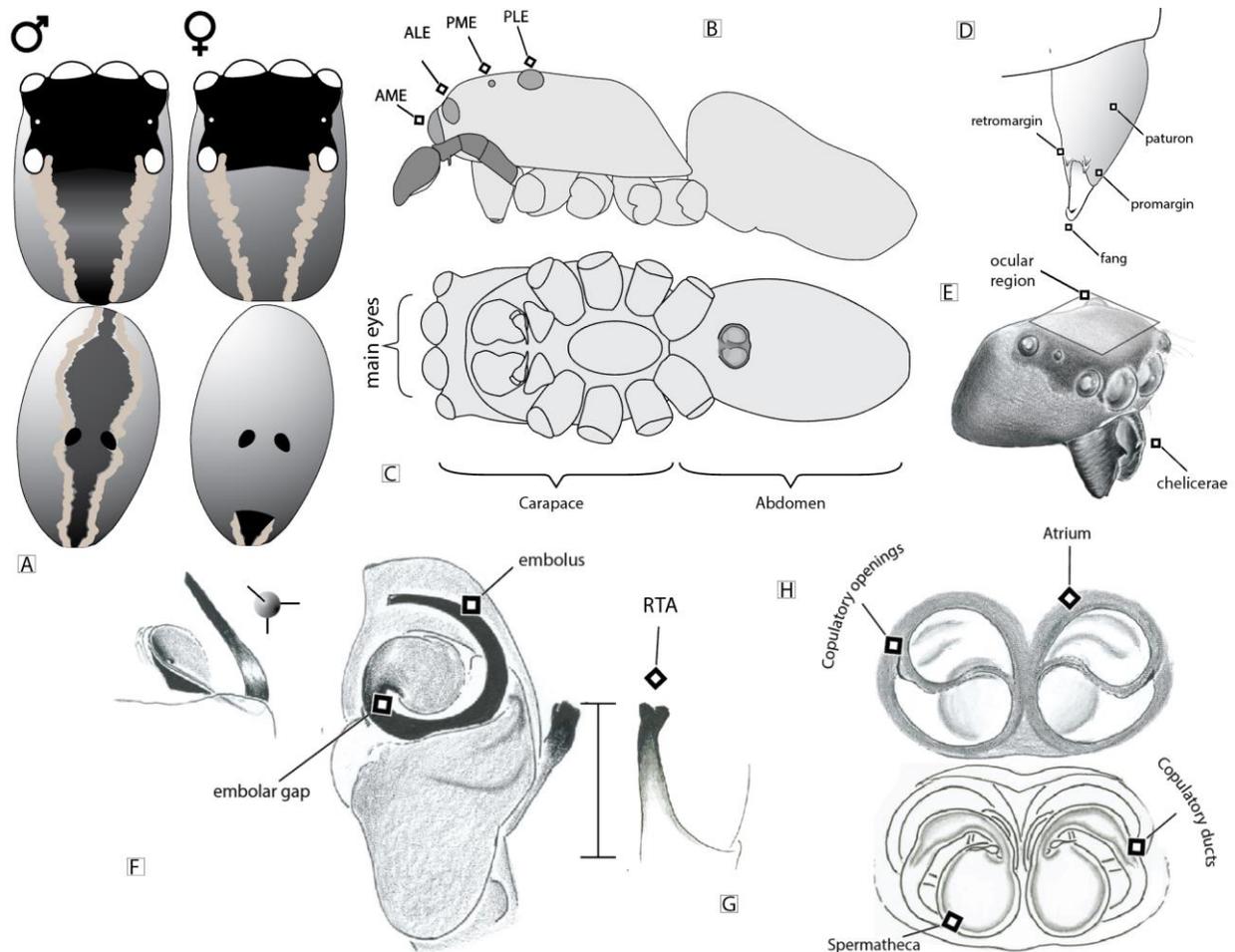
### Genus *Mexigonus* Edwards (2003)

**Type species:** *Mexigonus minutus* (F.O.P. Cambridge, 1901)

*Mexigonus* comprises small to medium sized spiders from 3 mm to 1 cm, with the most common size around 5 mm. Their geographic distribution spans from the mountains of Arizona to Costa Rica, and some species have been recently introduced into Ecuador and Colombia (GBIF 2020) as some species like *M. albidus* thrive on human settlements (Durán-Barrón et al., 2009; Desales-Lara et al., 2013; Maldonado-Carrizales & Ponce-Saavedra, 2017). Some specimens found on iNaturalist suggest that the distribution could also include Guyana and Suriname. The main diversity of the genus is in the mountains of Mexico, Guatemala and El Salvador, and seems to be particularly speciose in highlands of temperate and cloud forests. The latitudinal range of *Mexigonus* spans from 15 to 37 °N with an elevational range from 50 m (*M. \$comma*) to 3,718 m (*M. \$habanero*). Most species lie between 1,000 to 3,000 m in temperate forests of oak and pine trees, and cloud forests respectively.

**Diagnosis.** *Mexigonus* can usually be identified among other Nearctic or Neotropical Euophryini by the dark dorsal medial band longitudinally bisecting the abdomen of males and reduced to a small triangular patch surrounded by cream integument over the anal tubercle of females, two black dots at the middle of the abdomen sometimes hidden by the stripe, the integument of legs spotted forming rings, and a carapace with two stripes of pale setae descending from the thoracic slope (fig. 1,A). The dark dorsal abdominal band is plesiomorphic as it is found in one undescribed species of *Pensacola* (salticidae.org, 2020) and the parallel stripes descending the thorax could be synapomorphic. The Nearctic *Mexigonus* representatives are often hairy and cryptic coloured with excavated male chelicerae, whereas Neotropical representatives are often glabrous or smoothly hirsute. Among Nearctic *Mexigonus* the ocular region is outlined by a line

of pale setae that merge with the parallel stripes descending the thoracic slope from the PLE. This character seems to represent a synapomorphy for Nearctic representatives of the genus and the *albidus* group. Other diagnostic features proposed for each of our morphological groups could represent synapomorphies, potentially justifying the splitting of *Mexigonus* into several genera after molecular evidence becomes available.



**Figure 1.** Diagnostic features of *Mexigonus*. A-C habitus in dorsal, lateral and ventral view, D left chelicere in prolateral view, E carapace in *M. dentichelis*, F palp and embolus in *M. albidus*, G retro tibial apophysis in *M. albidus*, H dorsal and ventral view of epigynum in *M. albidus*.

The characters used by Edwards (2003) to diagnose *Mexigonus* are based on the genitalia: a narrow, angulate gap between the embolar disc and the innermost (apical) edge of the embolus

(fig. 1, F) that seems to be produced by the rotation of the disk over its own center without drastically changing its axis relative to the longitudinal axis of the palp. A spiraled embolus that is inclined medially towards the gap (i.e. twisting towards the observer in the ventral view of the palp, fig. 1, F), and atrial rims leaving a narrow septum and forming windows (fig. 1, H). The location of the openings at the medial inner, medial external or anterior external edges of the windows determine the degree of intromission of the atrial rims, sometimes creating sub windows (fig. 1, H). The description provided by Edwards (2003) also includes a dark brown colouration and the parallel pale stripes descending the thoracic region. These characters in combination form a strong diagnosis for Nearctic species such as *M. albidus*, *M. arizonensis* and *M. dentichelis* but are less effective when diagnosing the Neotropical representatives of the genus at the southern part of Mexico below the trans Mexican volcanic belt because they are often missing.

*Mexigonus* is quite morphologically distinctive among other Nearctic and Neotropical euophryines, but some *Mexigonus* species may be initially confused as *Euophrys*, especially for species in the San José del Pacífico (SJP) complex or small sized species like *M. \$small\_pepper*. Whereas *Euophrys* shares with *Mexigonus* a cryptic habitus with hirsute and often dark first legs in males with a brownish hirsute colouration, the abdomens are more rounded than in *Mexigonus* and distinctively marked by symmetrically positioned spots of black integument. Even in species like *E. frontalis* where there seems to be a dark medial abdominal stripe, the band is discontinuous and formed by the sequential alignment of chevroned spots. The epigyna between these genera is also very different. Those species of *Mexigonus* with long copulatory ducts connect to the copulatory openings near the outer edges of the windows, whereas in *Euophrys* the openings are located at the middle of the windows, with the atria tracing a concentric spiral from the epigastric furrow to the openings. Although the embolus

occasionally has something that could be considered an embolic gap, the embolus doesn't rotate as in *Mexigonus*. The width of the embolus in *Mexigonus* is rarely as thin as in *Euophrys*.

*Mexigonus* differs from *Corythalia* mostly on the brown or reddish rather than black integument (except in the *tomato\_red* group) and the straight square shape of the carapace at the cheeks and boundary between the cephalic and thoracic region around the fovea (fig. 1, A, E), which are often concave in *Corythalia*. While many species of *Corythalia* have the margins of the carapace outlined by a margin of white setae, *Mexigonus* rarely shows a margin, in which case is very thin. The fang of the chelicerae is at least as long to intersect each other when extended (fig. 1, D) compared to the short fangs of *Corythalia* (Bayer et al. 2020). Many species of *Corythalia* have a tegulum with the proximal edge forming a bump, which is shared with some Neotropical species of *Mexigonus* in the *tomato\_red* group, but the tegulum in those species of *Mexigonus* is conical rather than rectangular (fig. 26).

*Mexigonus* shares its distribution in temperate and cloud forests with a complex of species currently named as *Corythalia nigriventer* (F. O. Pickard-Cambridge, 1901), some of which have males with deeply excavated chelicerae. The main difference with *Mexigonus* is in the outline of iridescent setae enclosing a black integument at the second half of the dorsal view of the abdomen, sometimes reduced to lateral stripes transversal to the longitudinal axis of the abdomen. The epigyna in *C. nigriventer* have the atrial rims joining the openings at the middle of the genital plate forming a mushroom-like shape with the windows not covering the spermathecae, whereas in *Mexigonus* the windows are circular (fig. 2, 14, 21, 26), often very well delimited and usually cover the entire diameter of the spermathecae (fig. 1, D). The embolus in *C. nigriventer* is blunt, wide and finger shaped, whereas in *Mexigonus* the embolus is laminar (fig. 1, F) and if it appears wide, it is caused by the rotation of the embolus exposing the laminar face (e.g. fig. 43). The fangs in *C. nigriventer* are longer than most *Corythalia* but unlike most species of *Mexigonus* the paturon is very bulky and deeply striated, complemented by the

concave cheeks and thoracic region. In addition, the ocular region is outlined by a margin of iridescent setae, which is never seen in *Mexigonus*.

Genera like *Corythalia*, *Chalcoscirtus* and *Chapoda* have iridescent setae covering the margins of the carapace or at least the anterior margin of the dorsal part of the abdomen, and these setae are never seen in *Mexigonus*. Whereas some species of *Maeota* and *Chapoda* show guanine crystals over the ocular region, in *Mexigonus* the ocular region is always black and often densely covered by hairy looking setae. Males of *Chapoda* often show wide and robust looking pedipalps, whereas in *Mexigonus* they are always as thin as in the female, although they might appear bigger in some species for dense patches of bristles (fig. 22, 9). The abdomen of *Chapoda* and *Maeota* is longitudinally bisected by a pale stripe often outlined by a pair of black and uniform stripes running parallel at each side of the pale band, whereas in those few species of *Mexigonus* where the band is pale (fig. 49, 5; 66, 5) the rest of the abdomen is uniformly coloured or mottled. The embolus and RTA in *Chapoda* and *Maeota* is very short relative to the size of the tegulum, whereas in *Mexigonus* the only species with this pattern is *M. \$yuka*, which is the largest species in the genus, and looks like its palp morphology is caused by allometric changes in the proportions of the body (fig. 40).

*Pensacola*, which is phylogenetically closely related to *Mexigonus* (Zhang and Maddison, 2015) shares the teeth pattern and excavation in the chelicerae and the hirsuteness of the carapace of *Mexigonus*. However, *Pensacola* has tall and boxy carapaces and long abdomens that are somewhat like species in the *\$triste* group (fig. 3; 9), but except for one species of *Pensacola*, the dark dorsal longitudinal band bisecting the abdomen is exclusive of *Mexigonus*. The pale diamond patch of pale setae covering the fovea of males in *Pensacola* is never seen in *Mexigonus*, and if a similar shape is present, it is not densely covered in white setae (fig. 49, 5). The embolus of *Pensacola* is cork shaped and mostly hidden by the distal haematodocha, also appearing at the prolateral edge of the cymbium, whereas in *Mexigonus* the embolus is a more

circular spiral, the embolar disc is always resting over the distal haematodocha, the embolus arises along the longitudinal axis of the cymbium (fig. 1, F), and the tegulum is longer than in *Pensacola*. As in *Chapoda*, *Pensacola* can have robust pedipalps almost the same width than the cymbium, which is never seen in *Mexigonus*. The epigyna of *Pensacola* is formed by a wide septum and small windows that don't cover the spermathecae, with the copulatory openings located at the medial inner edge of the genital plate, whereas in *Mexigonus* the epigyna have always big windows, except in *M. \$walrus* (fig. 70, 12).

### **Variation in genitalia across species of *Mexigonus***

The diversity of bodies and colours seen in *Mexigonus* is matched by a wide range of variation in genitalia. Males can have a straight and slender embolus that rises straight from behind the tegular shoulder, abruptly turning distally (fig. 2) with the rising portion of the embolus sometimes projecting prolaterally forming a slight curvature (fig. 2, *M. \$big\_moss*). Such curvature can be considered diagnostic and valuable for distinguishing among species from the same group. Emboli of this type are usually matched by secondary spermathecae in females, located right after the copulatory openings (fig. 2). Many of these species are part of the *tristis* group but is also observed in *M. \$walrus* (fig. 70, 1-2). Whereas *M. morosus* has a unique epigynum among *Mexigonus*, the embolus belongs to this category (fig. 66, 1-2).

A second type of embolus is long enough to produce a conspicuous curvature that covers at least half of the diameter of the embolar disc (fig. 34, 1-2). Females in this group usually have copulatory openings partially migrated to the outer margin of genital plate, caused by the migration and subsequent elongation of the copulatory ducts from an anterior to mesal position. When the embolus is long enough, the copulatory openings remain at this position, but the copulatory ducts elongate proportionally in response, commonly forming loops. These forms in

genitalia are seen in the *albidus* group (fig. 32), *matlizaha* group (fig. 43) and some species in the *quetzal* group (fig. 21).

A third type of embolus is very long and usually covers the entire diameter of the embolar disc more than once (fig. 14; fig 26). The shape of the embolus is not considered laminar at this point, as the width of the laminar face gets greatly reduced. There seems to be a positive relationship between the embolus length and the magnitude of the embolar groove described by Edwards (2003). Such variation is hard to categorize, but in species of this group the groove migrates in a clock-wise direction, and sometimes elevates or even reduces the size of the embolar disk. The most extreme example is *M. stuxedo* (fig. 69, 1-2), where the embolus is so highly coiled that it notably changes the distribution of all other parts of the palp, including tegulum. Female genitalia match the embolus configuration with elongated copulatory ducts that form densely packed coils at the edge of the gastric furrow, sometimes reducing the size of spermathecae (fig. 14; fig 26). These forms in the genitalia are seen in the *tomato\_red* group (fig. 26) and the *banderas* group (fig. 14).

We use these differences in the genitalia and some other characters in the habitus to justify morphologically distinctive groups, representing our hypotheses of what clades could look like. Further molecular and morphological analyses could corroborate or reject these groups, but until then they are useful for diagnostic purposes.

An astonishing convergence in body forms can be observed between *Mexigonus* and *Jotus*. The genus *Jotus* from Australia and Indonesia belongs to the New Guinea's euophryine radiation (Zhang and Maddison 2013). Like *Mexigonus*, many species of *Jotus* have an abdomen divided by a broad and smooth black band. Moreover, there seems to be many examples of convergence in courtship mechanisms between these groups. Some species have thin and long first legs with white tarsi probably displayed as flags during courtship, while others have densely

hirsute first legs usually complementing brightly colored faces, including red (e.g. *J. fortiniae* Baehr et. al. 2019). These ornamentation patterns are surprisingly similar to those seen among the species of *Mexigonus* here described. In contrast, the genitalia are very distinct. Males of *Jotus* have a circular and very short embolus resting upon an oval tegulum which is projected distally at its posterior end forming a conical shape.

### ***Striste* group**

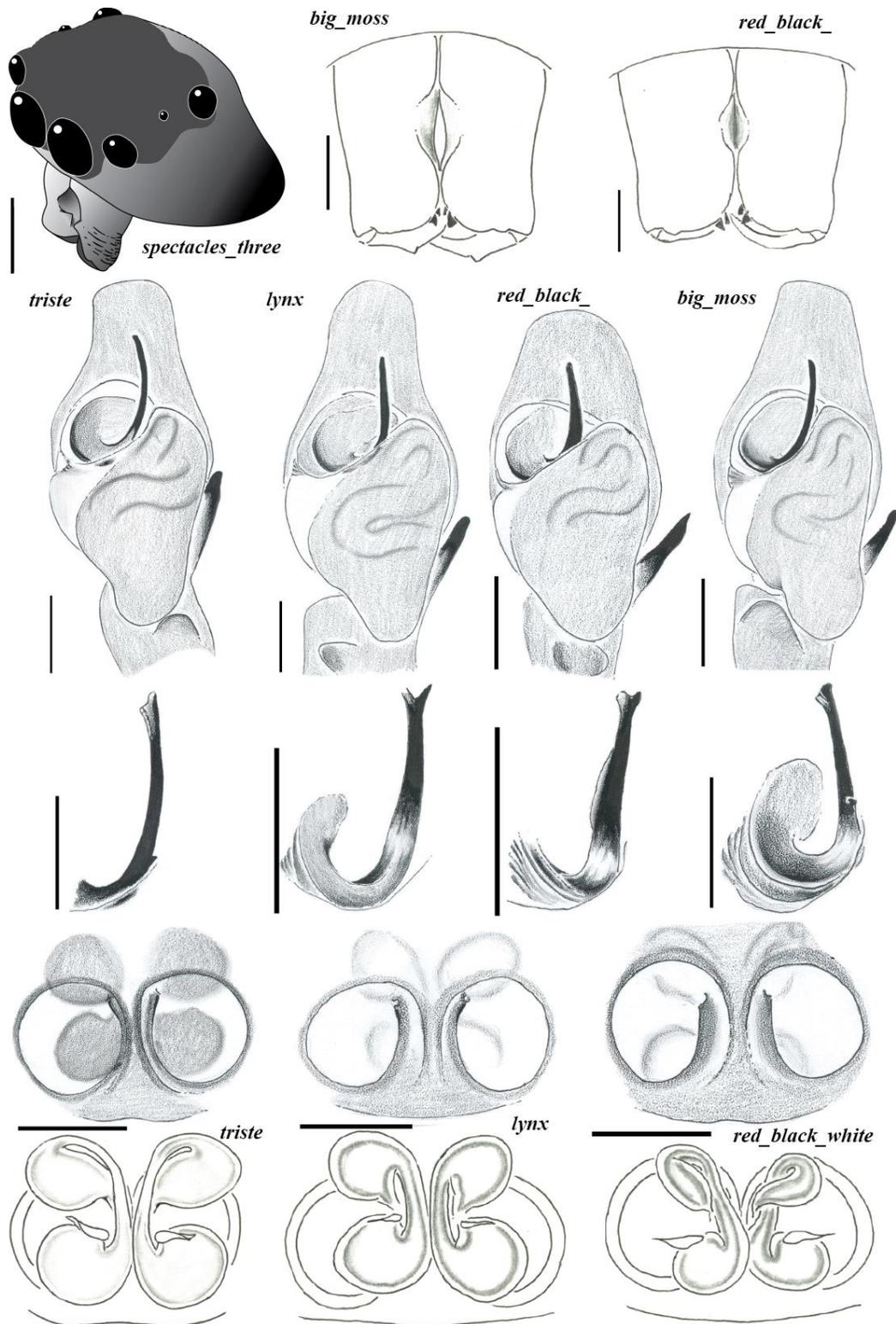
(fig. 2; map 1)

This group with 11 species is primarily distributed in southern Mexico, with medium-sized and cryptic bodies but sexual dimorphism, nonetheless. They look robust often with darker first legs in males and added to their posture make the spiders look tall. Their habitat includes dried suspended leaf litter at the boundaries of cleared areas and convoluted vines near vertical walls of vegetation.

**Diagnosis.** Most of the species in this group can be easily identified by AME outlined by a continuous band of white setae passing between AME-ALE (fig. 3, 7), especially of males, and reduced in some species to 'whiskers' (fig. 8, 7) or triangular patches (fig. 4, 7), slightly long abdomens, and robust patellae and tibiae II as wide as tibiae I. The emboli are short and straight with some species showing a medial spur (fig. 3, 2; 7, 2). The copulatory openings are located near the middle or anterior inner margins of the epigyna, and the copulatory ducts show secondary spermatheca (fig. 2).

Males often show dark carapaces with the ocular region covered in brown setae. Often at least the femora II in males are bicolored with the basal portion transparent orange and the rest black. The chelicerae are excavated with the base of the paturon often ornamented by a horizontal patch of setae outlining the notch left by the excavation. The secondary spermatheca follow the

openings with varying size, from small widened chambers to the same size than the primary spermatheca. Both males and females seem to extend the muscles of the paturon making the chelicerae look longer while dividing the patches of setae on the chelicerae from the clypeus.



**Figure 2.** Morphological diversity in somatic and genital structures distinctive of the *\$triste* morphological group.

***Mexigonus \$triste* sp. nov.**

(fig. 3; 1-14)

**Holotype.** Male from MÉXICO: OAXACA: Santa Catarina Lachatao, 17.25 °N, 96.464 to 96.466 °W, 2570 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, R. Paredes, A. Casasola, Hernandez, WPM#17-009, (\$m = MX17-0500).

**Paratypes.** 4 males, 3 females from MÉXICO: OAXACA: Santa Catarina Lachatao: 17.25 °N, 96.464 to 96.466 °W, 2570 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, R. Paredes, A. Casasola, Hernandez, WPM#17-009 (1\$m, 3\$f: \$m = MX17-0487, \$f = MX17-0519, \$f = MX17-1102, \$f = MX17-0528); OAXACA: near km 88 of HWY 175: 17.5898 °N, 96.3973 °W, 2000 m, 4-5 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, A. Casasola, R. Paredes, WPM#17-020 (\$m = MX17-1202); OAXACA: Santiago Comaltepec, Humo Chico: 17.576 °N, 96.503 °W, 3030 m, 3 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, A. Casasola, WPM#17-015 (2\$m: \$m = MX17-0682).

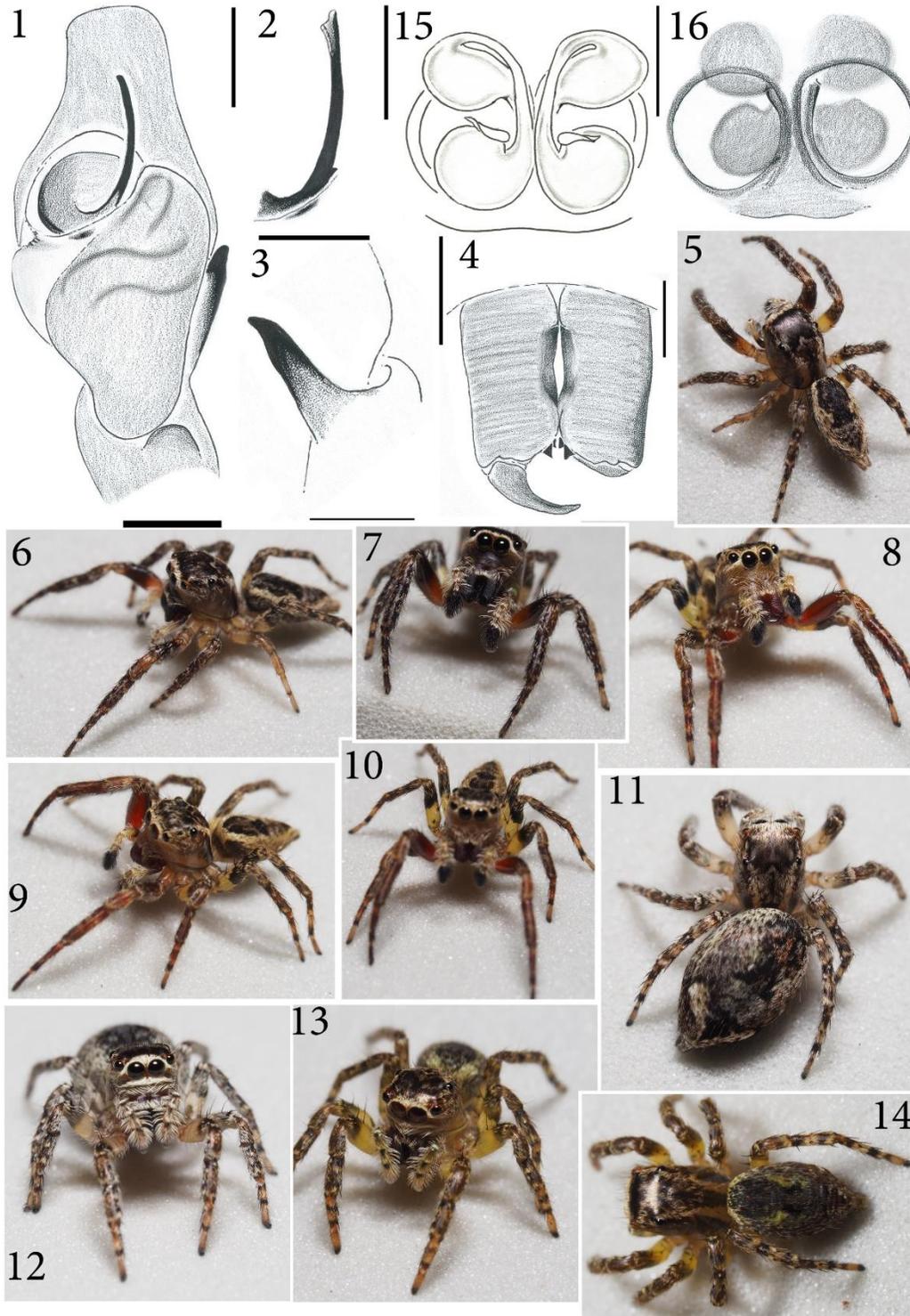
**Diagnosis.** Medium sized tall-faced spiders unique among other members in the *tristis* group by the continuous facial band covering the anterior eyes in both males and females (fig. 3; 7, 12). The clypeus is dark and glabrous like in *M. \$thunderstruck* but with a very thin ring of scales surrounding the AME. Unlike *M. \$signe* the continuous band passes between AME and ALE without narrowing. Male femur I fades in colour from reddish to black from proximal to distal end (fig. 3; 8) and the embolus (fig. 3; 1-2) arises vertically with the tip slightly curved prolaterally and with a medial spur. This spur appears also in *M. big\_moss* and *M. \$spectacles\_II*. In females, the secondary spermatheca are as big as the primary spermatheca and, contrary to *M. \$big\_moss*, the primary spermatheca are circular.

**Description.** Male (holotype). Carapace length 3.0. Abdomen length 3.3. **Carapace** almost as long as high and dark brown. The margins of carapace are the same colour as the coxae and femora. **Clypeus** glabrous and dark, surrounded by long setae, white on the side and brown reddish near the AME. The brown reddish setae delimit the lower margin of the facial band, which is continuous and pale. **Chelicerae** longer than wide with a narrow horizontal patch of long whitish setae resting at the base of the paturon, above the excavation. Excavation deep but narrow. **Palp** is pale and covered by long cream yellow setae except in the cymbium, which is entirely black. **Embolus** arising from its disk at 6:00 o'clock in left palp, slightly curving counter-clockwise while maintaining a vertical shape. Middle part of embolus with a spur and distal part of embolus thin. Tegular ledge passes diagonally through the shoulder of the tegulum. **Legs** 4>3>1>2. Basal region of femora yellow except for first legs where is honey coloured. Legs are dark, especially in the tibiae, but are randomly covered by pale setae from Femur to tibia, and forming semi-continuous ringed patches in metatarsus and tarsus. **Abdomen** dark and broad at the anterior, constricted at the medial and semicontinuous at the posterior region, surrounded by a wide margin of smooth cream yellowish setae.

Female (paratype; MX17-0528). Carapace length 3.3. Abdomen length 3.0. **Carapace** lighter than male except in the ocular region. **Clypeus** as in male except for a narrow horizontal patch of cream yellowish setae that delimit the inferior margin of the face and a paler cuticle. Facial band present as in male without reddish setae. **Chelicerae** barely notched with the same ornamenting patch of setae seen in male. **Epigyne** with circular spermatheca. Secondary spermatheca of the same size as the primary spermatheca. **Legs** more densely covered by pale yellow cream setae than male. Cuticle of light orange colour and transparent. **Abdomen** barely covered by pale whitish setae with the margin surrounding the dark medial band.

**Remarks.** Some female specimens have patches on the abdomen that are olive green resembling moss (fig. 3; 13-14).

**Additional material examined.** 5 males, 8 females, 41 juveniles from MÉXICO: OAXACA: Santa Catarina Lachatao: 17.249 to 17.25 °N, 96.459 to 96.464 °W, 2575-2650 m, 1 Jul 2017, W. Maddison, WPM#17-011 (1\$m); 17.25 °N, 96.464 to 96.466 °W, 2570 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, R. Paredes, A. Casasola, Hernandez, WPM#17-009 (3\$m, 2\$f, 31\$j: \$m = MX17-0502, \$f = MX17-0530, \$m = MX17-0509, \$m = MX17-0473); OAXACA: Sendero Interpretivo el Relámpago, km 88 of HWY 175: 17.591 to 17.592 °N, 96.398 to 96.4 °W, 2000-2200 m, 4 Jul 2017, U. Garcilazo, W. Maddison, R. Paredes, A. Casasola, Ł. Trębicki, WPM#17-019 (1\$f, 2\$j: \$j = MX17-1109); 17.592 °N, 96.398 °W, 2000 m, 4 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, A. Casasola, R. Paredes, WPM#17-018 (2\$f); OAXACA: near km 89 of HWY 175: 17.592 to 17.594 °N, 96.398 to 96.405 °W, 2000 m, 5 Jul 2017, J. Arturo A. Casasola, WPM#17-024 (1\$f, 4\$j: \$f = MX17-1297); OAXACA: near km 88 of HWY 175: 17.5898 °N, 96.3973 °W, 2000 m, 4-5 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, A. Casasola, R. Paredes, WPM#17-020 (\$m = MX17-1170); OAXACA: Santiago Comaltepec, Humo Chico: 17.576 °N, 96.503 °W, 3030 m, 3 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, A. Casasola, WPM#17-015 (4\$j); VERACRUZ: 6 km N of Coscomatepec on HWY 125: 19.12 °N, 97.03 °W, 1066 m, W. Maddison & M. Kaulbrs, WPM#83-081 (2\$f).



**Figure 3.** *Mexigonus triste*. 1-7 male holotype: MX17-0500; 8-10 male paratype MX17-1202; 11-12,15-16 female paratype MX17-0528. 13-14 female paratype MX17-1297. 1-3 palp, embolus and RTA. 4 chelicerae. 15-16 epigyna dorsal and ventral view.

***Mexigonus \$signe* sp. nov.**

(fig. 4; 1-13)

**Holotype.** Male from MÉXICO: VERACRUZ: Xamaticpac, 19.1264 °N, 97.06738 °W, 1705 m, 11 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@028, (\$m = MXN\_2899).

**Paratypes.** 6 males, 2 females from MÉXICO: OAXACA: Sendero Interpretativo San Bernardino: 17.606 to 17.608 °N, 96.384 to 96.385 °W, 1650-1750 m, 4 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-021 (2\$m: \$m = MX17-1239, \$m = MX17-1249); OAXACA: Puerto Antonio, km 71 of HWY 175: 17.665 to 17.666 °N, 96.3323 to 96.3327 °W, 1160-1270 m, 5 Jul 2017, R. Paredes, W. Maddison, Ł. Trębicki, U. Garcilazo, A. Casasola, WPM#17-023 (\$m = MX17-1373); VERACRUZ: 2 km SE of Naolinco on HWY 127: 19.6 °N, 96.9 °W, 1371 m, WPM#83-076 (1\$m); VERACRUZ: Acomulco, Cerro "El Filo": 19.14396 °N, 97.15194 °W, 2045 m, 12 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@029 (1\$m, 1\$f: \$f = MXN\_1861, \$m = MXN\_1838); VERACRUZ: Rio Pancho Poza: 19.75297 °N, 97.25205 °W, 1995 m, 23 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@053 (1\$m, 1\$f: \$f = MXN\_5728, \$m = MXN\_5379).

**Diagnosis.** Opaque cryptic species distinctive among members in the *\$triste* group by a patch of red setae surrounding the AME complementing a discontinuous facial band restricted to the space between the AME-ALE (fig. 4; 7, 10). The eyes are encircled by red setae rather than yellow as in *M. \$triste*, the femora I is uniformly dark (fig. 4; 7,10), the habitus is hirsute with scattered reddish short setae, and the embolus is straight with a secondary projection of the lamina in the last third of the embolus as seen from the ventral view of the palp (fig. 4; 1-2).

**Description.** *Male* (holotype). Carapace length 2.4. Abdomen length 1.8. **Carapace** very dark and as black as the ocular area, hirsute with two parallel yellow bands descending from the PLE to the pedicel. **Clypeus** dark and covered by a scattered patch of short orange setae.

**Chelicerae** deeply excavated with a bumpy distal end almost as long as wide with a margin of white setae covering the basal part of the paturon where the excavation starts. **Palp** reddish brown and covered with pale yellowish and reddish setae except in the cymbium. **Embolus** arises at ca. 6 o'clock forming a semi straight line. Medial part of embolus rotating dorsally exposing a prominent spur. RTA fingerlike ending in a blunt tip. Ventral tibial bump triangular.

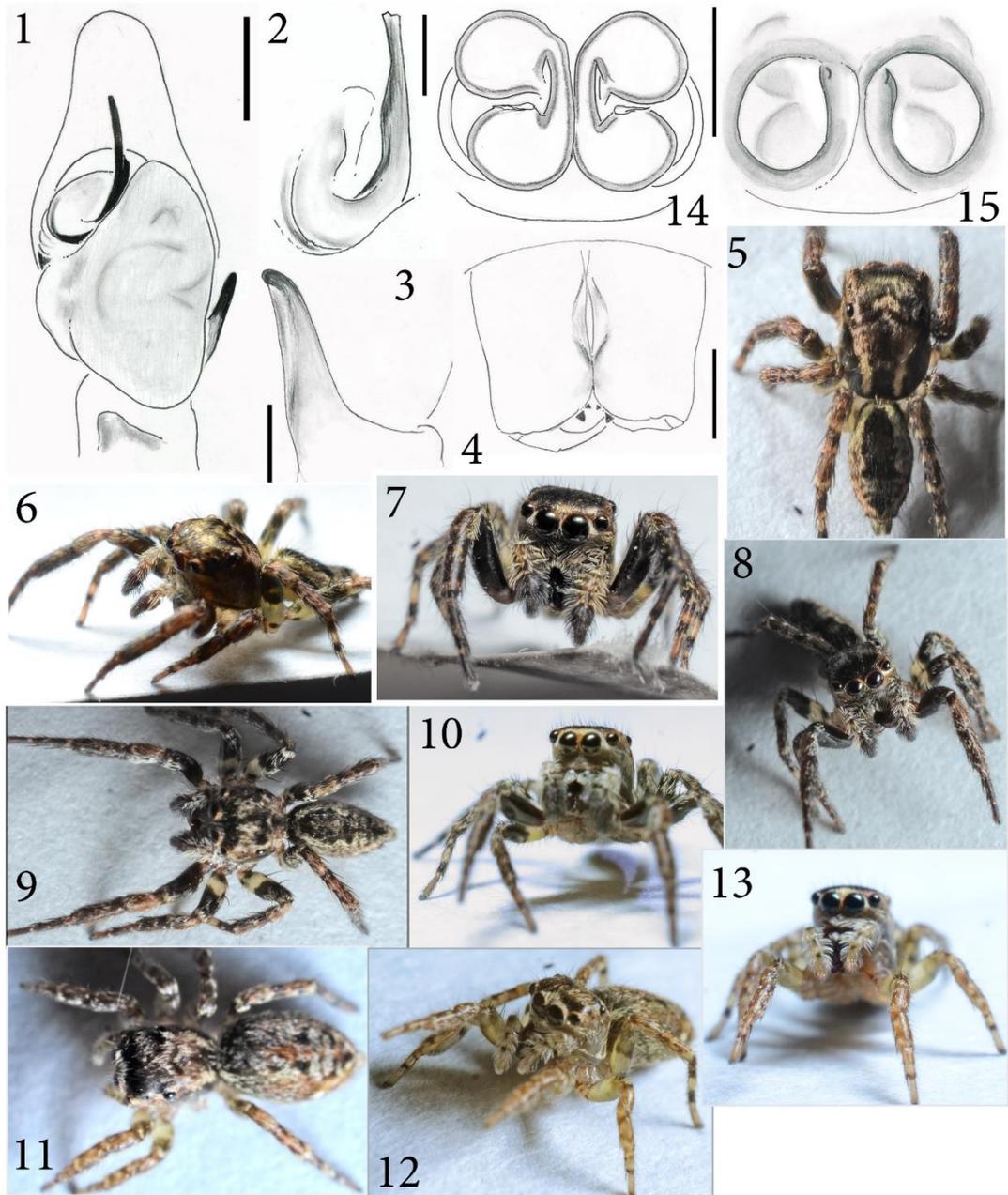
**Legs** 4>1>3>2. Femora (excepting first leg whose cuticle is entirely dark) pale at the basal and dark at the distal edges. Legs hirsute with spots of darkened cuticle covered by patches of pale setae resembling rings. **Abdomen** divided by a dark medial band that is broad at the anterior side, constricting at the medial side, becoming discontinuous at the posterior half of abdomen and ending in a triangle. Band surrounded by a pale cream yellow margin of setae.

*Female* (paratype; MXN\_5728). Carapace length 2.3. Abdomen length 2.5. **Carapace** dark as in male but more densely covered by short copper coloured setae. **Clypeus** with a horizontal fringe delimiting the boundaries between the carapace and chelicerae. **Chelicerae** are also excavated, but it's reduced to a small notch. **Epigyne** with secondary spermatheca that are similar in shape and size to the main spermatheca. **Legs** 4>3>1>2. Coloured as in male except for legs I, which have the same pattern as legs II-IV. Ventral tibiae pattern as seen in male.

**Remarks.** Specimens from Oaxaca show variation in the pattern of the facial band to the ones described before. Whereas the specimens from Veracruz have a semi continuous facial band, these males (e.g. MX17-1239, MX17-1249, MX17-1373) have only triangular patches merging to the sides of the AME and no shiny red scales complementing this pattern. The embolus has the spur diagnostic for the species, long and deeply excavated chelicera with a bumpy distal inner margin (fig. 4; 4).

**Natural history:** Specimens were found at the side of the river and slopes exposed to the sun when beating densely packed vines, covered by suspended leaf litter.

**Additional material examined.** 6 males, 4 females, 14 juveniles from MÉXICO: OAXACA: Puerto Antonio, km 71 of HWY 175: 17.665 to 17.666 °N, 96.3323 to 96.3327 °W, 1160-1270 m, 5 Jul 2017, R. Paredes, W. Maddison, Ł. Trębicki, U. Garcilazo, A. Casasola, WPM#17-023 (1\$m); OAXACA: 27 km SW of Valle Nacional on HWY 175: 17.6 °N, 96.4 °W, 1219 m, 24 Jun 1983, W. Maddison, WPM#83-084 (3\$m, 2\$f); NUEVO LEON: Santa Rosa Canyon, 29 km W of Linares along HWY 60: 24.8 °N, 99.8 °W, 609 m, 3-5 Jun, W. Maddison, WPM#83-035 (1\$m, 2\$f); VERACRUZ: Nueva Vaqueria, Pine trees: 19.09367 °N, 97.22215 °W, 3040 m, 18 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@046 (1\$j); VERACRUZ: Acomulco, Cerro “El Filo”: 19.14396 °N, 97.15194 °W, 2045 m, 12 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@029 (1\$m, 1\$f, 5\$j: \$f = MXN\_1733, \$m = MXN\_1955); VERACRUZ: Acomulco, Cerro “El Filo” dry: 19.14601 °N, 97.14953 °W, 2023 m, 12 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@030 (1\$f); VERACRUZ: Xamaticpac: 19.1264 °N, 97.06738 °W, 1705 m, 11 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@028 (2\$j); VERACRUZ: Rio Pancho Poza: 19.75297 °N, 97.25205 °W, 1995 m, 23 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@053 (3\$j); VERACRUZ: Jesus Maria Acatla, Xocotla: 19.18443 °N, 97.13235 °W, 2206 m, 19 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@048 (1\$j).



**Figure 4.** *Mexigonus \$signe*. Figures 1-7 (male holotype MXN\_2899). 8-9 male paratype MXN\_1838. 10 male paratype MXN\_5379. 11-13 female paratype MXN\_5728. 1,2,3 palp, embolus and RTA. 4 chelicerae. 14, 15 epigyna dorsal and ventral view.

***Mexigonus \$thunderstruck* sp. nov.**

(Fig. 5; 1-10)

**Holotype.** Male from MÉXICO: OAXACA: Sendero Interpretivo el Relámpago, km 88 of HWY 175, 17.591 to 17.592 °N, 96.398 to 96.4 °W, 2000-2200 m, 4 Jul 2017, U. Garcilazo, W. Maddison, R. Paredes, A. Casasola, Ł. Trębicki, WPM#17-019, (\$m = MX17-1066).

**Paratypes.** 3 males, 4 females from MÉXICO: OAXACA: Sendero Interpretivo el Relámpago, km 88 of HWY 175: 17.592 °N, 96.398 °W, 2000 m, 4 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, A. Casasola, R. Paredes, WPM#17-018 (1\$m); 17.591 to 17.592 °N, 96.398 to 96.4 °W, 2000-2200 m, 4 Jul 2017, U. Garcilazo, W. Maddison, R. Paredes, A. Casasola, Ł. Trębicki, WPM#17-019 (2\$m: \$m = MX17-1053, \$m = MX17-1072); OAXACA: Puerto Antonio, km 71 of HWY 175: 17.665 to 17.666 °N, 96.3323 to 96.3327 °W, 1160-1270 m, 5 Jul 2017, R. Paredes, W. Maddison, Ł. Trębicki, U. Garcilazo, A. Casasola, WPM#17-023 (\$f = MX17-1380); OAXACA: near km 88 of HWY 175: 17.5898 °N, 96.3973 °W, 2000 m, 4-5 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, A. Casasola, R. Paredes, WPM#17-020 (3\$f: \$f = MX17-1186, \$f = MX17-1180, \$f = MX17-1175).

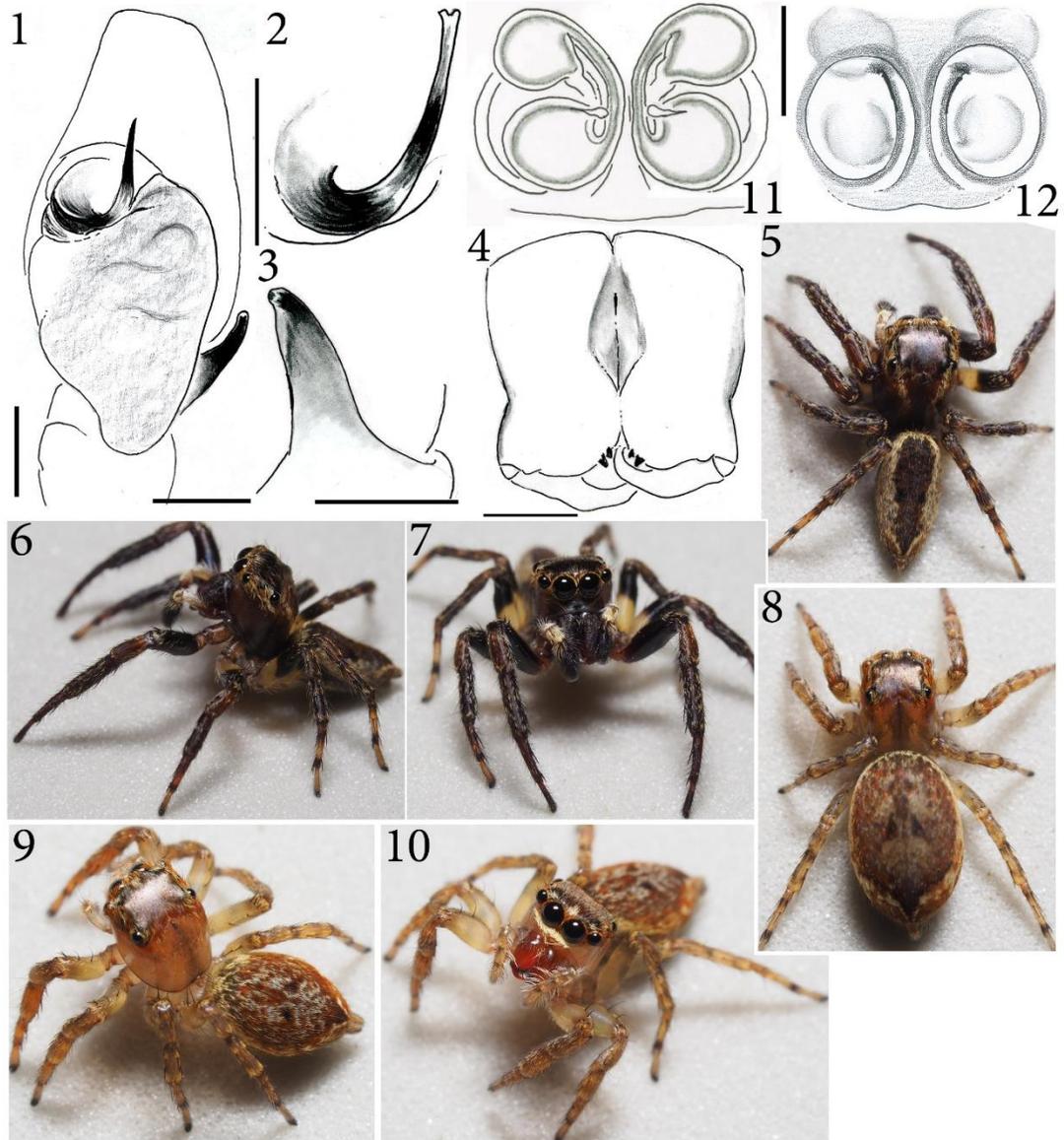
**Diagnosis.** Medium-large sized species relative to other members of the \$triste group and marked sexually dimorphic bodies with a dark and slightly hirsute male and an orange and slightly transparent female (fig 5; 5-10). The male lacks the facial stripes usually located at the anterior eyes, whereas the female has a triangular patch above and between the AME (fig. 5; 10). The species lacks white pale setae in the chelicerae in both males and females (fig. 7, 10). Other species morphologically similar are M. \$big\_moss, M. \$signe and M. \$triste. It differs from M. \$triste by the dark and glabrous clypeus in males and the reddish setae encircling the AME (seen also in males of M. \$triste and M. \$signe) and femora I in males is entirely dark brown rather than bicolored. Females show a narrow horizontal as in M. \$triste that is yellow rather

than white and have grey mottled abdomens as seen in *M. \$big\_moss* and *M. \$stripe\_grass* rather than hirsute with medial bands as in *M. \$triste*.

**Description.** *Male* (holotype). Carapace length 3.2. Abdomen length 3.3. **Carapace** dark brown and slightly paler at the back of the PLE. Two parallel yellow cream bands run from the PLE to the pedicel. **Clypeus** glabrous and dark with a couple of long setae descending from below the AME. Facial band missing and AME encircled by orange scales. **Chelicerae** longer than wide, reddish and excavated. **Palp** yellow cream coloured and covered by mostly white setae except for the tibia where they are yellow, and the black cymbium. **Embolus** arising from its disk at 6:00 o'clock in left palp, maintaining a straight line until reaching the tip. **Legs** 1>4>3>2. All legs black except for basal portion of femora, metatarsus and tarsus in legs II-IV. Coxae I darker than rest of the legs but appearing caramel red, paler than rest of the first legs. Ventral tibia I with spines: 2:2:2. **Abdomen** dark with a continuous medial band which is smooth, without noticeable irregular edges. Band is surrounded by a margin of yellow cream setae that gradually fade into the colour of setae covering the lateral sides of abdomen.

*Female* (paratype; MX17-1180). Carapace length 2.9. Abdomen length 4.5. **Carapace** transparent yellow except for the dark ocular region and a slit that belongs to the fovea, extending while fading towards the pedicel. **Clypeus** glabrous with a narrow horizontal line of yellow setae right below the AME. **Chelicerae** smooth. **Epigyne** with secondary spermatheca that are smaller than primary spermatheca. **Legs** 4>3>1>2. Uniformly coloured by transparent yellow of the same tonality as in carapace. Tarsus II-IV with a dark spot at the basal joint of the segment. **Abdomen** mottled with pale gray, dark and reddish. The only remnant of the dark medial stripe is two dark spots at the middle of the abdomen and the triangle above the anal tubercle.

**Additional material examined.** 6 males, 6 females, 11 juveniles from MÉXICO: OAXACA: Sendero Interpretivo el Relámpago, km 88 of HWY 175: 17.591 to 17.592 °N, 96.398 to 96.4 °W, 2000-2200 m, 4 Jul 2017, U. Garcilazo, W. Maddison, R. Paredes, A. Casasola, Ł. Trębicki, WPM#17-019 (3\$f, 1\$j: \$f = MX17-1086); OAXACA: near km 89 of HWY 175: 17.592 to 17.594 °N, 96.398 to 96.405 °W, 2000 m, 5 Jul 2017, J. Arturo A. Casasola, WPM#17-024 (2\$m, 2\$j); OAXACA: near km 88 of HWY 175: 17.5898 °N, 96.3973 °W, 2000 m, 4-5 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, A. Casasola, R. Paredes, WPM#17-020 (2\$m, 3\$f, 8\$j); OAXACA: Sendero Interpretativo San Bernardino: 17.606 to 17.608 °N, 96.384 to 96.385 °W, 1650-1750 m, 4 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-021 (\$m = MX17-1256); CHIAPAS: 5-15 km E of Rayon on HWY 195: 17.2 °N, 93 °W, 1494 m, 6 Jul 1983, W. Maddison & R.S. Anderson, WPM#83-097 (1\$m).



**Figure 5.** *Mexigonus \$thunderstruck*. Figures 1-7 male holotype MX17-1066; 8-12 female paratype MX17-1180. 1-3 palp, embolus, and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$stripe\_grass sp. nov.***

(Fig. 6; 1-12)

**Holotype.** Male from MÉXICO: CHIAPAS: Huitepec Reserve, 16.7501 °N, 92.6883 °W, 2410 m, 12 Jul 2017, W. Maddison & Ł. Trębicki, WPM#17-040, (\$m = MX17-2207).

**Paratypes.** 3 females from MÉXICO: CHIAPAS: Huitepec Reserve: 16.7501 °N, 92.6883 °W, 2410 m, 12 Jul 2017, W. Maddison & Ł. Trębicki, WPM#17-040 (3♂: ♂ = MX17-2136, ♀ = MX17-2228, ♀ = MX17-2139).

**Diagnosis:** Uniformly hirsute and bicolored species of medium-small size relative to other members in the *tristis* group with a pair of broad orange pale stripes of decoloured integument beside the fovea of both males and females (fig. 6; 5, 8). It looks very similar to *M. big\_moss* in the presence of decoloured stripes and some male specimens having bicolored first legs, but there is a pair of diagonal patches next to the PME looking like 'eyebrows' (fig. 6; 7). These stripes slightly show as iridescence in some other male specimens in other species in front view, but the setae seem to become white only in *M. stripe\_grass* and *M. stripe\_broad*, being these two species quite morphologically different otherwise. The facial bands around the AME are absent altogether rather than forming a yellow mask as in *M. big\_moss*. The embolus is slender and straight with a smooth reduction in width with uniform edges (fig. 6; 1-2), contrary to the small spur at the middle of the embolus seen in *M. big\_moss*. In females the secondary spermatheca look more vertical than other species in the group, and are oriented parallel to the longitudinal axis of genital plate, whereas the atria are wider than other species in the *triste* group (fig. 6; 11-12).

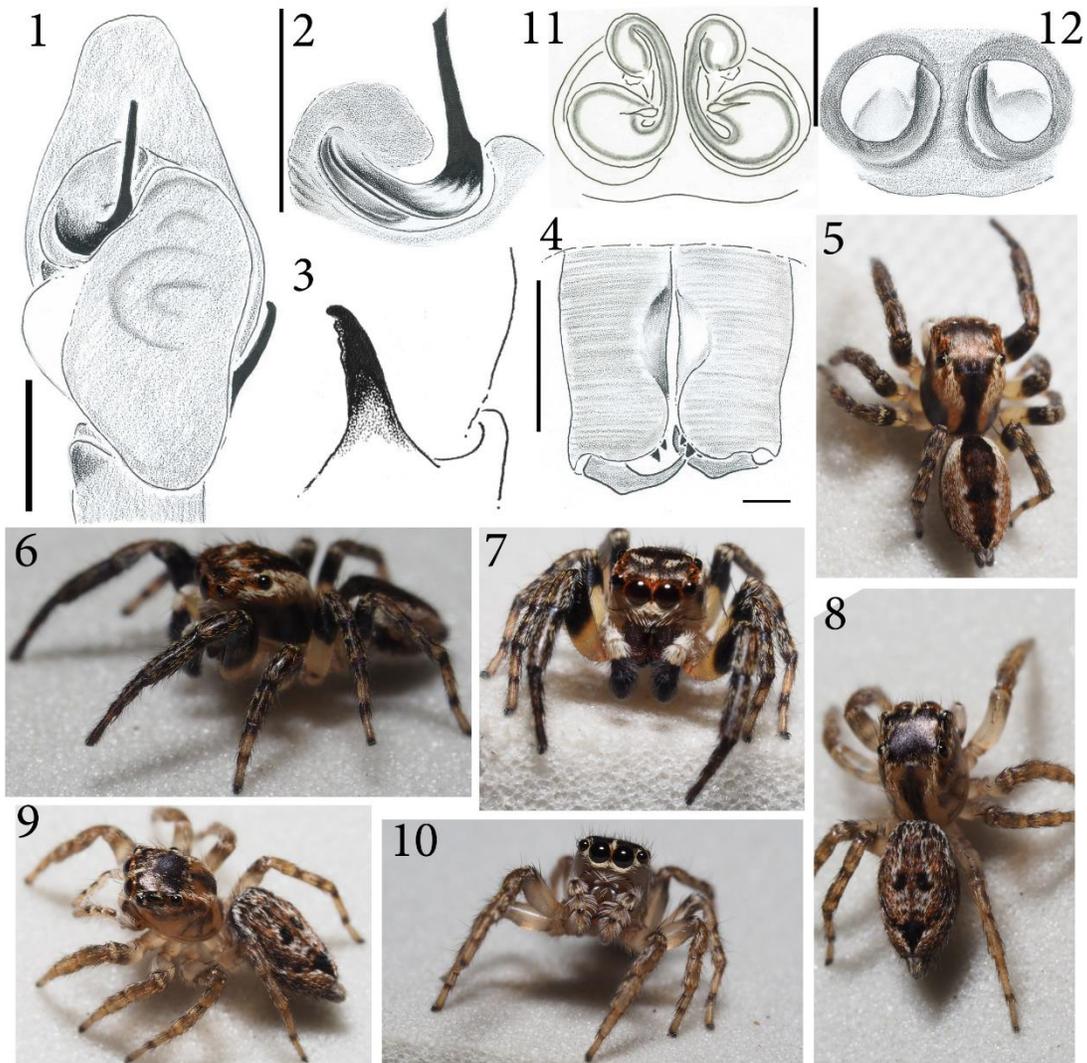
**Description.** *Male* (holotype). Carapace length 2.1. Abdomen length 2.2. **Carapace** dark brown with two broad honey coloured parallel bands descending from the ALE and PLE towards the back of the carapace, and covered by long cream yellow setae. A narrow patch of white setae descends diagonally from the PME towards the AME forming 'eyebrows'. **Clypeus** dark yellow, glabrous in the cheeks and covered by a dense horizontal patch of yellow cream setae right under the AME. A series of long setae pass over the margin of the carapace partially covering the chelicera. **Chelicerae** longer than wide, excavated and dark brown. **Palp** is mostly white with small patches of yellow at the tip of the tibia. Cymbium black. **Embolus** arising from its disk

at 6:00 o'clock in left palp, maintaining a straight line slightly leaning retrolaterally, and with a medial spur that constricts smoothly back into the embolus. RTA long and thin with ventrally serrated at its distal end and ending in a blunt bended tip. **Legs** 1>4>3>2. All legs black except for the coxae and the basal half part of femur in all legs, and metatarsus and tarsus in legs II-IV. Hirsute covered by evenly separated short yellow and white setae covering the dark parts of legs. **Abdomen** smooth and covered by shiny red scales. The dark medial band is semi-uniform with light symmetrical indentations after the second half of the abdomen before ending in a triangle over the anal tubercle. The indentations in the band and the anterior margin covered by white setae. The rest of the abdomen evenly mixes white and red setae.

*Female* (paratype; MX17-2228). Carapace length 2.6. Abdomen length 2.6. **Carapace** as in male except the parallel pale cuticular stripes have more irregular borders making them look smaller. **Clypeus** pale yellow gray with a small and narrow horizontal line below the AME. The facial band shows up as a small projection besides each of the AME and a dorsal triangle in between. **Chelicerae** smooth. **Epigyne** without obvious secondary spermatheca except for a widened chamber following the copulatory openings. **Legs** 4>1>3>2. Grey of the same tonality as the grey in the carapace and transparent, especially obvious in the femora. Tarsus II-IV with a dark spot at the basal joint of the segment. **Abdomen** of pale gray background and mottled with dark and reddish setae. Two dark spots in the middle of the abdomen with a narrow shadow of the medial dark medial stripe end in a triangle above the anal tubercle.

**Natural history.** Species were found in leaf covered branches and especially beating well drained suspended litter.

**Additional material examined.** 1 males, 7 females, 3 juveniles from MÉXICO: CHIAPAS: Grutas de San Cristobal, ~16 km SE of San Cristobal on HWY 190: 16.68 °N, 92.58 °W, 2392 m, 27 Jul 1983, W. Maddison, WPM#83-127 (1♂m, 7♀f, 3♂j).



**Figure 6.** *Mexigonus stripe\_grass*. Figures 1-7 male holotype MX17-2207; 8-12 female paratype MX17-2228. 1-3 palp, embolus, and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$big\_moss* sp. nov**

(Fig. 7; 1-15)

**Holotype.** Male from MÉXICO: CHIAPAS: trail from Santa Rita to El Triunfo, 15.6807 to 15.679 °N, 92.7956 to 92.7978 °W, 1840-1890 m, 16 Jul 2017, Ł. Trębicki & W. Maddison, WPM#17-052, (\$m = MX17-2933).

**Paratypes.** 4 males, 3 females from MÉXICO: CHIAPAS: P.N. Lagunas de Montebello, park office: 16.114 °N, 91.731 °W, 1490 m, 14 Jul 2017, Ł. Trębicki & W. Maddison, WPM#17-042 (\$m = MX17-2355); CHIAPAS: trail from Santa Rita to El Triunfo: 15.6807 to 15.679 °N, 92.7956 to 92.7978 °W, 1840-1890 m, 16 Jul 2017, Ł. Trębicki & W. Maddison, WPM#17-052 (2\$m: \$m = MX17-2941, \$m = MX17-2911); CHIAPAS: P.N. El Triunfo, crest of Costa Trail: 15.6474 to 15.6483 °N, 92.8096 to 92.8105 °W, 2100 m, 17-18 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-058 (1\$m, 3\$f: \$f = MX17-3244, \$f = MX17-3237).

**Diagnosis.** Irregularly hirsute cryptic brown species of medium size and distinctive among other members in the \$triste group by a butterfly shaped mask covering the AME in both males and females (fig. 7; 7, 10, 13), which seems to form by the combination of stripes over the AME and smaller comma shaped projections below them. Other species morphologically similar to *M. \$big\_moss* are *M. \$triste*, *M. \$stripe\_grass* and *M. \$stripe\_broad*. It differs from these and other species on the clypeus, which is hirsute in males contrary to *M. \$thunderstruck* and *M. \$triste*, the yellow rather than white setae covering the clypeus contrary to *M. \$stripe\_broad* and restricted to the clypeus, not reaching the cheeks as in *M. \$orange\_legs*. The male chelicera has a patch of yellow setae covering the entire basal portion of the paturon (fig. 7; 7, 10) which is a trait only shared with *M. \$orange\_legs*, but it is less dense with the underlying integument still visible. The legs are chocolate brown rather than orange (fig. 7; 5-11) as in *M. \$orange\_legs* and in males the femora I are fading into black from the coxae (fig. 7; 7) or slightly bicolored (fig.

7; )unlike *M. \$stripe\_grass*. Male palp is hirsute and messy, contrary to *M. \$thunderstruck* and mostly yellow. Although some specimens seem to have white setae, they are not smooth and uniform as in *M. \$stripe\_grass* and *M. \$stripe\_broad*. Embolus has a medial spur as in *M. \$triste* and *M. \$spectacles\_two*. However, the spur in this species is greatly reduced, only visible through high magnifications (fig. 7; 2). In females, the epigyne has well formed secondary spermatheca contrary to *M. \$stripe\_grass*, and these are flipped perpendicular to the longitudinal axis of the epigyne (fig. 7; 15) unlike *M. \$stripe\_grass* and *M. \$orange\_legs*, and are smaller than the primary spermatheca unlike *M. \$thunderstruck* and *M. \$triste*.

**Description.** *Male* (holotype). Carapace length 3.0. Abdomen length 3.4. **Carapace** dark brown in the ocular area, around the fovea and the posterior margins of the carapace. Anterior margins of carapace and cuticle underlying the parallel stripes that descend from behind the PLE of dark yellow. **Clypeus** hirsute by long and messy looking yellow cream setae projecting into the basal part of chelicera and increasing in density below the AME until merging with the yellow rings that surround the main eyes. Facial band visible as a small projection of yellow setae on the side of AME and on the top, where they form a triangle. **Chelicerae** widely excavated. Basal part of the paturon is entirely covered by the same setae seen in the clypeus, accentuating the basal margin of the groove produced by the excavation. Promargin with two teeth. Retromargin with one simple tooth. **Palp** mostly yellow produced by a combination of a pale integument and cream yellow setae. Cymbium is black. **Embolus** arising from its disk at 6:00 slightly maintaining a curved shape pointing prolaterally. Tegulum longer than wide with a strong constriction at the prolateral side of the tegular bump. RTA fingerlike ending in a blunt tip preceded by a constriction. **Legs** 1>4>3>2. All legs mostly chocolate dark brown and transparent yellow at the medial portion of femora II-IV and metatarsus-tarsus II-IV. Legs I entirely dark barely covered by short yellow setae. **Abdomen** smoothly hirsute. Dark medial band wide at its anterior half, constricted in the middle and discontinuous at the last third, ending in a dark triangle over the

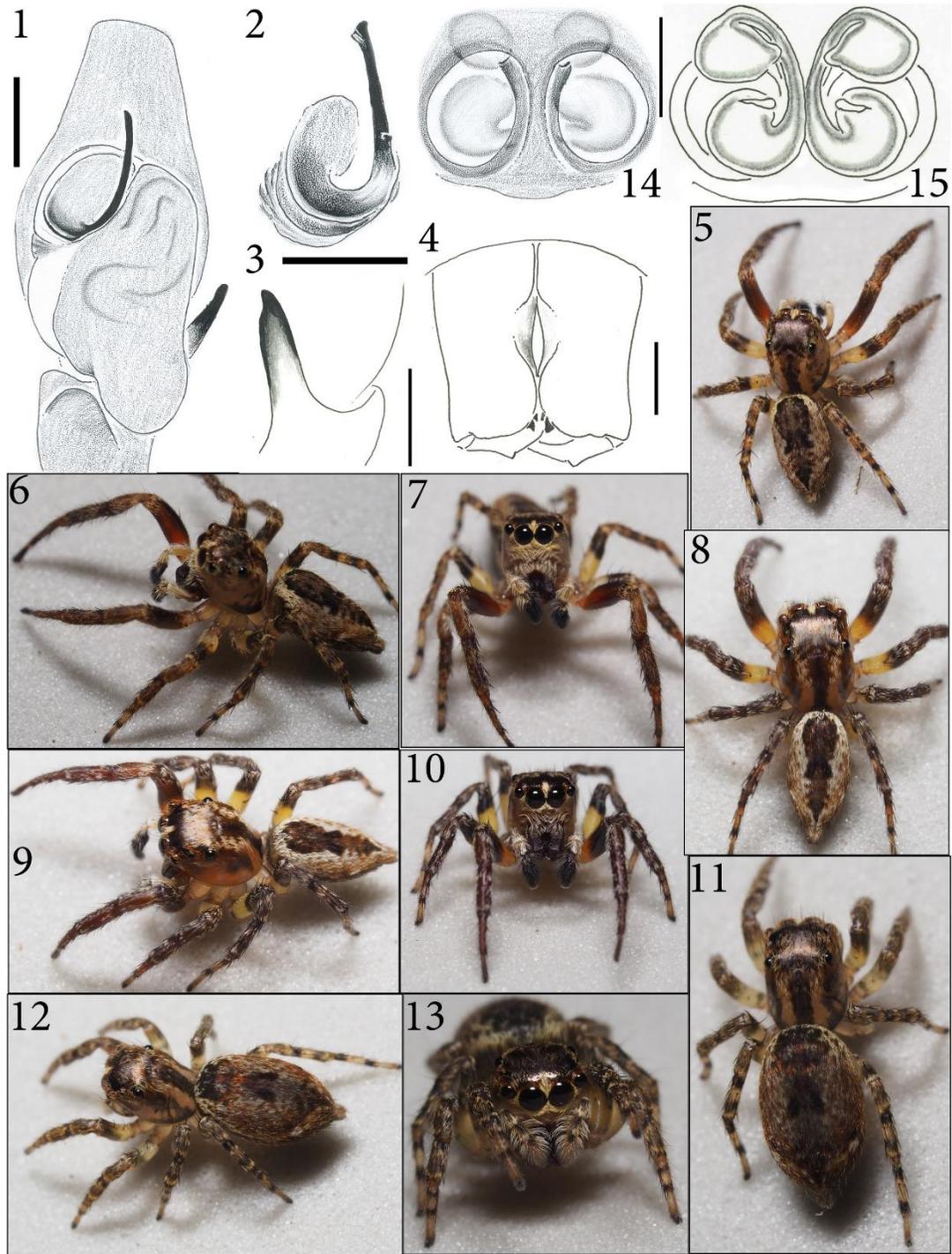
anal tubercle. The band is complemented by a margin of white setae, especially visible at the anterior edge of the abdomen that fades into a yellow integument.

*Female* (paratype; MX17-3237). Carapace length 2.5. Abdomen length 3.7. **Chelicerae** smooth. Promargin with two teeth. Retromargin with one simple tooth. **Epigyne** with secondary spermatheca smaller than primary ones. Primary spermatheca teardrop shaped. **Legs** 4>3>1>2. Transparent honey coloured and olive at some of the distal and basal parts of the segments, especially femora. Dark rings in the tibia and metatarsus. **Abdomen** with a faded dark medial band, obvious in alcohol preserved specimens but hidden behind a mottled pattern of white and shiny reddish setae that give a big contrast. The only recognizable pattern is a medial pair of black spots and a distal triangle over the anal tubercle accompanied by a margin of white short setae.

**Remarks.** Specimens from Chiapas: P.N. Lagunas de Montebello and San Rafael de Los Arcos, and the vial from MCZ: 69810 (see below) are different than the ones previously described. MX17-2473 (female) is paler, the colour of the integument is cream yellow and the AME are surrounded by white rather than yellow setae. Some males (e.g. MX17-2355) are about 15% smaller and femora I is more bicolored (fig. 7; 8-10). These specimens are referred to as *M. duvalin* in their vials. Molecular work or additional collecting might help corroborate if these specimens belong to a different taxon.

**Additional material examined.** 14 males, 11 females, 12 juveniles from MÉXICO: CHIAPAS: San Rafael de los Arcos: 16.134 °N, 91.728 °W, 1450 m, 14 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-046 (\$f = MX17-2676); CHIAPAS: P.N. Lagunas de Montebello, trail from park office: 16.114 °N, 91.73 °W, 1500 m, 14 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-043 (\$f = MX17-2473); 16.114 °N, 91.727 °W, 1540 m, 14 Jul 2017, U. Garcilazo, Ł. Trębicki, W. Maddison, WPM#17-044 (2\$m); CHIAPAS: P.N. El Triunfo, Costa

Trail, north of crest: 15.656 to 15.648 °N, 92.807 to 92.81 °W, 1940-2100 m, 17 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-057 (6\$j); CHIAPAS: P.N. El Triunfo, entrance to Costa Trail: 15.6559 °N, 92.8073 °W, 1940 m, 17 Jul 2017, U. Garcilazo, Ł. Trębicki, W. Maddison, WPM#17-056 (2\$f); CHIAPAS: P.N. El Triunfo, crest of Costa Trail: 15.6474 to 15.6483 °N, 92.8096 to 92.8105 °W, 2100 m, 17-18 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-058 (7\$m, 4\$f, 5\$j; \$m = MX17-3227, \$m = MX17-3220); CHIAPAS: 5 km W of San Cristobal de Las Casas on HWY 190: 16.73 °N, 92.68 °W, 2133 m, 27-28 Jul 1983, W. Maddison & R.S. Anderson, WPM#83-126 (4\$m, 2\$f, 1\$j); CHIAPAS: 5-15 km E of Rayon on HWY 195: 17.2 °N, 93 °W, 1494 m, 6 Jul 1983, W. Maddison & R.S. Anderson, WPM#83-097 (1\$m, 1\$f).



**Figure 7.** *Mexigonus big\_moss*. Figures 1-7 male holotype MX17-2933; 8-10 male paratype MX17-2355. 11-15 female paratype MX17-3237. 1-3 palp, embolus, and RTA. 4 chelicerae. 14-15 epigyna dorsal and ventral view.

***Mexigonus \$lynx* sp. nov.**

(Fig. 8; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: San José del Pacifico, 16.173 to 16.177 °N, 96.5 to 96.503 °W, 2600-2800 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-027, (\$m = MX17-1603).

**Paratypes.** 1 females from MÉXICO: OAXACA: San José del Pacifico: 16.173 to 16.177 °N, 96.5 to 96.503 °W, 2600-2800 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-027 (\$f = MX17-1607).

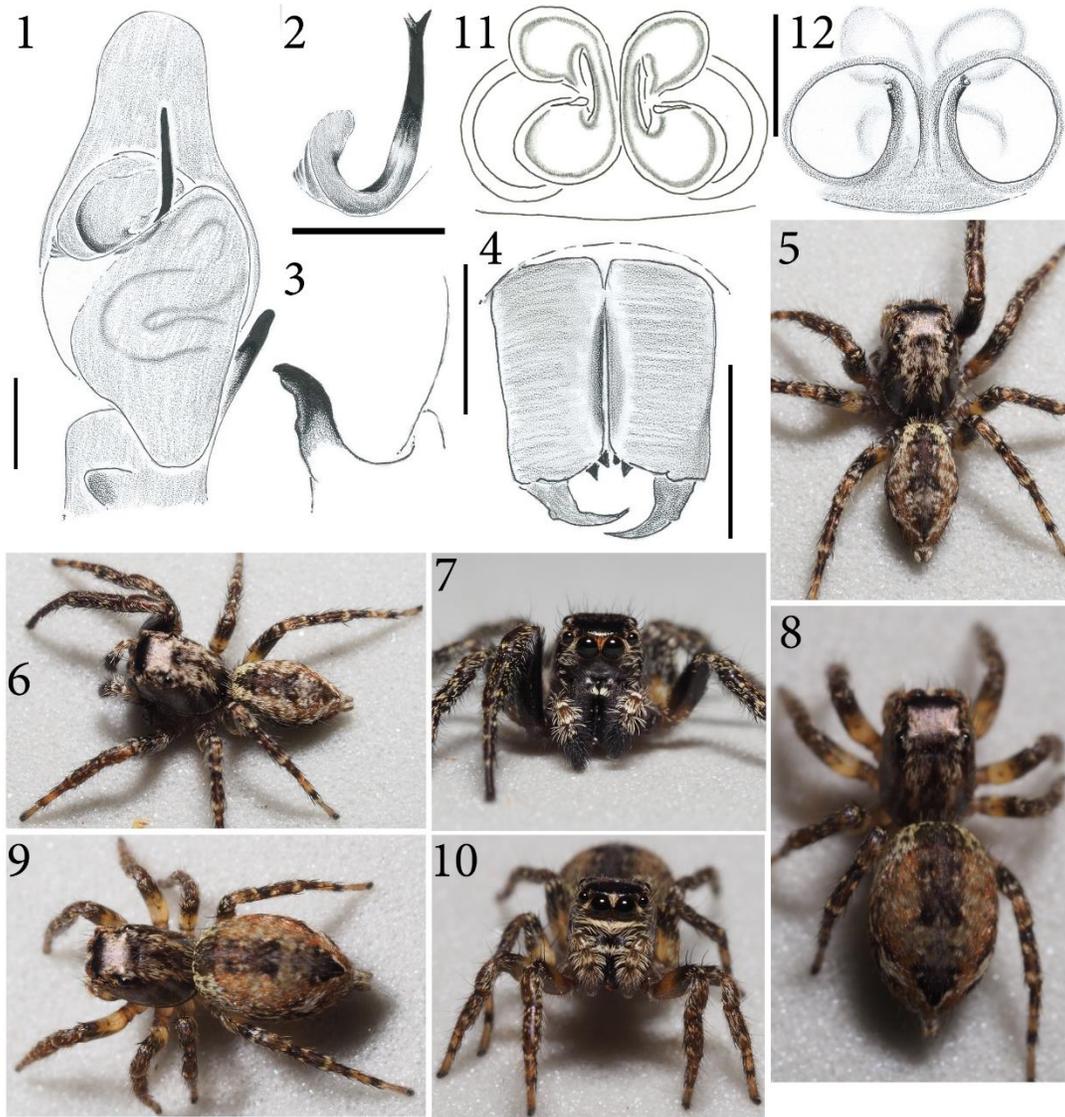
**Diagnosis:** Medium-big sized, glabrous and dark species relative to other members of the \$triste group unique by the long male chelicerae ornamented by a narrow white ‘mustache’ at the base of the paturon (fig. 8; 7) and the AME outlined by ‘whiskers’ formed by pale setae (fig. 8; 7). Other species morphologically similar to M. \$big\_moss are *M. \$thunderstruck* and *M. \$triste*. It differs from these species in the carapace, which is black and glabrous as in *M. \$thunderstruck* but the parallel bands that descend from the fovea are represented by dense patches of messy looking setae with an almost non-existent decolouring of the underlying integument (fig. 8; 5, 8). The abdomen is similar to *M. \$triste* in having the dark medial band continuous until the first half of the abdomen, but in *M. \$lynx* the band is not wider at the anterior margin of the abdomen (fig. 8 ; 5, 8).

**Description.** *Male* (holotype). Carapace length 3.0. Abdomen length 2.7. **Carapace** black and glabrous with the thoracic area covered by scattered dense patches of white setae, some of which project to the back resembling the two parallel lines found in other species. Specimen in alcohol reveals these lines as pale discoloration in the integument. Margins of the carapace delimited by a thin line of white setae. **Clypeus** dark and glabrous. Facial band is missing but

AME are surrounded by scattered long white setae resembling wrinkles. **Chelicerae** are very long ca.7x the height of the clypeus. Basal part of paturon with a short patch of white setae. Promargin with two teeth. Retromargin with one simple tooth. **Palp** with honey coloured integument and covered by messy looking white setae except in the black cymbium. **Embolus** arises from its disk at 6:00 and maintains a straight thin line ending into a tip. RTA hook shaped ending into an acute tip. **Legs** 1>4>3>2. All legs mostly black except for the basal part of femora II-IV and metatarsus-tarsus of all legs. Femur I entirely black. **Abdomen** irregularly hirsute and messy looking. Dark medial band maintains a consistent width from anterior to posterior sides of abdomen before ending into a triangle over the anal tubercle. Specimen in alcohol reveals that the integument becomes pale at the beginning of second half of the medial band. Anterior side of the abdomen with a pair of patches of yellow cream setae.

*Female* (paratype; MX17-1607). Carapace length 2.6. Abdomen length 3.4. **Clypeus** with a narrow horizontal line of setae at the edge of the carapace. The facial band is present as triangular patches of cream yellow setae at the sides and the top in between the AME.

**Chelicerae** short ca. 4x the height of clypeus. **Epigyne** with secondary spermetheca slightly smaller than the primary ones. **Abdomen** as in male only covered by additional shiny reddish setae.



**Figure 8.** *Mexigonus lynx*. Figures 1-7 male holotype MX17-1603; 8-12 female paratype MX17-1607. 1-3 palp, embolus, and RTA. 4 chelicerae. 11, 12 epigyna dorsal and ventral view.

***Mexigonus \$orange\_legs* sp. nov.**

(Fig. X (A-I))

**Holotype.** Male from MÉXICO: CHIAPAS: P.N. Lagunas de Montebello, trail from park office, 16.114 °N, 91.73 °W, 1500 m, 14 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-043, (\$m = MX17-2495).

**Paratypes.** 2 males, 2 females from MÉXICO: CHIAPAS: Huitepec Reserve: 16.75 to 16.758 °N, 92.681 to 92.688 °W, 2330-2400 m, 12 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-039 (1\$m, 1\$f: \$f = MX17-2063, \$m = MX17-2075); CHIAPAS: P.N. Lagunas de Montebello, trail from park office: 16.114 °N, 91.73 °W, 1500 m, 14 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-043 (\$f = MX17-2482); CHIAPAS: P.N. Lagunas de Montebello, Lago de Carrizal: 16.1136 °N, 91.7267 °W, 1470 m, 14 Jul 2017, W. Maddison, WPM#17-045 (1\$m).

**Etymology.** Name formed by the combination of the Latin adjective *aurantius* = orange and the Latin noun *pes* = feet; *aurantipes* = orange legs. Species named after the colour of the integument in the species, which makes it distinctive among other members in the species group.

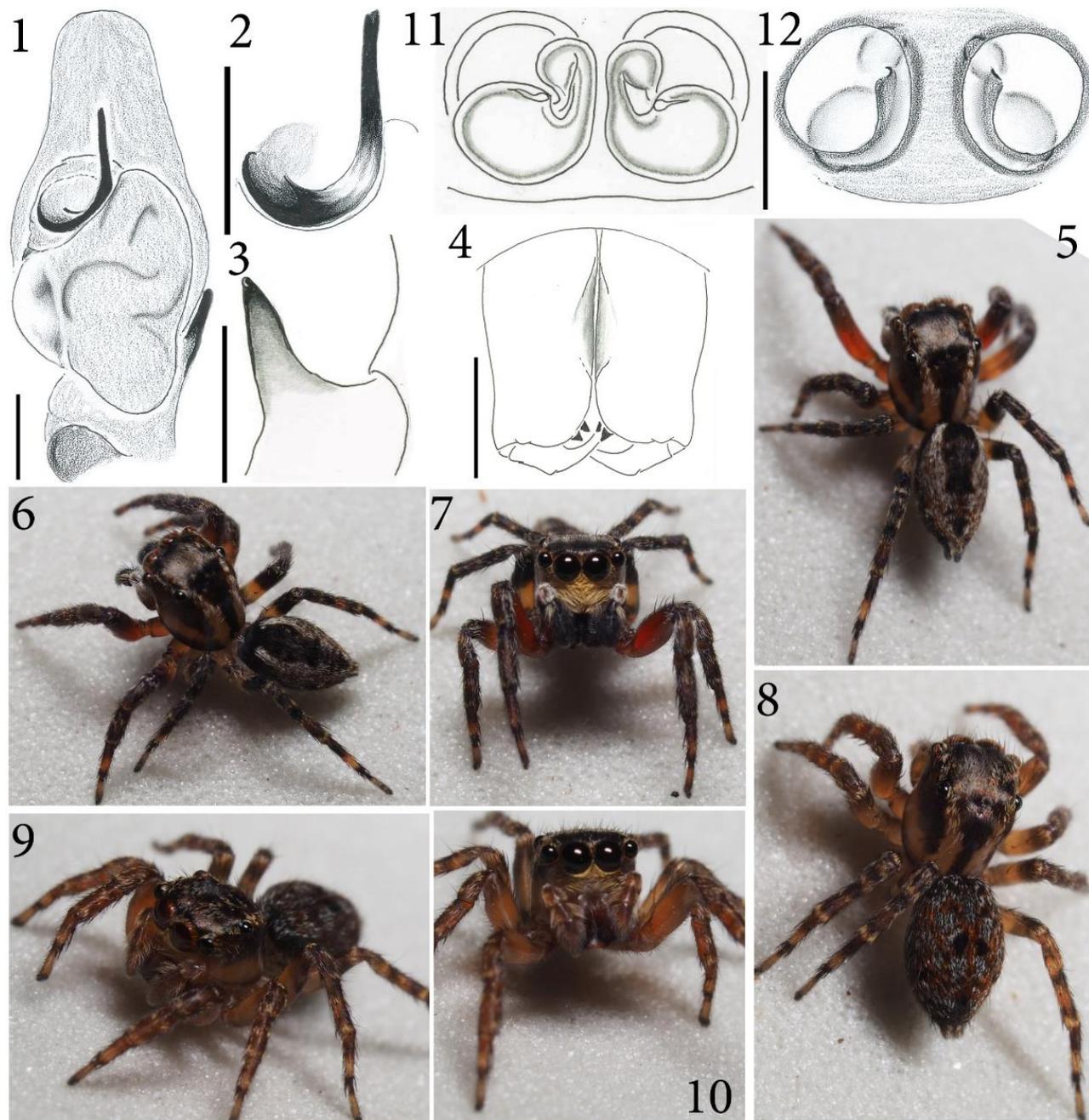
**Diagnosis.** Medium-small sized dark and reddish orange spiders with glabrous carapaces (fig. 9; 5, 6, 8), unique among members in the \$triste group by a distinctive and densely hirsute patch of yellow setae covering the face of males (fig. 9; 7) and red-orange integument especially visible at the first legs in both males and females (fig. 9; 7). Other species morphologically similar to *M. \$orange\_legs* are *M. \$signe*, *M. \$stripe\_broad*, *M. \$stripe\_grass* and *M. \$big\_moss*, but the tegulum is more oval (fig. 9; 1) and the RTA is short (fig. 9; 3). The palp is white and hirsute as in *M. \$triste* except the integument in the patella is dark rather than yellow.

Unlike M. \$stripe\_grass and M. \$stripe\_broad the hirsuteness of the body is messy looking. Females retain the low margin of yellow setae as in M. \$big\_moss and M. \$stripe\_grass (fig. 9; 10).

**Description.** Male (holotype). Carapace length 2.2. Abdomen length 2.2. **Carapace** bicoloured. Ocular region, upper half of cheeks and fringe behind the fovea black, whereas the margins of the carapace are amber yellow and fuse with the parallel lines descending from behind the PLE. Ocular region with a pair of patches of diagonal setae descending from PME towards the AME forming 'eyebrows'. **Clypeus** and cheeks densely covered by long yellow setae. Facial band missing. **Chelicerae** longer than wide with a narrow excavation with the first half of the paturon covered by the same setae seen in clypeus. Promargin with two fused teeth. Retromargin with one simple tooth. Specimen in alcohol shows this area has a pale integument. **Palp** covered by long white and yellow setae extending into the tibia. Integument is dark honey coloured except from patella to cymbium. **Embolus** arises from its disk at 6:00 and arising straight. Tegulum oval wider than high. RTA fingerlike. **Legs** 1>4>3>2. Orange integument, especially visible on the femora that turns darker at the distal segments of legs. Metatarsus and tarsus ringed with pale integument. Hirsute over the dark parts with yellow cream setae. **Abdomen** with a dark medial band wider and smooth at the anterior half of the abdomen, constricted in the middle that turns discontinuous before ending into a dark triangle over the anal tubercle. Band marginalized by pale yellow cream setae.

*Female* (paratype; MX17-2482). Carapace length 2.3. Abdomen length 2.2. **Carapace** missing the diagonal 'eyebrows'. **Clypeus** glabrous and dark. Lower margin of AME covered with yellow setae. **Chelicerae** smooth. **Epigyne** without secondary spermatheca but widened chambers follow the copulatory openings. **Legs** as in male except for legs I, which look similar to the rest. **Abdomen** mottled with white and shiny reddish setae. The integument is entirely black.

**Additional material examined.** 15 males, 6 females, 33 juveniles from MÉXICO: CHIAPAS:  
P.N. Lagunas de Montebello, trail from park office: 16.114 °N, 91.73 °W, 1500 m, 14 Jul 2017,  
W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-043 (10\$m, 3\$f, 6\$j); 16.114 °N, 91.727 °W,  
1540 m, 14 Jul 2017, U. Garcilazo, Ł. Trębicki, W. Maddison, WPM#17-044 (1\$f, 1\$j);  
CHIAPAS: Huitepec Reserve: 16.75 to 16.758 °N, 92.681 to 92.688 °W, 2330-2400 m, 12 Jul  
2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-039 (5\$m, 2\$f, 26\$j).



**Figure 9.** *Mexigonus \$orange\_legs*. Figures 1-7 male holotype MX17-2495; 8-12 female paratype MX17-2482. 1-3 palp, embolus, and RTA. 4 chelicerae. 11, 12 epigyna dorsal and ventral view.

***Mexigonus \$red\_black\_white* sp. nov.**

(fig. 10; 1-13)

**Holotype.** Male from MÉXICO: CHIAPAS: trail from Santa Rita to El Triunfo, 15.6904 to 15.6898 °N, 92.7923 to 92.7943 °W, 1480-1600 m, 16 Jul 2017, W. Maddison & Ł. Trębicki, WPM#17-051, (\$m = MX17-2890).

**Paratypes.** 2 males, 4 females from MÉXICO: CHIAPAS: trail from Santa Rita to El Triunfo: 15.6904 to 15.6909 °N, 92.7989 to 92.7963 °W, 1370-1450 m, 16 Jul 2017, U. Garcilazo Cruz & W. Maddison, WPM#17-049 (2\$f: \$f = MX17-2828, \$f = MX17-2821); 15.6904 to 15.6898 °N, 92.7923 to 92.7943 °W, 1480-1600 m, 16 Jul 2017, W. Maddison & Ł. Trębicki, WPM#17-051 (\$f = MX17-2898); 15.6888 to 15.689 °N, 92.7945 to 92.7943 °W, 1615 m, 19 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-062 (2\$m, 1\$f: \$m = MX17-3728, \$m = MX17-3742, \$f = MX17-3751).

**Diagnosis.** Cryptic and medium-sized hirsute species where males have black first legs (fig. 10; 5-7). The species is unique among other members in the *\$triste* group by an anterior margin of white setae covering the anterior margin of the ocular region and divided by vertical dark lines (fig. 10; 7). Other species morphologically similar to *M. \$red\_black\_white* are *M. \$canela\_blanca* and *M. \$dark\_red*, which are not part of the *\$triste* group. It differs from these species in having excavated chelicerae (fig. 10; 4), promarginal teeth having roughly the same size, male palp with an entirely black cymbium unlike *M. \$canela\_blanca* and an entirely black patella unlike *M. \$dark\_red*.

**Description.** Male (holotype). Carapace length 2.5. Abdomen length 2.4. **Carapace** dark brown covered by shiny reddish setae. Ocular area and parallel stripes descending towards the back of carapace from behind the PLE white. Specimen in alcohol shows the stripes as paler

integument. **Clypeus** glabrous without any setae. AME with a margin of red setae. Facial band is replaced by a pattern of red-black-white vertical stripes above the AME. **Chelicerae** Dark reddish without setae. Promargin with two teeth. Retromargin with a simple tooth. **Palp** entirely black but covered by long white setae forming a smooth looking pattern except on the tibia where it forms a comb. **Embolus** short and arising from its disk at 6:00 moreless straight with the tip leaning retrolaterally. RTA fingerlike and greatly constricted distally forming an acute bent tip. **Legs** pale yellow with rings present in legs II-IV located in the basal part of segments and the middle of tibiae. Leg I is entirely black except for a yellow pale tarsus. **Abdomen** with dark medial band wide at the first half of abdomen, constricted in the middle and becoming discontinuous and ending into a dark triangle. Anterior margin of abdomen covered with white setae.

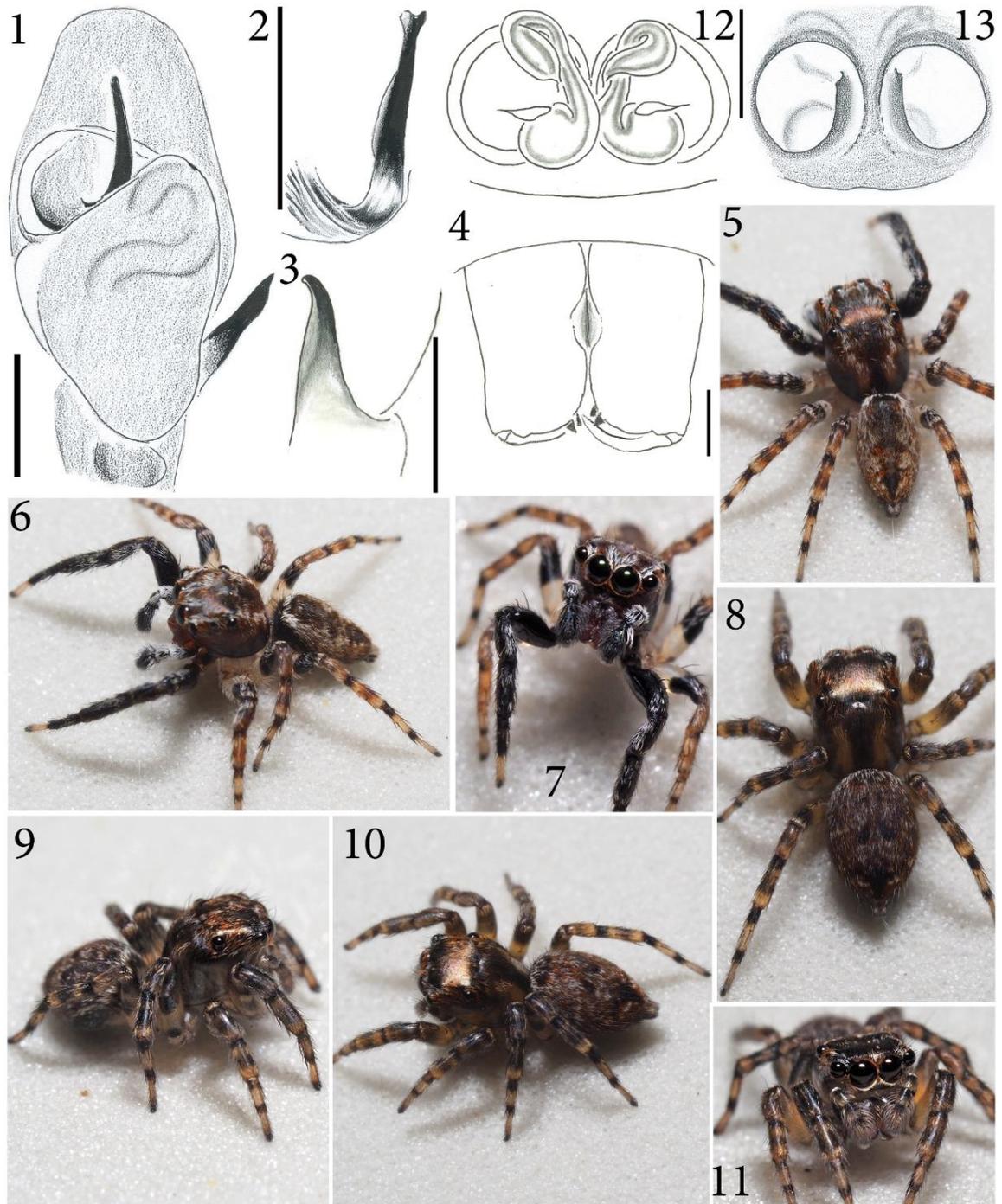
Female (paratype; MX17-2821). Carapace length 2.5. Abdomen length 2.3. **Carapace** with parallel bands emerging at the middle of the thoracic area, paler than ocular area and wide. Margins of the carapace, especially cheeks as pale as the parallel bands. Ocular area is glabrous but covered by reddish shiny setae. **Clypeus** as in male but AME have a lower margin of pale yellow setae. **Epigyne** with copulatory ducts slightly wider right after the openings but maintaining a long shape. Primary spermatheca small and spherical. **Legs** as in male except all legs look the same. Abdomen mottled with white and shiny reddish setae, lacking the dark medial band, replaced by two dark dots in the middle and a triangle over the anal tubercle.

**Additional material examined.** 10 males, 15 females, 12 juveniles from MÉXICO: CHIAPAS: trail from Santa Rita to El Triunfo: 15.6904 to 15.6898 °N, 92.7923 to 92.7943 °W, 1480-1600 m, 16 Jul 2017, W. Maddison & Ł. Trębicki, WPM#17-051 (\$m = MX17-2881); 15.6807 to 15.679 °N, 92.7956 to 92.7978 °W, 1840-1890 m, 16 Jul 2017, Ł. Trębicki & W. Maddison, WPM#17-052 (\$f = MX17-2944); 15.6888 to 15.689 °N, 92.7945 to 92.7943 °W, 1615 m, 19 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-062 (5\$m, 5\$f, 4\$j; \$f = MX17-3756); 15.691 to

15.692 °N, 92.793 to 92.794 °W, 1460-1490 m, 19 Jul 2017, U. Garcilazo, Ł. Trębicki, W.

Maddison, WPM#17-063 (2\$m, 5\$f, 4\$j); 15.6904 °N, 92.7989 °W, 1370 m, 19 Jul 2017, W.

Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-064 (2\$m, 4\$f, 4\$j).



**Figure 10.** *Mexigonus \$red\_black\_white*. Figures 1-7 male holotype MX17-2890; 8-12 female paratype MX17-2821. 1-3 palp, embolus, and RTA. 4 chelicerae. 11, 12 epigyna dorsal and ventral view.

***Mexigonus \$spectacles\_three* sp. nov.**

(fig. 11; 1-7)

**Holotype.** Male from MÉXICO: OAXACA: near km 89 of HWY 175, 17.592 to 17.594 °N, 96.398 to 96.405 °W, 2000 m, 5 Jul 2017, J. Arturo A. Casasola, WPM#17-024, (\$m = MX17-1292).

**Notes.** Male is missing the right third leg (dorsal view) starting from the tibia, the tip of the fang and the retromarginal tooth. It has dissected the right first leg and both palps, deposited in a micro vial with the specimen.

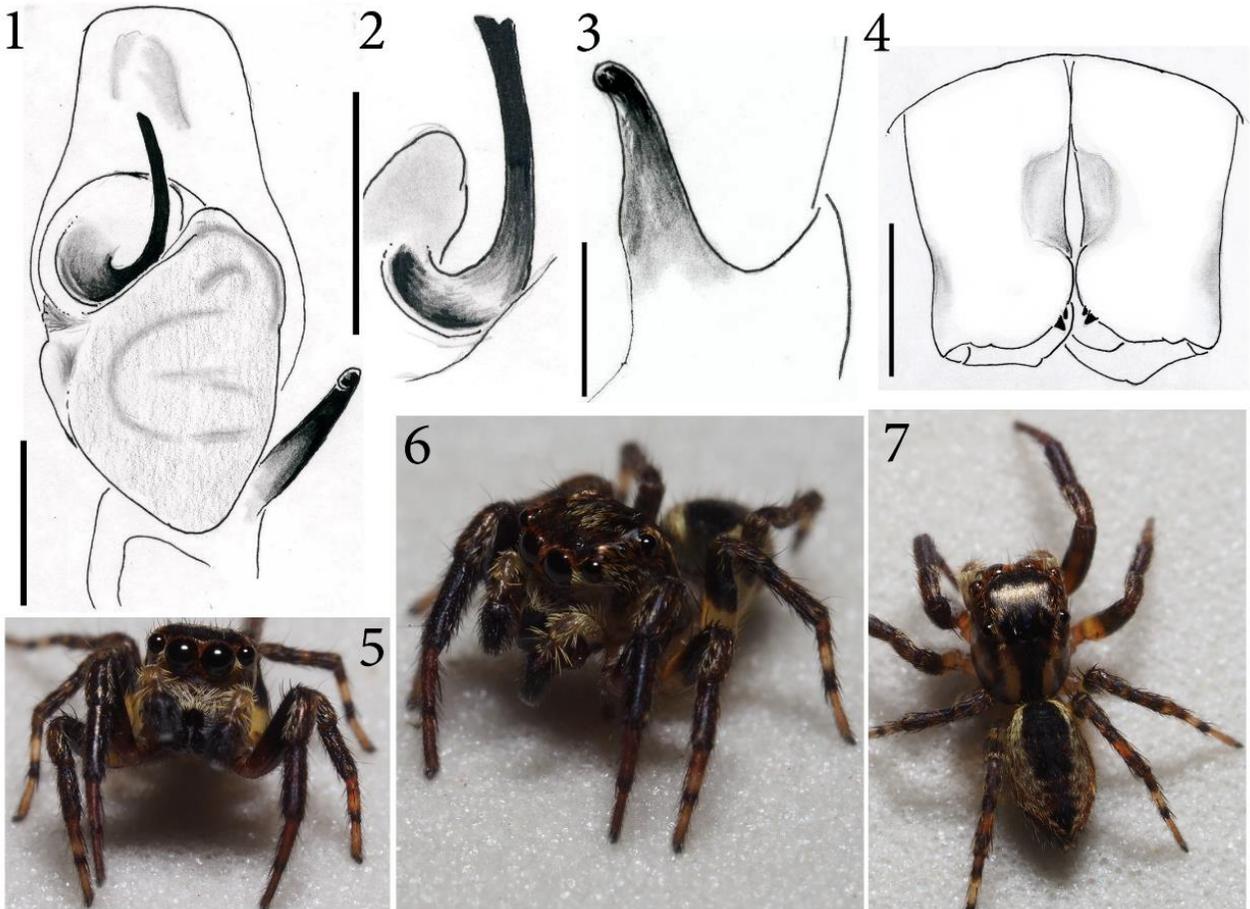
Paratypes. 1 male, 4 females from: Mexico: Oaxaca: Sendero Interpretivo el Relámpago, km 88 of HWY 175, 17.591 to 17.592 °N, 96.398 to 96.400 °W, 2000-2200 m, Additional type specimens with the same collecting code: 3\$f, MX17-1097 (female). 4 Jul 2017, U. Garcilazo, W. Maddison, R. Paredes, A. Casasola, Ł. Trębicki, WPM#17-019; Sendero Interpretive San Bernardino, 17.606 to 17.608 °N, 96.384 to 96.385 °W, 1650-1750 m, field voucher: MX17-1232 (male, DNA voucher: zGz113). 4 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-021.

**Diagnosis.** A dark, glabrous and medium-small sized species with small “spectacle” like triangular patches of setae beside the AME (fig. 11; 5), and unique among other members in the \$triste group by a highly curved embolus leaned prolaterally. *M. \$spectacles\_three* is hard to diagnose for its cryptic body and shared distribution with *M. \$signe*, with which it shares the “spectacles” like markings. It differs on lacking the fin shaped projection on the embolus (fig. 11; 1-2), and having broad parallel bands descending from the PLE and cheeks (fig. 11; 7), in contrast to *M. \$signe* (especially in specimens from Oaxaca) whose carapaces are entirely dark. The clypeus is less hairy, the palp is reddish amber rather than pale yellow and the legs are overall darker with the clearer areas of a reddish amber colour.

**Description.** *Male* (holotype). Carapace length 2.1. Abdomen length 2.0. **Carapace** dark brown with parallel bands descending to pedicel from behind the PLE produced by maple syrup coloured integument. Cheeks of the same colour than parallel stripes, almost merging at the thoracic area. **Clypeus** glabrous and dark brown with the margin of the carapace covered by a single row of long yellow cream setae. Facial band with two triangular projections connecting to the side of AME. **Chelicerae** as dark as clypeus with the basal part of paturon discoloured in specimen in alcohol and covered by yellow cream setae in alive specimen. Chelicera deeply excavated. Promarging with two teeth. Retromargin with one simple tooth. **Palp** honey coloured barely covered by yellow cream setae. Cymbium black. Embolus arises from its disk at 6:00 from a straight fashion to slightly leaned retrolaterally. **Legs** 1>4>3>2. All legs mostly dark brown with basal half of femora, distal half of metatarsus and tarsus amber yellow with a tint of red. Legs I entirely dark. **Abdomen** with dark medial band continuous, regular on the first half of abdomen and irregular on the second half ending in a dark triangle. Anterior margin covered by cream yellow setae.

*Female* (paratype; MX17-1097). Carapace length 2.3. Abdomen length 3.1. **Clypeus** as in male but facial band present as three triangular patches of cream yellow setae, two at the side of each of the AME and the third one over and between the AME. **Chelicerae** smooth with a small patch of setae at the basal part of paturon. **Epigyne** secondary spermatheca bigger than primary spermatheca. **Abdomen** mottled with white and reddish setae over a black integument that covers most of the dorsal part of abdomen except for a pair of pale yellowish areas serving as margin to the dark triangle over the anal tubercle.

Remarks. The specimen from Oaxaca: Sendero interpretivo San Bernardino (MX17-1232) is paler and seems to retain the triangular patch of cream yellow setae over the AME seen in females.



**Figure 11.** *Mexigonus spectacles\_three*. Figures 1-7 male holotype MX17-1292. 1-3 palp, embolus, and RTA. 4 chelicerae. (!!!We need to draw and photograph the female).

***Mexigonus \$stripe\_broad* sp. nov.**

Fig. 12 (1-11)

**Holotype.** Male from MÉXICO: CHIAPAS: P.N. Lagunas de Montebello, park office, 16.114 °N, 91.731 °W, 1490 m, 14 Jul 2017, Ł. Trębicki & W. Maddison, WPM#17-042, (\$m = MX17-2385).

**Paratypes.** 1 males, 1 females from MÉXICO: CHIAPAS: P.N. Lagunas de Montebello, Lago Montebello: 16.107 °N, 91.706 °W, 1500 m, 14 Jul 2017, Ł. Trębicki & U. Garcilazo Cruz, WPM#17-047 (1\$m, 1\$f).

**Diagnosis.** Medium sized whitish cryptic species with black first legs and a bicolored face produced by a white clypeus and a red outline to the AME. The species is unique among members of the \$triste group by the short embolus leaned retrolaterally (fig. 12; 1-2). *M. \$stripe\_broad* is morphologically similar to *M. \$stripe\_grass*. However, the setae in the clypeus are white instead of yellow and not restricted to the clypeus reaching the cheeks, whereas the surfaces from palpal femur to tibia are covered by white setae (fig. 12; 7). The embolus is straight as in many *Mexigonus* species within the group including *M. \$stripe\_grass*, but leaned retrolaterally (fig. 12; 1), and the first pair of legs are entirely dark instead of paler at the base of the femora I (fig. 12; 5, 7).

**Description.** *Male* (holotype). Carapace length 2.2. Abdomen length 2.0. **Carapace** dark brown, almost black at the margins of the carapace, cheeks and ocular area, where it extends into the fovea towards the back of the carapace forming a stripe. Parallel bands descending the thoracic slope originating from the PLE and the ALE, covered by yellow cream setae and transparent integument. Ocular region with diagonal bands emerging from the side of the PME and descending towards the AME forming 'eyebrows'. **Clypeus** covered by white long setae especially dense below the AME. AME are circled by shiny red setae on the sides forming a

horizontal mask. **Chelicerae** brown, longer than wide, excavated and with a very tiny patch of white setae at the base of the paturon over the excavation. Promargin with two teeth. Retromargin with one simple tooth. **Palp** white except for the black cymbium, produced by smooth looking long white setae over a transparent cream yellow integument. **Embolus** arising from its disk at ca. 6:00 from left palp forming a straight sclerite leaned retrolaterally. RTA fingerlike. **Legs** I uniformly dark. Legs II-IV honey orange from patella to tarsus and dark at the joints. Femora with a dark band at its distal end and transparent cream yellow at the base. Coxae transparent yellow cream for all legs. **Abdomen** with a dark medial band well delimited, broad at the anterior half, constricted in the middle but continuously descending towards the anal opercle where it ends as a dark triangle. Rest of the abdomen densely covered by white setae increasing the contrast with the dark medial band.

*Female* (paratype in alcohol). Carapace length 2.1. Abdomen length 3.2. **Carapace** yellow including ocular area with the area surrounding the fovea darker. **Clypeus** yellow. Live specimen with horizontal patch of white setae under the AME. Facial band present only as a triangular patch above and between the AME. **Chelicerae** smooth and entirely yellow. **Epigyne** with secondary spermatheca slightly smaller than primary spermatheca and conical in shape. Legs entirely yellow. **Legs** in alive specimen probably looked as in legs II-IV in male, except that femora are uniformly pale. **Abdomen** missing the dark medial band with two dark dots in the middle of the abdomen and a dark triangle over the anal tubercle. Abdomen of alive specimens probably looked like female of *M. kelotaenius*.

**Additional material examined.** 5 males, 2 females, 2 juveniles from MÉXICO: CHIAPAS: P.N. Lagunas de Montebello, trail from park office: 16.114 °N, 91.73 °W, 1500 m, 14 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-043 (\$m = MX17-2509); CHIAPAS: 5-15 km E of Rayon on HWY 195: 17.2 °N, 93 °W, 1494 m, 6 Jul 1983, W. Maddison & R.S. Anderson, WPM#83-097 (4\$m, 2\$f, 2\$j).



**Figure 12.** *Mexigonus stripe\_broad*. Figures 1-7 male holotype MX17-2385. 1-3 palp, embolus, and RTA. 4 chelicerae.

***Mexigonus \$canales blanca* sp. nov.**

(fig. 13; 1-12)

**Holotype.** Male from MÉXICO: VERACRUZ: Atotonilco de Calchahualco, 19.13881 °N, 97.20312 °W, 2222 m, 10 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@026, (\$m = MXN: 1093).

**Paratypes.** 3 males, 3 females, 3 juveniles from MÉXICO: VERACRUZ: Atotonilco de Calchahualco: 19.13881 °N, 97.20312 °W, 2222 m, 10 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@026 (1\$m, 1\$j: \$j = MXN: 1019, \$m = MXN: 0982); VERACRUZ: Atotonilco de Calchahualco top: 19.13717 °N, 97.20265 °W, 2445 m, 10 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@027 (2\$f: \$f = MXN: 1260, \$f = MXN: 1281); VERACRUZ: Jesus Maria Acatla, Xocotla: 19.18443 °N, 97.13235 °W, 2206 m, 19 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@048 (1\$m, 1\$f, 2\$j: \$f = MXN: 3437); VERACRUZ: Rio Pancho Poza: 19.75297 °N, 97.25205 °W, 1995 m, 23 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@053 (\$m = MXN: 5584).

**Diagnosis.** Medium-small sized dark and hirsute species with a long pale stripe anterior to the fovea and black integument on the male first legs (fig. 13; 7). The species is distinctive by the white male pedipalps including the dorsal view of the cymbium (fig. 13; 7), bulky chelicerae almost as wide as high (fig. 13; 4) and the vertical patch of white setae between the PLE on the ocular region and the mottled pattern of the female dorsal view of the abdomen (fig. 13; 8). Other species morphologically similar are *M. \$canales\_negra* and *M. \$porkachu*. The dark medial stripe in the dorsal side of the abdomen is similar to *M. \$porkachu* and *M. \$canales\_negra*, but

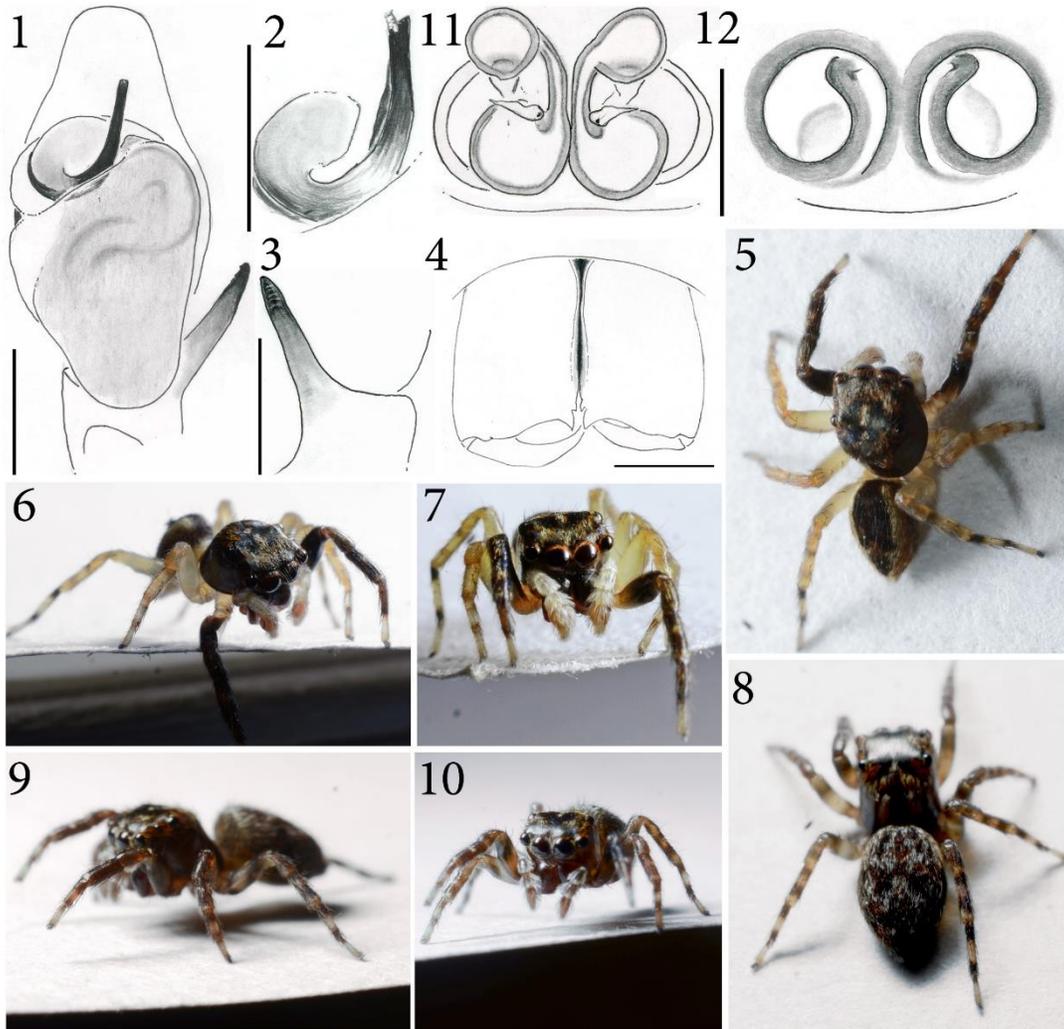
the ocular region is entirely black without a white margin over the anterior eyes, and the first legs are dark with legs II-IV yellow and smooth rather than dark orange and ringed as in *M. \$porkachu*. The embolus (fig. 13; 1-2) is straight and short unlike *M. \$porkachu* and *M. \$canela\_negra*.

**Description.** *Male* (holotype). Carapace length 2.1. Abdomen length 1.6. **Carapace** black and hirsute. Ocular region outlined by a compound pattern of setae: margin between ALE-PME-PLE and around the fovea covered in reddish and white setae, a white vertical stripe divides the ocular region in half, patches of white setae above ALE. **Clypeus** black and glabrous. AME encircled by a layer of reddish setae. Area above the ALE and above and between AME with a vertical patch of white setae entering the ocular area. **Chelicerae** wide, dark brown and glabrous. Promargin with two teeth from which the innermost is the smallest. Retromargin with one tooth, bigger than those in the promargin. **Palp** transparent yellow, covered by long cream yellow setae. Cymbium reddish. **Embolus** arising from its disk ca. 6:00 projecting a straight line slightly leaned retrolaterally ending into a blunt tip. RTA long and fingerlike. **Legs** 1>4>3>2. Legs I entirely black except for tarsus and slightly hirsute with scattered white setae at the dorsal side of tibia. Legs II-IV amber yellow at the basal half of femora and the joints of tibia to tarsus. **Abdomen** with dorsal dark medial band wide almost covering the entire surface of the abdomen. Mostly uniform reducing its width towards the posterior side ending into a dark triangle over the anal tubercle. Band outlined by a margin of white setae that fades towards the posterior side. Dorsal side of abdomen reddish brown otherwise.

*Female* (paratype; MXN: 1260). Carapace length 2.0. Abdomen length 2.1. **Carapace** brown and hirsute at the ocular region by long setae and outlined by a margin of reddish setae between the eyes that extend behind the PLE surrounding the fovea. **Clypeus** dark brown and glabrous. AME encircled by a margin of setae white at the inferior half and orange otherwise. Chelicerae smooth and glabrous, non-excavated. **Epigyne** with openings located at the anterior

inner margin of the plate. Atria following openings from the posterior inner margin slightly invading the windows and forming hooks at its merging point with the openings. Ducts after openings widened forming secondary spermatheca that descend parallel from their counterpart before entering the big spermatheca from the anterior side. **Legs** mostly amber red except for black joints, creating a ringed pattern. Hirsute by long dark setae. **Abdomen** mottled by combination of white, brown and reddish brown setae over a black integument. Dark medial band visible only as dark triangle over anal tubercle and two black spots at the middle of the abdomen.

**Additional material examined.** 13 males, 7 females, 4 juveniles from MÉXICO: VERACRUZ: Atotonilco de Calchualco top: 19.13717 °N, 97.20265 °W, 2445 m, 10 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@027 (3\$m, 1\$f); VERACRUZ: Atotonilco de Calchualco: 19.13881 °N, 97.20312 °W, 2222 m, 10 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@026 (5\$m, 1\$j); VERACRUZ: Jesus Maria Acatla, Xocotla: 19.18443 °N, 97.13235 °W, 2206 m, 19 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@048 (3\$m, 1\$f, 2\$j: \$j = MXN: 3457, \$f = MXN: 2206); VERACRUZ: Rio Pancho Poza: 19.75297 °N, 97.25205 °W, 1995 m, 23 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@053 (2\$m, 5\$f, 1\$j: \$f = MXN: 5631).



**Figure 13.** *Mexigonus Scanela blanca*. Figures 1-7 male holotype MXN: 1093. 8-12 female paratype MXN: 1260. 1-3 palp, embolus and RTA. 11-12 epigyna dorsal and ventral view.

### ***\$banderas* group**

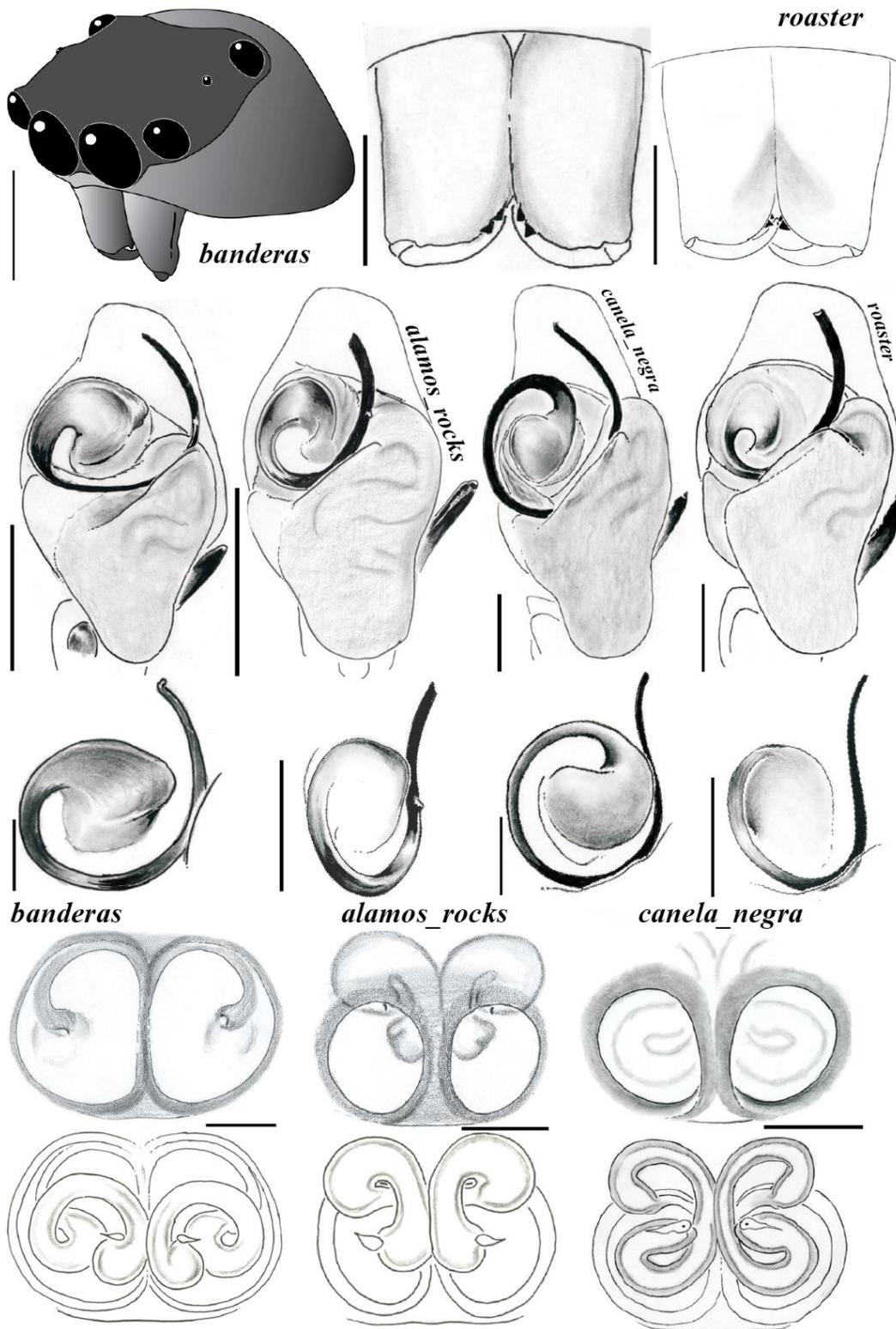
(fig. 14; map 2)

This group with six known species is primarily distributed in southern Mexico and the eastern part of the Trans Volcanic Mexican Belt, including medium sized spiders with colourful males and orange-transparent females.

**Diagnosis.** The species in the group can easily be identified by the long first legs of males with the metatarsus covered by black bristles often complemented by white setae in the tarsus (fig. 17; 6), black male carapaces with a horizontal short line of white setae below the PLE (fig. 17; 7) and often blue iridescence and long velvety pale setae covering the ventral view of the first and second femora (fig. 17; 6), a long embolus resting over the tegulum in a conspicuous tegular ledge (fig. 17; 1) and the slender copulatory ducts with reduced spermatheca and copulatory openings located at the anterior medial edge of the genital plate (fig. 17; 14-15).

The parallel stripes diagnostic to *Mexigonus* are missing in this group, replaced instead by the pale stripes covered in white setae starting below the PLE. The anterior edge of the ocular region is often ornamented by white or red setae and the chelicerae are smooth without excavation. The first pair of legs have stretched patella and tibiae making the legs noticeable longer than the rest. The embolus is very long and spiraled arising from its disk after 6:00, usually from 7:00 leaving a deep embolar gap ending into a very slender tip pointing upwards (fig. 17; 1). The embolar disk is rotated to accommodate the embolus and in some species shows a dorsal triangular spur near the beginning of the embolus (fig. 17; 2). The RTA is often flat or shaped as a can opener (fig. 17; 3). Females are orange with a transparent integument on the legs and thoracic area of carapace, whereas the ocular region is often covered in reddish short setae. The epigynum is represented by well delimited windows with copulatory openings

located at the anterior medial edge of the plate (fig. 17; 15). The copulatory ducts are thin and long looping in some species near to the openings before entering the very small spherical spermatheca, almost the same diameter as the entering ducts (fig. 17; 15).



**Fig. 14.** Morphological diversity in somatic and genital structures distinctive of the *\$banderas* morphological group.

***Mexigonus \$alamos\_rocks* sp. nov.**

(fig. 15; 1-15)

**Holotype.** Male from MÉXICO: QUERÉTARO: Sierra Gorda, SW of Ahuacatlán on HWY 120, 21.187 °N, 99.57 °W, 1200 m, 29 Jul 2017, U. Garcilazo, W. Maddison, D. Guerrero, V. Muñoz, E. Humbel, WPM#17-072, (\$m = MX17-4369).

**Paratypes.** 4 males, 1 females, 4 juveniles from MÉXICO: QUERÉTARO: Sierra Gorda, SW of Ahuacatlán on HWY 120: 21.187 °N, 99.57 °W, 1200 m, 29 Jul 2017, U. Garcilazo, W. Maddison, D. Guerrero, V. Muñoz, E. Humbel, WPM#17-072 (3\$m, 1\$f, 4\$j; \$m = MX17-4352, \$f = MX17-4380); SAN LUIS POTOSI: near Taman, ~16 km SW of Tamazunchale on HWY 85: 21.18 °N, 98.88 °W, 304 m, WPM#83-059 (1\$m).

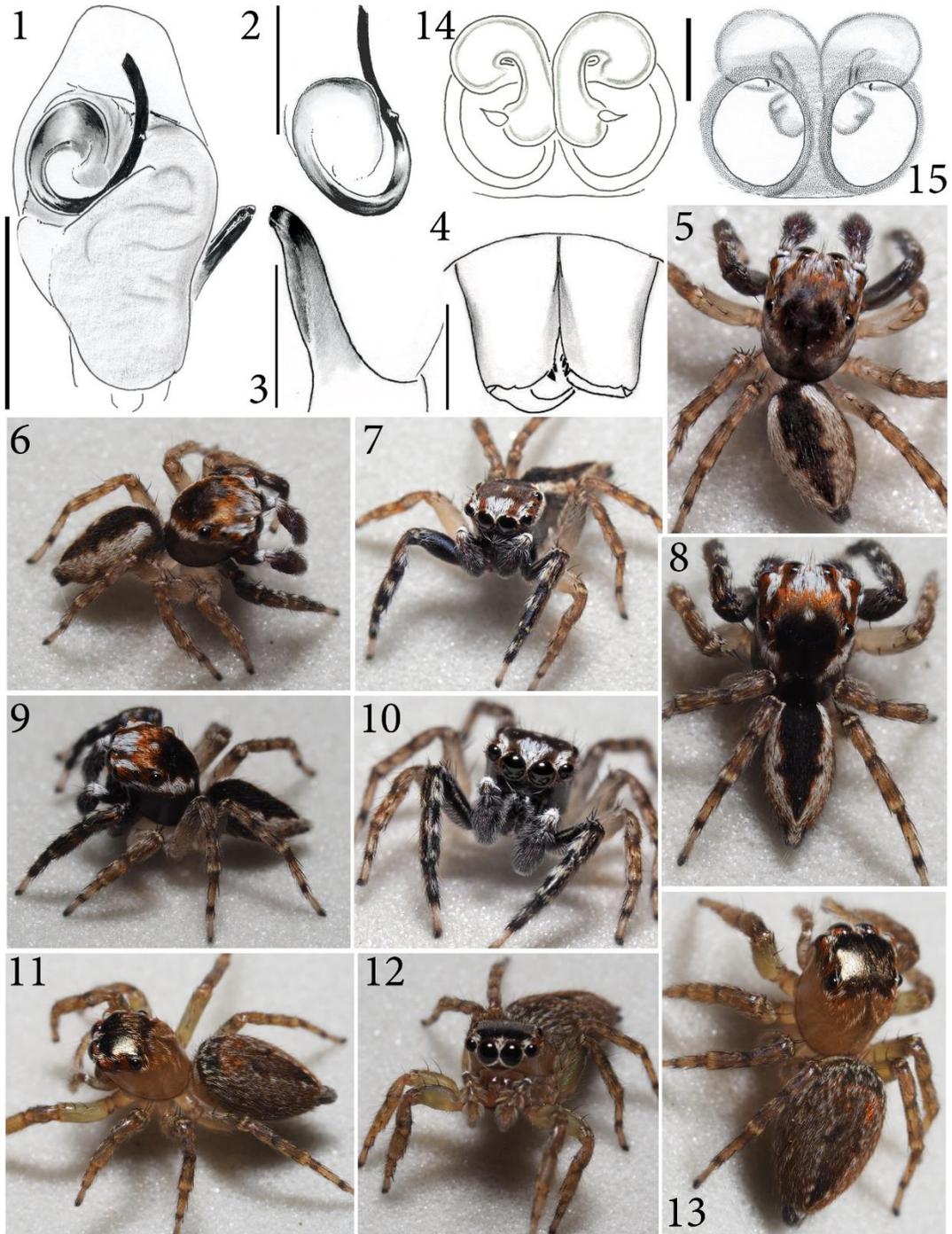
**Diagnosis.** A sexually dimorphic species with dark males covered in white setae contrasting black carapaces and elegantly hirsute with black first legs (fig. 15; 5-8), whereas females are orange with some transparency (fig. 15; 11-13). The species is unique among members in the *\$banderas* group by the length of the embolus, shorter than other known species in the group and oval spiraled rather than circular (fig. 15; 1-2), the banding pattern ornamenting the face above the AME in males (fig. 15; 7, 10) and the unique orientation of copulatory ducts at the anterior margin of the epigynum with reduced spermatheca (fig. 15; 15). *M. \$alamos\_rocks* and *M. \$red\_black\_white* share the same facial pattern but this species has perpendicular white bands instead of the longitudinal parallel pale bands descending towards the back of the carapace, and the embolus is longer and spiraled rather than straight. *M. \$canela\_negra* shares an oval embolus that is considerably longer but the facial markings are missing, and the copulatory ducts are large and not displaced anteriorly.

**Description.** *Male* (holotype). Carapace length 1.9. Abdomen length 1.7. **Carapace** black covered by shiny red setae covering the ocular area. Horizontal patches of white setae emerge from under the ALE, passing below PLE and disappearing before the fovea. Specimen in alcohol shows the integument underlying these patches is also black. **Clypeus** dark and glabrous without any setae. AME with a margin of red setae. Area above AME covered by a pattern of red-black-white vertical stripes. **Chelicerae** as dark as the clypeus and very slightly excavated. Promargin with two small teeth. Retromargin with one simple small tooth. **Palp** black except for the patella and the distal portion of the femora, which are covered by smooth looking white setae. **Embolus** emerging from its disk at 9:00 in left palp forming a spiral that ascends retrolaterally passing over a regular ledge. The embolus has a spur at its mesal-distal portion. Embolar disk concave with a retrolateral dorsal fin. **Legs** II-IV transparent grey with the joints of each segment black except for coxa-femur, and covered by pale yellow cream setae, scattered except in tibia where it forms patches perpendicular to the longitudinal axis of the leg. **Legs** I entirely black except for transparent grey tarsi. **Abdomen** with dark medial band as black as carapace, smooth and uniform in colour and setae. Borders in the band regular except for two bulges in the middle of the abdomen. Rest of the abdomen is covered by white setae, especially dense at the anterior edge where they form two teardrop patches.

*Female* (paratype; MX17-4352). Carapace length 2.4. Abdomen length 2.2. **Carapace** honey coloured and transparent except for a black ocular area and a transparent stain of black around the fovea. Chelicerae smooth and amber. Promargin with two simple and greatly reduced teeth. Retromargin with one tooth twice as big as the ones seen in the promargin. Margins of the ocular area covered by shiny red setae. **Clypeus** glabrous and honey coloured. AME with a marging of white setae especially dense at the lower margin. Some of the setae extend into the ocular area. **Epigyne** with copulatory openings located anteriorly and two oval windows. Copulatory ducts with swollen chambers right after the copulatory openings that are almost

twice as big as the primary spermatheca, reducing its size as they descend vertically until entering the spermatheca with the same width as these. **Legs** honey transparent in colour with dark faded stains of black at the tip of the joints. **Abdomen** mottled covered by white and shiny red and brown setae. Dark medial band is visible as a narrow uniform band, faded anteriorly, that ends into an acute dark triangle over the anal opercle.

**Additional material examined.** 1 males, 3 juveniles from MÉXICO: QUERÉTARO: Sierra Gorda, SW of Ahuacatlán on HWY 120: 21.187 °N, 99.57 °W, 1200 m, 29 Jul 2017, U. Garcilazo, W. Maddison, D. Guerrero, V. Muñoz, E. Humbel, WPM#17-072 (1\$m, 3\$j: \$m = MX17-4362).



**Figure 15.** *Mexigonus Salamos\_rocks*. Figures 1-7 male holotype MX17-4369. 8-10 male paratype MX17-4352. 11-15 female paratype MX17-4380. 1-3 palp, embolus, and RTA. 4 chelicerae. 14-15 epigyna dorsal and ventral view.

***Mexigonus \$banderas* sp. nov.**

(fig. 16; 1-12)

**Holotype.** Male from MÉXICO: CHIAPAS: P.N. Lagunas de Montebello, trail from park office, 16.114 °N, 91.73 °W, 1500 m, 14 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-043, (\$m = MX17-2450).

**Notes.** Specimen got the left palp (ventral view) dissected too far and the endite got detached, making the chelicerae prone to plunge into the hole that was left.

**Paratypes.** 6 males, 1 females, 1 juveniles from MÉXICO: CHIAPAS: P.N. Lagunas de Montebello, Lago de Carrizal: 16.1136 °N, 91.7267 °W, 1470 m, 14 Jul 2017, W. Maddison, WPM#17-045 (\$f = MX17-2670); VERACRUZ: 7 km NE of Huatusco on HWY 125: 19.2 °N, 96.9 °W, 1036 m, 21-22 Jun 1983, W. Maddison & R.S. Anderson, WPM#83-080 (6\$m, 1\$j).

**Etymology.** Name formed by the combination of a Latin verb *praedat[us]* = hunting and Latin noun *cerasum* = cherry; *praedat-o-cerasum* = hunting cherry. Species named after the conspicuous red carapace seen in males that contrasts with the black carapace making it look like a bunch of differently ripped wild cherries.

**Diagnosis.** Glabrous and medium sized spiders with sexual dimorphism. Males are colorful and have long first legs (fig. 16; 5-7), whereas the female is pale orange and cryptic (fig. 16; 8-10). Other species morphologically similar to *M. \$white banderas* are *M. \$blue\_legs* and *M. \$white\_banderas*. The carapace is darker than *M. \$blue\_legs* and the ocular region is only anteriorly covered by reddish setae (fig. 16; 6) in contrast to *M. \$white\_banderas*, which is covered by white setae. The clypeus is more hirsute than *M. \$blue\_legs* covered by scattered yellow-cream setae (fig. 16; 6) and the chelicera are not excavated (fig. 16; 4), the embolus has a fold in the tegulum (fig. 16; 1) oriented diagonal to the longitudinal axis of the cymbium rather

than perpendicular, and the embolar gap is more widely open rather than hooked-shaped. The copulatory ducts project a horizontal spiral (fig. 16; 11) rather than vertical like in *M. white\_banderas*. Legs are more hirsute than *M. blue\_legs* and the prolatero-ventral face of femora I-II is covered by long feathery looking white setae (fig. 16; 6), and smoother than in *M. white\_banderas*.

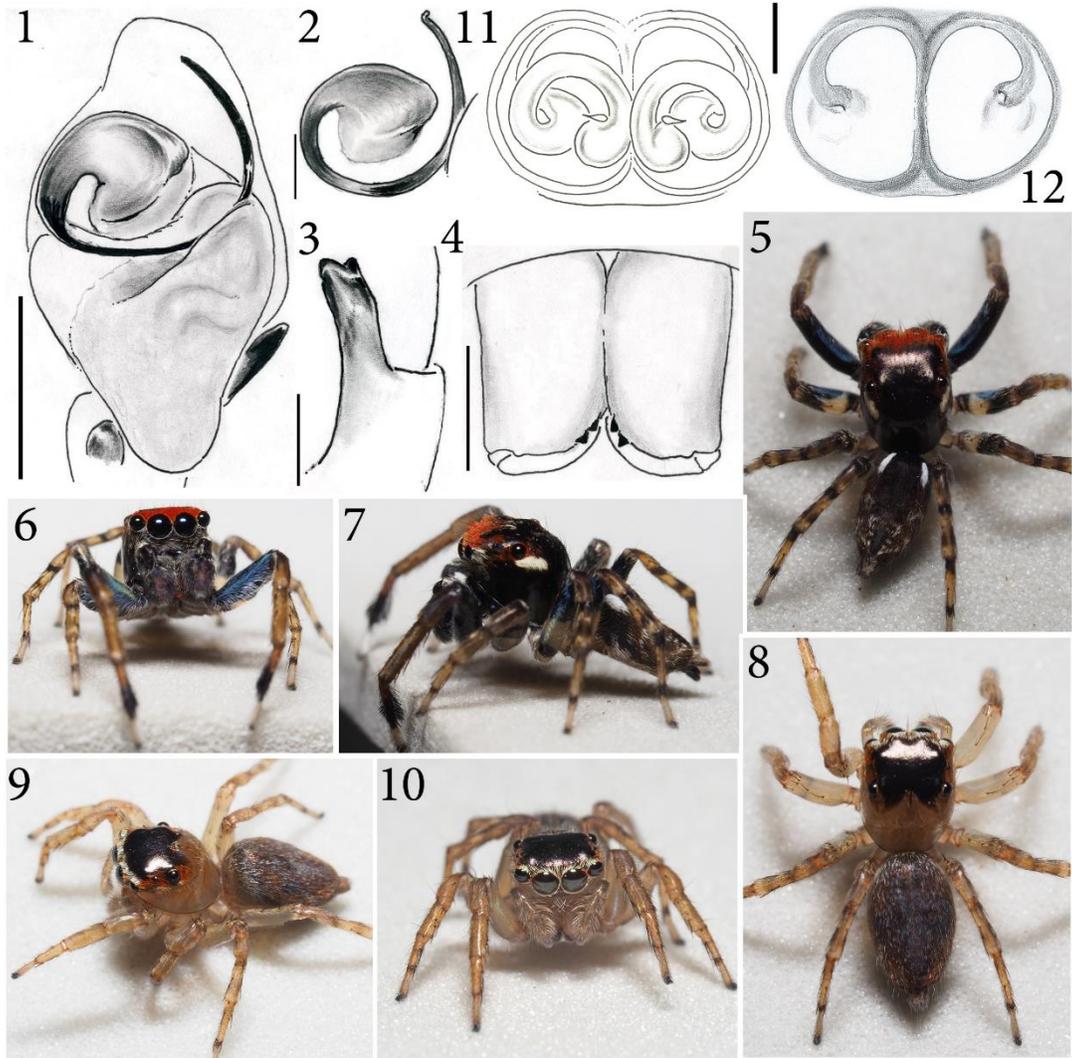
**Description.** *Male* (holotype). Carapace length 2.7. Abdomen length 2.4. **Carapace** dark and glabrous with anterior margin of the ocular area covered in shiny red setae. Area under the PLE with a patch of horizontal yellow cream setae that projects slightly behind the eyes. **Clypeus** dark and covered by scattered pale long setae, cream yellow and white. Area over the main eyes densely covered by carmin shiny red setae, restricted to the ocular area. **Chelicerae** narrowly excavated and dark. Promargin with two teeth. Retromargin with one tooth. **Palp** entirely black but covered by long white setae at the dorsal part of femora. **Embolus** arising from its disk ca. 10:00 and rapidly projecting a circular spiral that almost completes a circle. Embolus bents at its tip and embolar gap is deep. **Legs** 1>4>3>2. Mostly golden yellow except at the femora. Femora I entirely black and covered by iridescent long setae that give a gleam of blue neon. Tarsus I white, metatarsus I with a brush of dark long setae. Femora II less densely covered by neon setae but integument is as in legs III-IV, where only the distal half of the segment is dark. **Abdomen** uniformly covered by shiny brown setae. Dark medial continuous, reducing size from the anterior to posterior sides of abdomen and faded, ending in a triangle surrounded by small patches of white setae over the anal tubercle. Two wide teardrop shaped patches of white setae surround the medial band on each side of the anterior margin of the abdomen.

*Female* (paratype; MX17-2670). Carapace length 3.2. Abdomen length 3.1. **Carapace** transparent yellow except for the black ocular area whose margins between the eyes are covered by shiny red setae. **Clypeus** glabrous and yellow. AME and ALE eyes with a margin of

yellow setae, some of which extend beyond the eyes forming a semi continuous mask.

**Chelicerae** smooth and yellow. **Epigyne** with copulatory openings located at the anterior medial and exterior edge of the genital plate. Copulatory ducts looping after the openings and ascending forming an arc before entering the spermatheca from above. Spermatheca spherical and the same size as the diameter of the entering ducts. **Legs** 4>1>3>2. Uniform transparent cream yellow and smooth without any noticeable patches of setae. **Abdomen** uniformly covered by reddish setae and cream yellow setae over a dark integument, mottled by the effect of unpigmented spots from which the shaft of the hairs emerge.

**Additional material examined.** 5 males, 3 females, 7 juveniles from MÉXICO: CHIAPAS: P.N. Lagunas de Montebello, trail from park office: 16.114 °N, 91.727 °W, 1540 m, 14 Jul 2017, U. Garcilazo, Ł. Trębicki, W. Maddison, WPM#17-044 (1\$m); 16.114 °N, 91.73 °W, 1500 m, 14 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-043 (2\$m, 1\$f: \$m = MX17-2429, \$f = MX17-2600, \$m = MX17-2407); CHIAPAS: San Rafael de los Arcos: 16.134 °N, 91.728 °W, 1450 m, 14 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-046 (1\$j); CHIAPAS: 10 km SW of Ocozingo on road to Oxchuc: 16.88 °N, 92.18 °W, 1527 m, W. Maddison & R.S. Anderson, WPM#83-129 (1\$m, 2\$f, 6\$j); CHIAPAS: Palenque ruins area: 17.48 °N, 92.02 °W, 116 m, W. Maddison & R.S. Anderson, WPM#83-095 (1\$m).



**Figure 16.** *Mexigonus \$banderas*. Figures 1-7 male holotype MX17-2450. 8-12 female paratype MX17-2670. 1-3 palp, embolus, and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$blue\_legs* sp. nov.**

(fig. 17; 1-15)

**Holotype.** Male from MÉXICO: OAXACA: Puerto Antonio, km 71 of HWY 175, 17.665 to 17.666 °N, 96.3323 to 96.3327 °W, 1160-1270 m, 5 Jul 2017, R. Paredes, W. Maddison, Ł. Trębicki, U. Garcilazo, A. Casasola, WPM#17-023, (\$m = MX17-1336).

**Paratypes.** 2 males, 1 females, 5 juveniles from MÉXICO: OAXACA: 23 km SW of Valle Nacional on HWY 175: 17.62 °N, 96.35 °W, 1066 m, 3 Aug 1983, W. Maddison, WPM#83-134 (1\$m, 5\$j); VERACRUZ: Xamaticpac: 19.1264 °N, 97.06738 °W, 1705 m, 11 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@028 (1\$m, 1\$f: \$f = MXN:2821, \$m = MXN:2727).

**Etymology.** Name is formed by the combination of the Greek noun *erythros* = red and Latin noun *stilus* = lizard; *erythrostilus* = red lizard. Species named after the pattern of red setae that cover the face in males of the species that perfectly matches the popular lipstick colour known as 'red lizard'. The name was chosen to commemorate the beauty of this species.

**Diagnosis.** A very colourful species where the anterior side of the male body has iridescent red and neon blue setae complemented by patches of yellow setae (fig. 17; 6-10). The species is unique among other members in the \$banderas group by the carmine setae that extend into the cheeks and ocular region, and the trapezoid patch of cream yellow setae covering the fovea (fig. 17; 5, 7). Females have copulatory ducts more vertically oriented than other species and are spiraled (fig. 17; 14). The species is very similar to *M. \$banderas* and can be additionally differentiated by a femora I and II with an integument more densely covered by iridescent blue combined with short neon setae, and the palpal patella that is not as dark as the cymbium (fig.

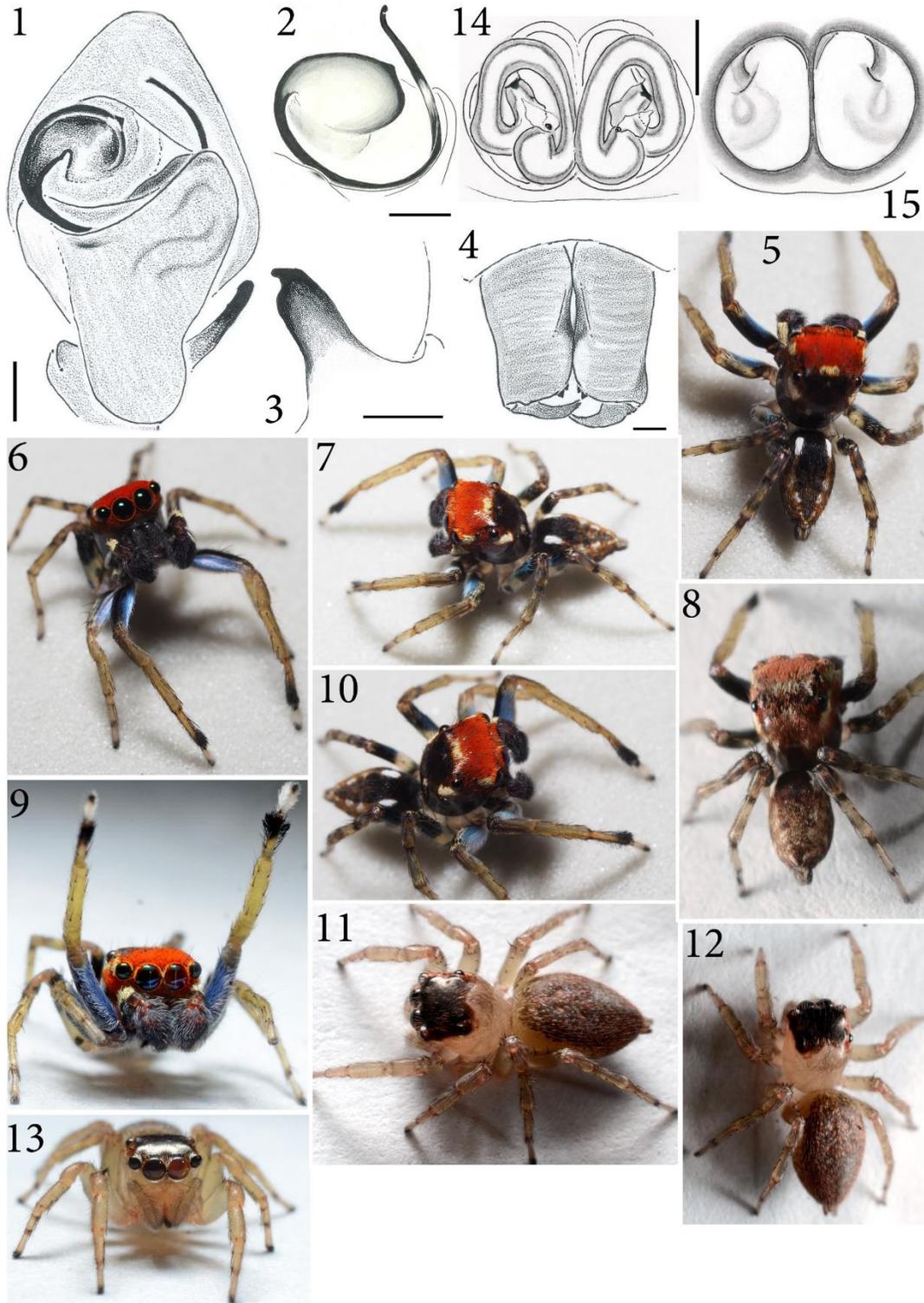
17; 6). This species has strong habitus similarities with *M. \$white\_banderas*, but it lacks the distinctive anterior margin of white setae that diagnose the species.

**Description.** *Male* (holotype). Carapace length 2.9. Abdomen length 2.6. **Carapace** dark brown and glabrous. Ocular area entirely covered by red setae with three contrasting cream yellow patterns emerging at its margins: two at the lateral sides between the PME and ALE and one right in front of the fovea. Two additional bands run horizontal from below the PLE but barely extending into the thoracic region. **Clypeus** dark and glabrous with part of the lower margin of scales surrounding AME occupying half of its height. Anterior eyes entirely surrounded by shiny red setae extending into the cheeks. **Chelicerae** longer than wide with a soft excavation. Promargin with two teeth very close to each other. Retromargin with one simple tooth. **Palp** femora with dark integument but densely covered dorsally by yellow cream setae. Patella and tibiae dark brown and cymbium black. Embolus arising from its disk at 9:00 with an acute embolar gap, rapidly reducing its width while projecting a spiraled semi circle folding ventrally at its tip forming a hook. Embolar disk concave with a distal spur. Tegulum moreless conical forming a fold that protects the embolus. RTA short and wide from retrolateral view suddenly constricting at its tip looking like a can opener. **Legs** mostly transparent yellow except at the femora. Femora I entirely black and densely covered by iridescent long setae that give a gleam of blue neon. Tarsus I white, metatarsus I with a brush of dark long setae. Femora II less densely covered by neon setae but integument is as in legs III-IV, where only the distal half of the segment is dark. **Abdomen** with uniform dark medial band broader around the middle and reducing its size uniformly ending into a dark triangle over the anal tubercle. Anterior side of abdomen with two narrow long patches of white setae forming teardrops. Prespiracular bump present.

*Female* (paratype; MXN:2821). Carapace length 3.3. Abdomen length 3.8. **Carapace** transparent cream yellow except for a black ocular area whose margin is decorated with red

setae between the eyes. **Clypeus** glabrous and cream yellow. **Chelicerae** smooth with a transparent pale yellow colour. **Epigyne** copulatory openings located at the anterior external margin of the genital plate. Copulatory ducts long and uniform in diameter, looping and ascending from the outer edge and descending again parallel to the first loop, entering the spherical, but with the same diameter, primary spermatheca from above. **Legs** of a uniform transparent cream yellow and smooth without any noticeable patches of setae. **Abdomen** uniformly covered by reddish setae over a dark integument, mottled by the effect of unpigmented spots from which the shaft of the hairs emerge.

**Additional material examined.** 1 males, 1 females, 5 juveniles from MÉXICO: OAXACA: Puerto Antonio, km 71 of HWY 175: 17.665 to 17.666 °N, 96.3323 to 96.3327 °W, 1160-1270 m, 5 Jul 2017, R. Paredes, W. Maddison, Ł. Trębicki, U. Garcilazo, A. Casasola, WPM#17-023 (5\$<sub>j</sub>: \$<sub>j</sub> = MX17-1363, \$<sub>j</sub> = MX17-1356, \$<sub>j</sub> = MX17-1346, \$<sub>j</sub> = MX17-1342); VERACRUZ: Xamaticpac: 19.1264 °N, 97.06738 °W, 1705 m, 11 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@028 (1\$m, 1\$f: \$m = MX2:6564).



**Figure 17.** *Mexigonus blue\_legs*. Figures 1-7 male holotype MX17-1336. 8-9 male paratype MXN:2727. 11-13 female paratype MXN:2821. 1-3 palp, embolus, and RTA. 4 chelicerae. 14-15 epigyna dorsal and ventral view.

***Mexigonus \$canela\_negra* sp. nov.**

(fig. 18; 1-15)

**Holotype.** Male from MÉXICO: VERACRUZ: Atotonilco de Calchualco, 19.13881 °N, 97.20312 °W, 2222 m, 10 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@026, (\$m = MXN: 0900).

**Paratypes.** 2 males, 3 females from MÉXICO: VERACRUZ: Jesus Maria Acatla, Xocotla: 19.18443 °N, 97.13235 °W, 2206 m, 19 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@048 (1\$m, 1\$f); VERACRUZ: Rio Pancho Poza: 19.75297 °N, 97.25205 °W, 1995 m, 23 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@053 (\$f = MXN: 5432); VERACRUZ: Atotonilco de Calchualco: 19.13881 °N, 97.20312 °W, 2222 m, 10 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@026 (1\$m, 1\$f: \$f = MXN: 0960, \$m = MXN: 0851).

**Etymology.** Species named after the type locality.

**Diagnosis.** A medium sized species with marked sexual dimorphism where the male is dark brown with black first legs (fig. 18; 5) and a pale band covering the anterior eyes (fig. 18; 6-7), whereas the female is orange and slightly transparent with a velvety looking abdomen (fig. 18; 10-13). The species is also distinctive by the male reddish carapace. The male femora I are black and completely glabrous whereas the tarsi are as pale as in the rest of the legs (fig. 18; 6-7) and the metatarsus lacks the patch of black setae diagnostic for the group. The embolus is oval rather than circular and arises from the disk ca. 1:00 (fig. 18; 1-2). The RTA is rectangular

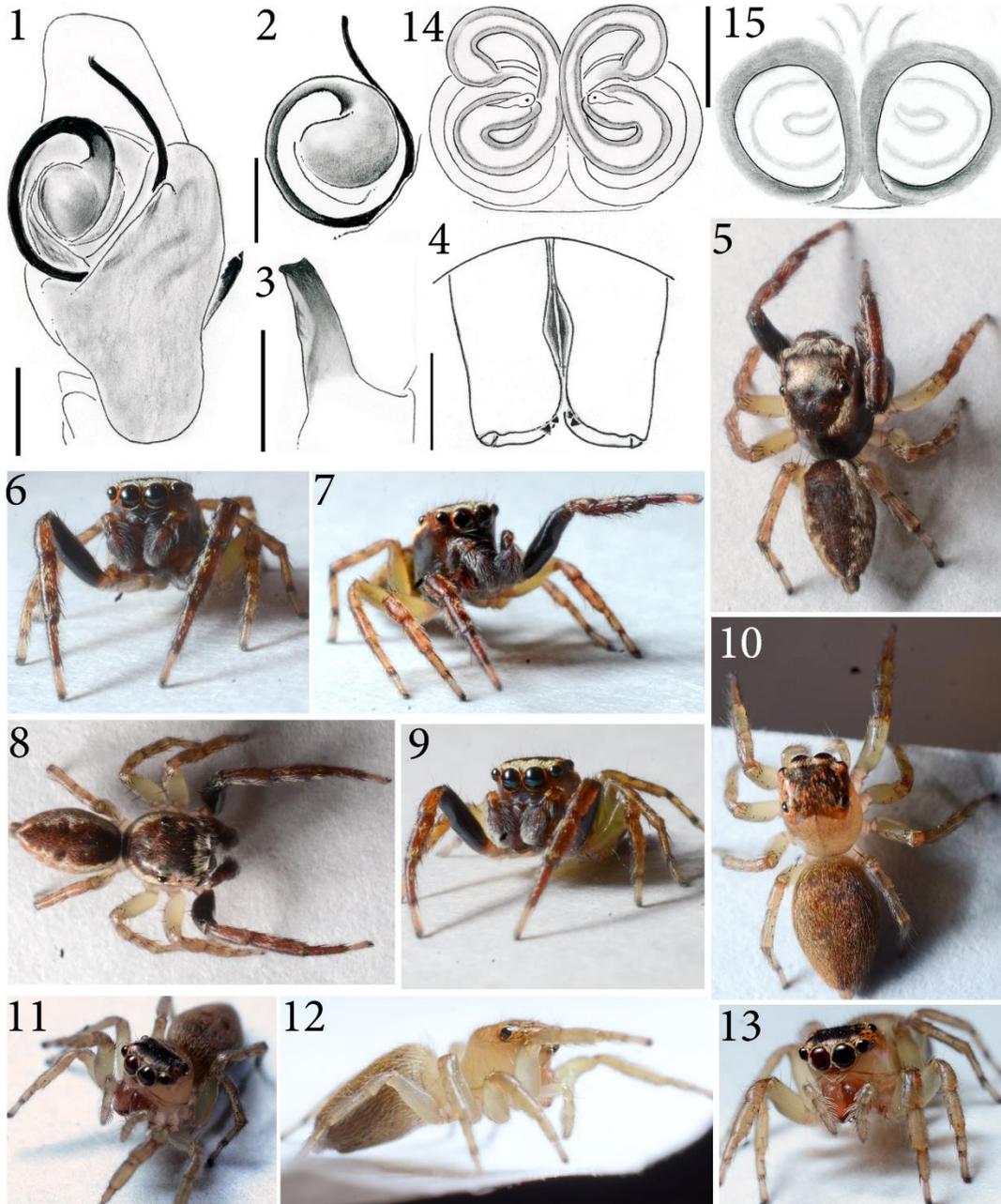
rather than shaped as a can opener (fig. 18; 3) and the copulatory ducts are shaped as a 'butterfly' (fig. 18; 14).

**Description.** *Male* (holotype). Carapace length 2.4. Abdomen length 2.6. **Carapace** black and glabrous. Anterior and lateral margins of ocular area covered by shiny red and white setae. Area under PLE with a horizontal line extending to almost touching its counterpart behind the fovea. **Clypeus** dark and glabrous. Area above AME with a horizontal patch of white setae. AME encircled by reddish setae, some of which extend on the sides connecting the eyes into a semi-continuous red mask. **Chelicerae** is dark, glabrous and narrowly excavated. Promargin with two teeth fused at the base. Retromargin with one simple tooth. **Palp** femora and patella transparent yellow covered by pale setae. Tibia and cymbium dark brown. **Embolus** spiraled arising from its disk at 12:00, reducing its size as it reaches the tip, located distal from the embolar groove. The sudden rotation of the embolus produces an oval spiral. Tegulum longer than wide with a fold that protects the embolus. RTA wide and rectangular with a flat tip. **Legs** 1>4>3>2. Legs I darker with femora entirely black, patella to metatarsus dark brown and tarsus transparent yellow. Legs II-IV, except for femora, amber coloured from patella to tarsus, gradually fading from proximal to distal segments into pale yellow. Femora black only at its distal end. **Abdomen** with a dark medial band wide covering almost the entire dorsal area of abdomen and uniform in colour and borders. Band accompanied by a margin of white setae.

*Female* (paratype; MXN:5432). Carapace length 2.8. Abdomen length 3.1. **Carapace** transparent yellow except for the black ocular area, which is covered by scattered patches of shiny red setae. **Clypeus** glabrous and yellow. AME and ALE eyes with a margin of yellow setae, some of which extend beyond the eyes forming a semi continuous mask. **Chelicerae** smooth and yellow. **Epigyne** with copulatory openings located right under the anterior margin of atrium making them hard to see. copulatory ducts 'butterfly' shaped forming two symmetrical arcs before connecting with primary spermatheca, which are reduced to the same diameter as

the ducts. **Legs** 4>1>3>2. Uniform transparent cream yellow and smooth without any noticeable patches of setae. **Abdomen** uniformly covered by reddish setae and cream yellow setae over a dark integument, mottled by the effect of unpigmented spots from which the shaft of the hairs emerge.

**Additional material examined.** 24 males, 7 females, 6 juveniles from MÉXICO: VERACRUZ: Atotonilco de Calchualco: 19.13881 °N, 97.20312 °W, 2222 m, 10 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@026 (8\$m, 2\$f: \$f = MXN: 0937); VERACRUZ: Atotonilco de Calchualco top: 19.13717 °N, 97.20265 °W, 2445 m, 10 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@027 (3\$m, 2\$f: \$f = MXN: 1345); VERACRUZ: Rio Pancho Poza: 19.75297 °N, 97.25205 °W, 1995 m, 23 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@053 (4\$m, 3\$f, 2\$j: \$m = MXN: 5684); VERACRUZ: Jesus Maria Acatla, Xocotla: 19.18443 °N, 97.13235 °W, 2206 m, 19 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@048 (9\$m, 4\$j: \$m = MXN: 3400).



**Figure 18.** *Mexigonus \$canela\\_negra*. Figures 1-7 male holotype MXN: 0900. 8-9 male paratype MXN: 0851. 10-15 female paratype MXN: 5432. 1-3 palp, embolus, and RTA. 4 chelicerae. 14-15 epigyna dorsal and ventral view.

***Mexigonus \$roaster* sp. nov.**

(fig. 19; 1-10)

**Holotype.** Male from MÉXICO: VERACRUZ: Nueva Vaqueria, Pine trees, 19.09367 °N, 97.22215 °W, 3119 m, 18 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@046, (\$m = MXN\_3302).

**Notes.** The right fang (ventral view) detached from the paturon. Future examiners of the specimen shall find the structure in a micro-vial next to the palp.

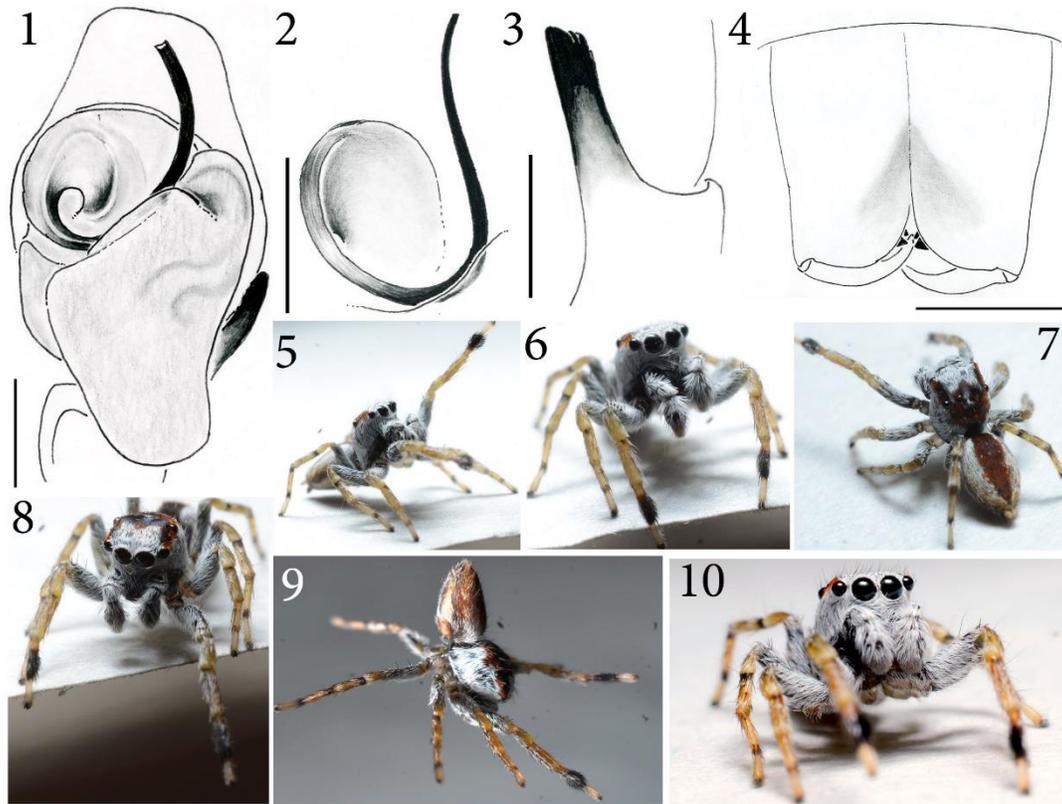
**Diagnosis.** Medium sized bluish grey spider with an inverted "M" letter shape on the carapace and the bristle of black setae at the metatarsus I (fig. 19; 5-8). The species is unique among members in the *M. \$banderas* group by the concavity, length and rotation of the embolar disk and embolus (fig. 19; 1-2), the fold at the anterior edge of the tegulum forming a secondary shoulder (fig. 19; 1) and femora entirely covered by grey bluish setae (fig. 19; 6). The tarsus I is the same colour as the tarsi of the other legs as in *M. \$canela\_negra* and *M. \$alamos\_rocks*, but the metatarsus shows the dense bristle of black setae diagnostic for the species group.

**Description.** Male (holotype). Carapace length 2.3. Abdomen length 2.4. **Carapace** black, densely covered by bluish grey setae except between the PLE to ALE and fovea, covered in shiny reddish brown setae forming an inverted "M". Clypeus, like the rest of the face, densely and entirely covered by bluish grey setae. **Chelicerae** dark brown except for a pale distal margin delimiting the rest for the fang. Promargin with two teeth partially fused at the base and the proximal (i.e. closest to the center) is half the size of the other. Retromargin with 1 simple tooth. Palp dark entirely covered by bluish setae. **Embolus** arising from its disk ca. 9:00 pm forming a spiral passing behind the tegular ledge. Embolar disk strongly concave. Tegulum with a fold forming a secondary shoulder. RTA finger-like but blunt and serrated at its tip. Legs 1>4>3>2.

Pale yellow except for femora, which are dorsally darker and covered in bluish setae. Patella-tibia and metatarsus-tarsus joints darker. Metatarsus I is entirely covered by dark setae.

**Abdomen** with a medial band dark entirely covered by shiny reddish setae, uniform and continuous reducing its size ending in a triangle over the anal tubercle. Rest of the abdomen is surrounded by bluish setae.

**Additional material examined.** 1 juveniles from MÉXICO: VERACRUZ: Nueva Vaqueria, Pine trees: 19.09367 °N, 97.22215 °W, 3119 m, 18 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@046 (1\$).



**Figure 19.** *Mexigonus \$roaster*. Figures 1-10 male holotype MXN\_3302. 1-3 palp, embolus, and RTA. 4 chelicerae.

***Mexigonus \$white\_banderas* sp. nov.**

(fig. 20; 1-15)

**Holotype.** Male from MÉXICO: VERACRUZ: Cerro Mohon, 19.90122 °N, 97.2917 °W, 1143 m, 24 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@056, (\$m = MXN\_5936).

**Paratypes.** 2 males, 3 females from MÉXICO: VERACRUZ: Atzalan, Alseseca: 19.82796 °N, 97.23318 °W, 1382 m, 24 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@054 (1\$m, 1\$f: \$f = MXN\_5073, \$m = MXN\_5303); VERACRUZ: Cerro Mohon: 19.90122 °N, 97.2917 °W, 1143 m, 24 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@056 (1\$m, 2\$f: \$f = MXN\_5991, \$f = MXN\_4695, \$m = MXN\_4610).

**Diagnosis.** Medium sized species with marked sexual dimorphism with males having long first legs with a black bristle covering the metatarsus (fig. 20; 5-10), white setae covering the tarsus and a margin of white setae over the anterior eyes (fig. 20; 7), whereas the female is transparent orange with a black ocular region (fig. 20; 11-13). The species is distinctive among members in the \$banderas group by the anteromedial spur in the last third of the embolus (fig. 20; 1-2) and the looping pattern of the copulatory ducts (fig. 14). Other species morphologically similar is *M. \$canela\_negra*, where the anterior margin above the eyes is cream yellow instead of white, the legs lack any hirsute ornamentation and the femora I lack bluish iridescence.

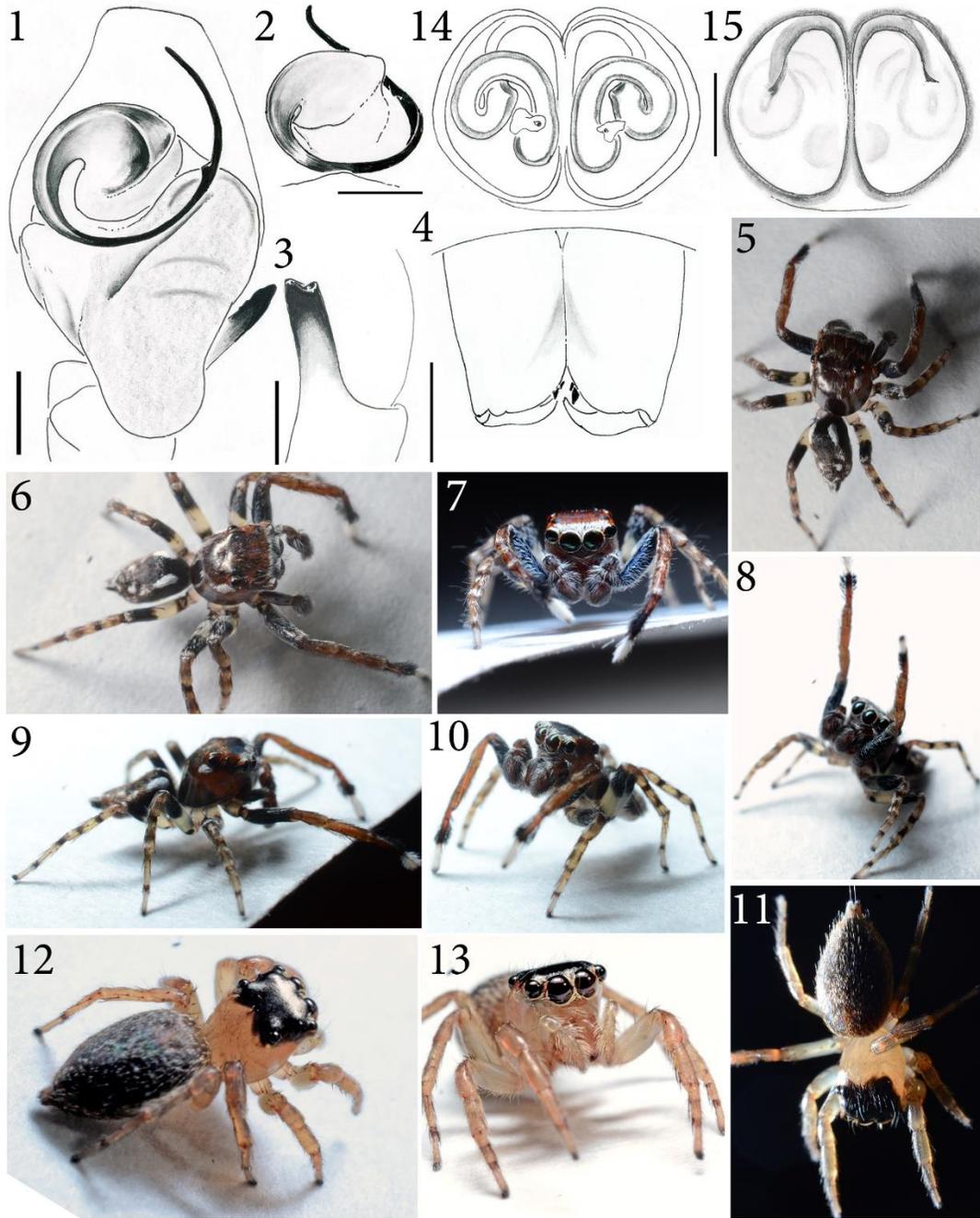
**Description.** *Male* (holotype). Carapace length 2.8. Abdomen length 2.1. **Carapace** dark red and glabrous except ocular area, which is covered by shiny reddish setae with a band of white setae covering the entire anterior margin above main eyes. Area under PLE with a horizontal

line barely extending into the thoracic region. **Clypeus** covered by a thin patch of long setae gradually become shorter at the cheeks. AME surrounded by a ring of white and red setae. **Chelicerae** narrow longer than wide. Red and uncovered by setae. Promargin with two teeth. Retromargin with one simple but big tooth. **Palp** hirsute with scattered long grey setae, white at the base of the patella. Integument is dark at femora and dark red otherwise. **Embolus** arising from its disk at 10:00 pm, forming a thin spiral slightly misaligned from the axis of the cymbium making the spiral look bigger retrolaterally and with an antero-medial spur. Embolar disk concave and elevated with a retrolateral dorsal fin standing out when looking at the palp in retrolateral view. **Legs** 1>4>3>2. Anterior legs dark honey coloured and posterior legs olive yellow. Tibiae with two rings of dark cuticle. Femora I and part of femora II entirely black and slightly covered by neon blue and white long setae. Femora II-IV only distally black. Metatarsus I entirely covered by a dense patch of setae. Tarsus I entirely covered by white setae. RTA wide, rectangular and bipartite at the end with the ventral tip longer. **Abdomen** dark with the dark medial band barely darker, uniformly and smoothly decreasing its size ending into a triangle over the anal tubercle. Medial band surrounded by white patches: two teardrop shaped at the anterior margin of abdomen and two pairs of spots at the middle, postero-medial and posterior areas. Prespiracular bump present.

*Female* (paratype; MXN:5991). Carapace length 3.0. Abdomen length 3.5. **Carapace** transparent yellow except for the black ocular area whose margins between the eyes are covered by reddish setae. **Clypeus** glabrous and yellow. Chelicerae smooth and yellow-orange. **Epigyne** with copulatory openings located at the antero medial part of the plate inside the windows, with atrium projecting arcs. Copulatory ducts immediately loop forming a tight spiral (i.e. with no open areas between inner walls ) and connecting to the spermatheca from above. Spermatheca reduced in size to the same diameter as the connecting ducts. **Legs** 4>3>1>2 transparent olive yellow at the femora and transparent yellow otherwise. **Abdomen** covered by

scattered short white and reddish setae over a dark integument, mottled by the effect of unpigmented spots from which the shaft of the hairs emerge.

**Additional material examined.** 11 males, 6 females, 50 juveniles from MÉXICO: OAXACA: 23 km SW of Valle Nacional on HWY 175: 17.62 °N, 96.35 °W, 1066 m, 3 Aug 1983, W. Maddison, WPM#83-134 (2\$m); PUEBLA: 1.5 km W of HWY 130 bypass of Xicotepec de Juarez: 20.28 °N, 97.98 °W, 1066 m, 1219 m, 17 Jun 1983, 20 Jun 1983, W. Maddison, WPM#83-071 (4\$m, 1\$f, 8\$j); VERACRUZ: Atzalan, Alseseca: 19.82796 °N, 97.23318 °W, 1382 m, 24 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@054 (2\$m, 2\$f, 28\$j: \$f = MXN\_5269, \$m = MXN\_5173); VERACRUZ: Cerro Mohon: 19.90122 °N, 97.2917 °W, 1143 m, 24 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez, H.D. Jimeno-Sevilla & A. Salazar, GCU/19@056 (3\$m, 3\$f, 14\$j: \$f = MXN\_6008, \$m = MXN\_4769).



**Figure 20.** *Mexigonus white\_banderas*. Figures 1-7 male holotype MXN\_5936. 8-10 male paratype MXN\_4769. 11-15 female paratype MXN\_5991. 1-3 palp, embolus and RTA. 4 chelicerae. 14-15 epigyna dorsal and ventral view.

## **\$quetzal group**

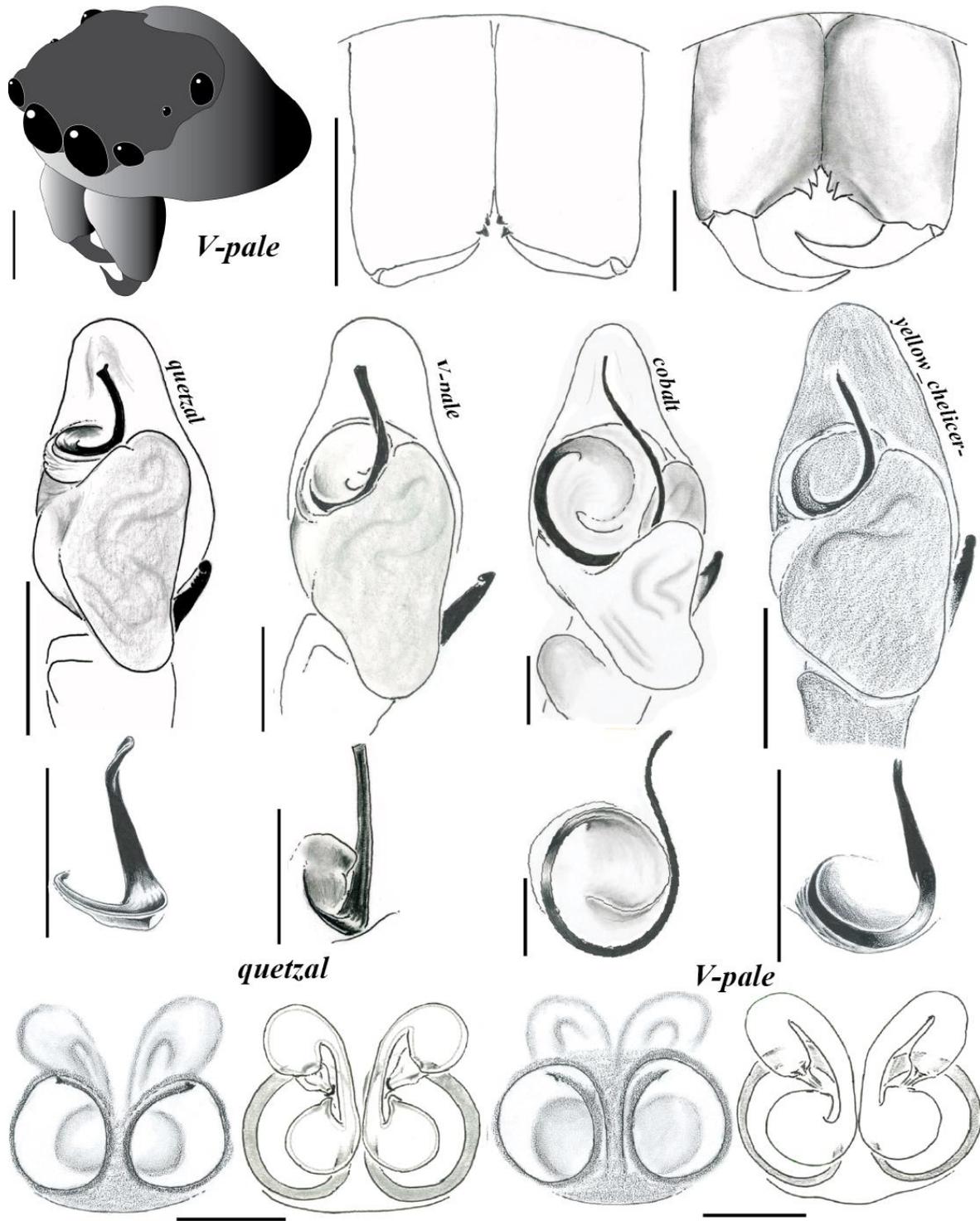
(fig. 21; map 3)

Medium sized cryptic and mostly black and hirsute spiders with strong sexual dimorphism in some species where the males are very colorful in the face, chelicerae and first legs. This group with four species is distributed in the high mountains and cloud forests of the Sierra Madre de Chiapas that extend into Guatemala. Their habitat includes suspended leaf litter in highly stratified habitats in well drained yet moist areas, and some species like *M. \$quetzal* seem to prefer the canopy.

**Diagnosis.** The species in this group can be recognized by the triangular pale stripes descending from the thoracic slope that converge around the fovea, and the dark and hirsute habitus with mottled abdomens. The emboli are often short and smoothly changing into a somewhat straight line leaned prolaterally. The copulatory openings are located at the anterior side of the genital plate near the windows edge, with the copulatory ducts forming secondary spermatheca located anteriorly to the windows, and descending diagonally into the main spermatheca.

Males often show heavily ornamented faces and first legs accompanied by iridescent fringes of setae in legs I and pedipalp. The chelicerae are not excavated and in some species they are big and bulky (fig. 23; 4, fig. 24; 4). In males and females the dark dorsal medial band in the abdomen is greatly faded against a dark integument being replaced instead by a velvety mottled pattern of sprinkled white and black patches of setae (fig. 24; 6). Whereas all the legs are predominantly dark and ringed, the first legs are often entirely black and often heavily hirsute and ornamented with iridescent lateral crests. The embolus is slender, short in all but one of the

known species (fig. 21). The females are often darker than males with copulatory openings located at the anterior medial edge of the genital plate.



**Figure 21.** Morphological diversity in somatic and genital structures distinctive of the *quetzal* morphological group.

***Mexigonus \$quetzal* sp. nov.**

(fig. 22)

**Holotype.** Male from MÉXICO: CHIAPAS: P.N. El Triunfo, crest of Costa Trail, 15.6474 to 15.6483 °N, 92.8096 to 92.8105 °W, 2100 m, 17-18 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-058, (\$m = MX17-3045).

**Paratypes.** 4 males, 2 females from MÉXICO: CHIAPAS: P.N. El Triunfo, crest of Costa Trail: 15.6474 to 15.6483 °N, 92.8096 to 92.8105 °W, 2100 m, 17-18 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-058 (4\$m, 2\$f: \$m = MX17-3019, \$f = MX17-5053, \$f = MX17-3215, \$m = MX17-3665).

**Diagnosis.** Cryptic medium-small sized dark species with ringed legs and parallel diagonal triangular patches of unpigmented integument descending from the fovea. The species is unique by the male first legs, densely covered by black and iridescent setae on the dorsal area of femora to metatarsus (fig. 22; 5-8), the red face in males is produced by carmine setae that extend into the cheeks and the prolateral side of palps (fig. 22; 9). Copulatory ducts are anteriorly displaced 1.5X the height of the genital plate (fig. 22;13-14).

**Description.** *Male* (holotype). Carapace length 2.4. Abdomen length 2.0. **Carapace** black covered by short dark yellow and reddish setae. Two stripes emerge from the fovea running diagonally and increasing size towards the back, creating a dark middle triangular band.

**Clypeus** densely and entirely covered by carmin shiny setae extending into the cheeks. AME with a thin ring of pale yellow setae. A green iridescence seems to cover the AME. **Chelicerae** narrow longer than wide, entirely covered in the same red setae seen in the clypeus and covering 3/4 of the paturon from basal to distal. Promargin with two teeth. Retromargin with one simple tooth bigger than those in promargin. **Palp** hirsute densely covered by black setae

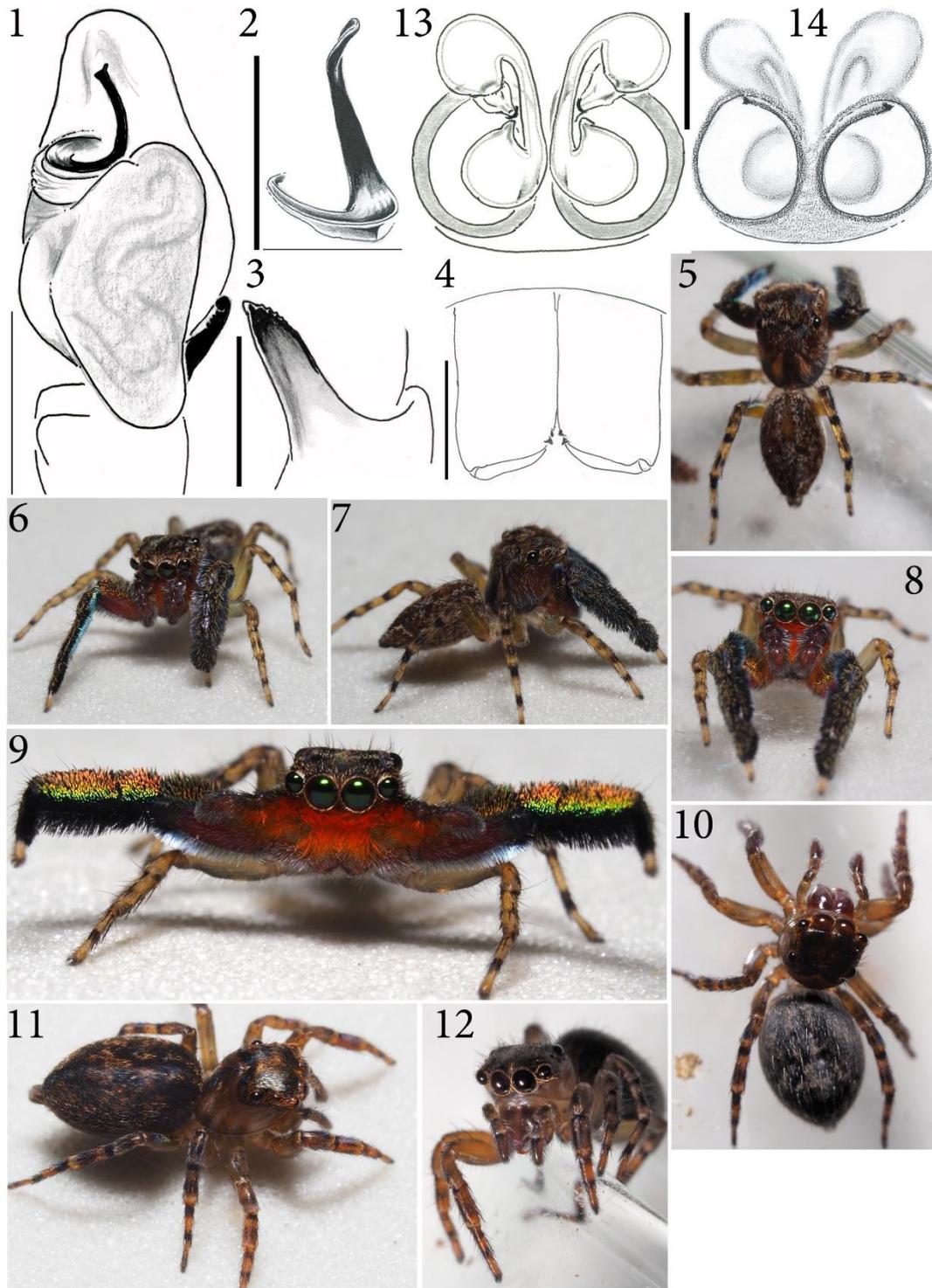
dorsally and red setae laterally, especially dense at the prolateral margin of femora to patella. Integument is red. Embolus arising from its disk at 6:00 projecting a smooth spiral and bending ventrally while extending part of the laminar face creating a 'tongue'. RTA wide and short with dorsal margin serrated with ca. seven bumps. **Legs** 1>4>3>2. Integument of Legs I black from distal part of femora to the metatarsus and densely covered laterally by iridescent setae prolaterally and entirely black setae retrolaterally. Basal and medial part of femora red and tarsus transparent honey coloured. Legs II-IV as in tarsus I in coloration except for femora with joints filled with black spots creating rings. Femora olive green with iridescent blue integument. **Abdomen** with dark medial band missing replaced by a pseudo scutum, clear in alcohol preserved specimens only. Rest of abdomen dark and spotted by patches of pale white setae over a dark integument.

*Female* (paratype; MX17-5053). Carapace length 2.5. Abdomen length 3.1. **Carapace** dark yellow partially transparent, highlighting the boundaries of the posterior margin of the ocular region. **Clypeus** glabrous and dark brown. AME ringed with red setae. **Chelicerae** smooth and dark brown. **Epigyne** with copulatory openings originating at the anterior medial edge of the windows in the genital plate. Copulatory ducts forming secondary spermatheca right after the copulatory openings that depart ca. 1.5 times the height of the plate from the epigynum, descending vertically into the primary spermatheca. Both pairs of spermatheca have similar sizes. **Legs** 4>1>3>2. Honey coloured and partially transparent with the basal part of the joints and the medial portion of tibiae dark spotted, creating rings. **Abdomen** entirely black but mottled by the effect of unpigmented spots in the integument.

**Additional material examined.** 8 males, 2 females from MÉXICO: CHIAPAS: P.N. El Triunfo, Cerro El Triunfo, peak: 15.6693 °N, 92.8117 °W, 2450 m, 18 Jul 2017, W. Maddison & Ł. Trębicki, WPM#17-060 (\$m = MX17-3545); CHIAPAS: P.N. El Triunfo, crest of Costa Trail:

15.6474 to 15.6483 °N, 92.8096 to 92.8105 °W, 2100 m, 17-18 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-058 (7\$m, 2\$f).

**Notes.** Most of these specimens, including the type material, are deposited in 80% alcohol.



**Figure 22.** *Mexigonus squetzal*. Figures 1-8 male holotype MX17-3045. 9 male paratype MX17-3665. 10-12 female paratype MX17-5053. 1-3 palp, embolus and RTA. 4 chelicerae. 13-14 epigyna dorsal and ventral view.

***Mexigonus \$V-pale* sp. nov.**

(fig. 23; 1-17)

**Holotype.** Male from MÉXICO: CHIAPAS: P.N. El Triunfo, Cerro El Triunfo, peak, 15.6693 °N, 92.8117 °W, 2450 m, 18 Jul 2017, W. Maddison & Ł. Trębicki, WPM#17-060, (\$m = MX17-3296).

**Paratypes.** 1 males, 5 females from MÉXICO: CHIAPAS: P.N. El Triunfo, Cerro El Triunfo, peak: 15.6693 °N, 92.8117 °W, 2450 m, 18 Jul 2017, W. Maddison & Ł. Trębicki, WPM#17-060 (1\$m, 4\$f: \$m = MX17-3333, \$f = MX17-3428, \$f = MX17-3456, \$f = MX17-3445); CHIAPAS: P.N. El Triunfo, crest of Costa Trail: 15.6474 to 15.6483 °N, 92.8096 to 92.8105 °W, 2100 m, 17-18 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-058 (\$f = MX17-3253).

**Diagnosis.** Medium-small sized cryptic and hirsute species with a pair of unpigmented triangular parallel stripes around the fovea. The species is distinctive among members in the *M. \$quetzal* group by the hirsuteness of the diagonal parallel stripes that merge at the fovea (fig. 23; 5-6), the horizontal patch of yellow setae covering the clypeus in both males and females (fig. 23; 7, 10), the copulatory ducts that enter the primary spermatheca diagonally (fig. 23; 16), the serrated dorsal surface of the RTA (fig. 23; 3), the orientation of the embolus leaned slightly prolateral (fig. 23; 1) and the bulky chelicerae that are almost as wide as long with prominent male cheliceral teeth (fig. 23; 4). The species is morphologically similar to *M. \$quetzal* sharing a V-shaped dorsal depigmentation in the carapace in both males and females, but *M. \$V-pale* is the only species known for the group where this patch is densely covered by yellow cream setae (fig. 23; 5, 11). The embolus of *M. \$V-pale* is rectangular rather than tongued as in *M. \$quetzal* or slender as in *M. \$yellow\_chelicerae*.

**Description.** *Male* (holotype). Carapace length 1.9. Abdomen length 2.0. **Carapace** very dark brown and glabrous. Fovea pale and covered by a patch of cream yellow setae. Two diagonal stripes emerge from this patch towards the back of the carapace forming a "V". **Clypeus** dark brown with a horizontal patch of yellow setae at the margin of the carapace that extends into the cheeks. AME encircled by red setae. **Chelicerae** slightly longer than wide and bulky, non-excavated and black. Promargin with two teeth from which the basal (i.e. closer to the center) is the smallest. Retromargin with one simple tooth. Fangs long. **Palp** with black integument and covered by scattered yellow setae from the distal end of femur to tibia. Cymbium black.

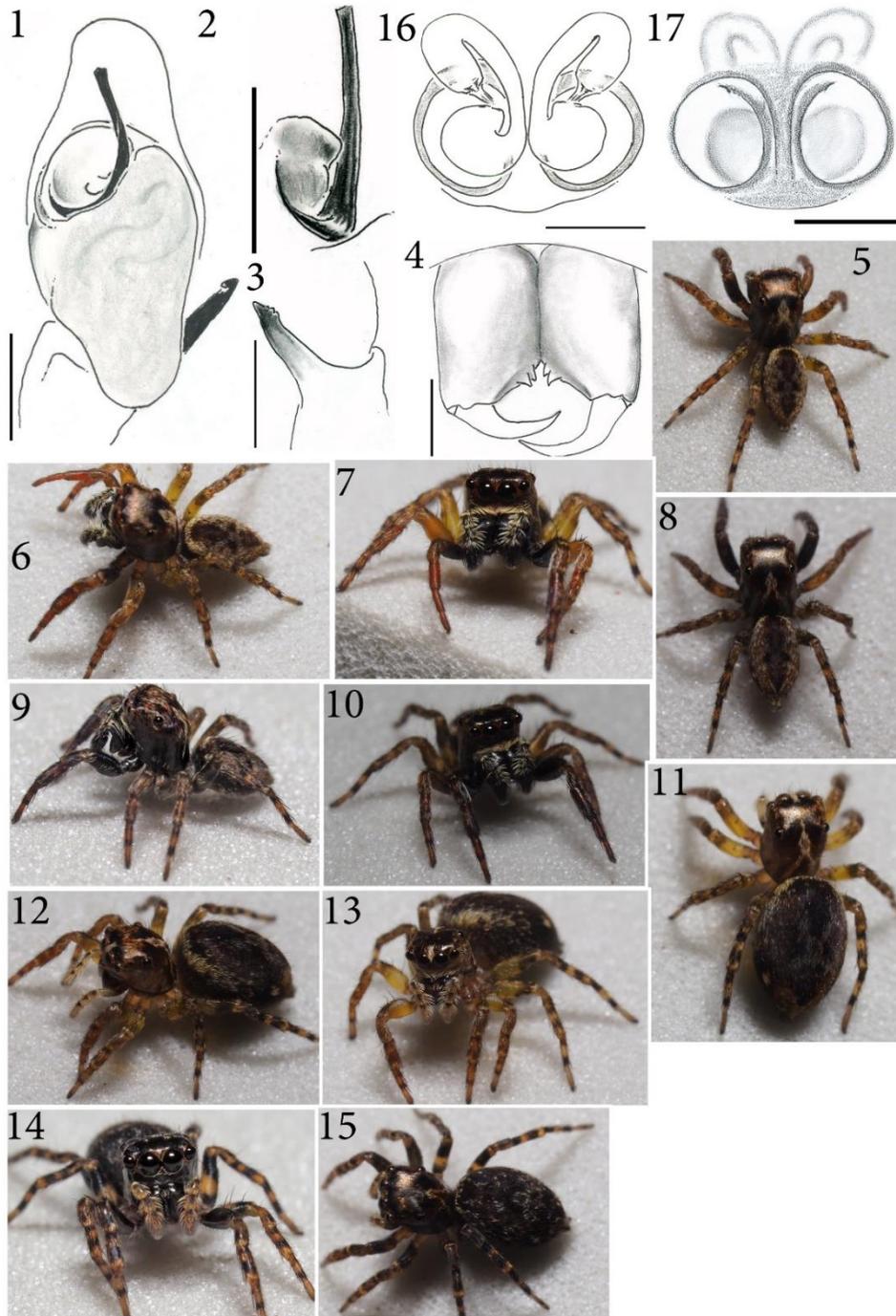
**Embolus** arising from its disk at ca. 6:00 slightly curved prolaterally ending into a flat tip. RTA long with a dorsal surface slightly serrated with the tip slightly bent ventrally. **Legs** 4>1>3>2. Integument of legs I darker than rest of the legs, especially at the black femora. Legs honey intensifying into reddish amber from femora to tarsus. Joints and middle of tibiae with dark spots forming rings. **Abdomen** with medial dark band slightly darker than rest of abdomen and irregular, fading from the anterior to the middle of the abdomen where it's reduced to two dots, and a triangle at the distal end over the anal tubercle. Abdomen with anterior margin covered in cream yellow setae.

*Female* (paratype; MX17-3445). Carapace length 2.3. Abdomen length 2.4. **Chelicerae** as in male except some of the setae covering the clypeus extend to the basal portion of the paturon. **Epigyne** with copulatory openings originating at the anterior medial edge of the windows in the genital plate. Copulatory ducts slightly widened after openings, and departing ca. 1.5 times the height of the plate from the epigynum, descending diagonally into the primary spermatheca. **Legs** yellow transparent at the basal portion of the femora, medial part of metatarsus and the entire tarsus. Integument dark brown otherwise with patches of scattered yellow setae at the dorsal surface of segments, mainly the distal edges. **Abdomen** as in male with dark triangle surrounded by pale integument and two lateral dots.

**Additional material examined.** 2 males, 19 females, 40 juveniles from MÉXICO: CHIAPAS:

P.N. El Triunfo, Cerro El Triunfo, peak: 15.6693 °N, 92.8117 °W, 2450 m, 18 Jul 2017, W.

Maddison & Ł. Trębicki, WPM#17-060 (2\$m, 15\$f, 31\$j: \$m = MX17-3468, \$j = MX17-3433, \$f = MX17-3410, \$f = MX17-3384, \$m = MX17-3362, \$f = MX17-3391, \$f = MX17-3401, \$f = MX17-3372); CHIAPAS: P.N. El Triunfo, trail to Cerro El Triunfo: 15.669 to 15.668 °N, 92.812 °W, 2400-2450 m, 18 Jul 2017, W. Maddison & Ł. Trębicki, WPM#17-061 (4\$f, 9\$j).



**Figure 23.** *Mexigonus \$V-pale\$*. Figures 1-7 male holotype MX17-3296. 8-10 male paratype MX17-3456. 11-13, 16-17 female paratype MX17-3445. 14-17 female paratype MX17-3372. 1-3 palp, embolus and RTA. 4 chelicerae. 16-17 epigyna dorsal and ventral view.

***Mexigonus \$yellow\_chelicerae* sp. nov.**

(fig. 24; 1-10)

**Holotype.** Male from MÉXICO: CHIAPAS: P.N. El Triunfo, 15.647 to 15.669 °N, 92.809 to 92.812 °W, 1980-2450 m, 17-19 Jul 2017, W. Maddison, WPM#17-066, (\$m = MX17-3982).

**Diagnosis.** A medium-small sized dark cryptic species distinctive among *Mexigonus* by the yellow colour of the chelicerae (fig. 24; 7). The habitus is very similar to *M. \$quetzal* and *M. \$V-pale* but the fovea is outlined by parallel stripes as in most species of *Mexigonus* rather than triangular diagonal patches (fig. 5-6, 8). The embolus is slender at the tip (fig. 24; 2) contrary to the tongue shape seen in *M. \$quetzalus* and *M. \$V-pale*.

**Description.** Male (holotype). Carapace length 1.7. Abdomen length 1.6. Carapace is very dark brown and glabrous. Fovea pale and covered by a patch of cream yellow setae. Two parallel stripes emerge from the side of the fovea, caused mainly by yellow setae rather than changes in the integument colouration. Area between the PLE to ALE covered by shiny reddish setae. Clypeus black and glabrous. Setae emerge from the margins of the carapace extending into the chelicerae. Chelicerae yellow, bulky and non excavated. Promargin with two teeth with the basal (i.e. closer to the center) smaller. Retromargin with one simple tooth. Palp entirely black. Embolus arising from its disk ca. 4:00 slightly curved ending into a pointy tip headed retrolaterally. Tegulum oval almost as wide as high. RTA fingerlike longer than wide ending in a blunt tip. Legs entirely black and glabrous except for tarsi in anterior legs and tarsi and metatarsi in posterior legs, which are dark amber. Abdomen with medial dark band slightly darker than rest of abdomen, narrow and irregular fading into a dark triangle at the distal end of the abdomen over the anal tubercle.



**Figure 24.** *Mexigonus yellow\_chelicerae*. Figures 1-10 male holotype MX17-3982. 1-3 palp, embolus and RTA. 4 chelicerae.

***Mexigonus \$cobalt* sp. nov.**

(fig. 25; 1-8)

**Holotype.** Male from GUATEMALA: EL PROGRESO: Cerro pinalon, Finca Las Nubes, 15.0838 °N, 89.9425 °W, 2500 m, 21 Sep 2008, R. Anderson.

**Notes on the holotype.** Left legs have been dissected. Future examiners shall find the appendages in a vial next to the palp.

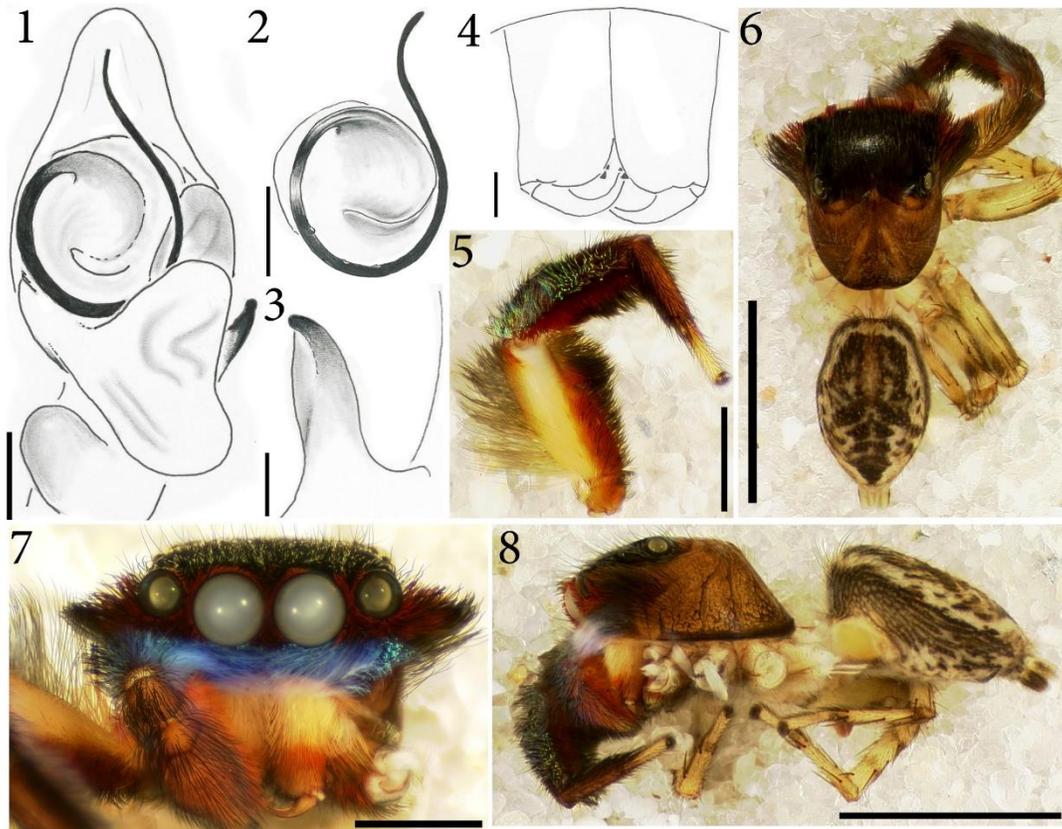
**Paratypes.** 1 male from GUATEMALA: EL PROGRESO: Cerro pinalon, Finca Las Nubes: 15.08385 °N, 89.94258 °W, 2500 m, 21 Sep 2008, R. Anderson, (1♂m).

**Etymology.** Name with the Trique word *Maca* = Mexico and Latinised in the genitive case of the third declension. “The *Mexigonus* of Mexico”. Species named after a word play representing a tautonymy mixing two languages and the irony of the species’ known distribution outside of Mexico. *Mexigonus* (Mexican inhabitant) + *maca* (of Mexico). ‘The Mexican inhabitant of Mexico’ found in Guatemala.

**Diagnosis.** A colourful dark species with thick and hirsute first legs. The species is distinctive among *Mexigonus* by the combination of neon glowing setae extending beyond the lateral margins of the carapace complemented by a red mask covering the anterior eyes and chelicerae (fig. 25; 7), the iridescent fringe of setae covering the prolateral side of patella and tibia (fig. 25; 5) and the shape of the spiral formed by the embolus (fig. 25; 2). The species is similar to *M. \$quetzal* in the hirsuteness and iridescent of the first legs, but the embolus is long and coiled, whereas the in *M. \$quetzal* it’s short with a tongue shaped tip.

**Description.** *Male* (holotype in alcohol). Carapace length 2.4. Abdomen length 2.3. **Carapace** black with the ocular area covered by long setae, some of which appear to be white. **Clypeus**

densely covered by blue neon glowing setae. AME surrounded by shiny reddish setae (probably carmin) that extend beyond the cheeks forming a red and blue mask. **Chelicerae** pale yellow entirely covered by yellow pale setae. Promargin with two teeth. Retromargin with one simple tooth. **Palp** pale brown which appears to have been black dorsally from femur to tibia and red at the cymbium. **Embolus** arising from its disk ca. 12:00 forming a wide spiral that moves anteriorly at its tip, which is slightly bent retrolaterally. Tegulum with a fold that protects the embolus and ending in a bump pointing retrolaterally. RTA fingerlike with ventral edge thinner. Legs brown in preserved specimen which were probably amber red. Distal area of femora II-IV and base of the joints black. Legs I with a ventral fringe of black and carmine red setae that extend from the coxae to metatarsus. Integument on legs I was certainly black but they look pale brown in the preserved specimen. **Abdomen** entirely black with paler spots creating a mottled integument. Dark medial band visible only as a small dark triangle over the anal opercle. A margin of white setae covers the anterior margin of the abdomen which indicates that the specimen probably had a scattered pattern of white setae.



**Figure 25.** *Mexigonus scobalt*. Figures 1-8 male holotype. 1-3 palp, embolus and RTA. 4 chelicerae. 5 prolateral first left leg.

### ***\$tomato\_red group.***

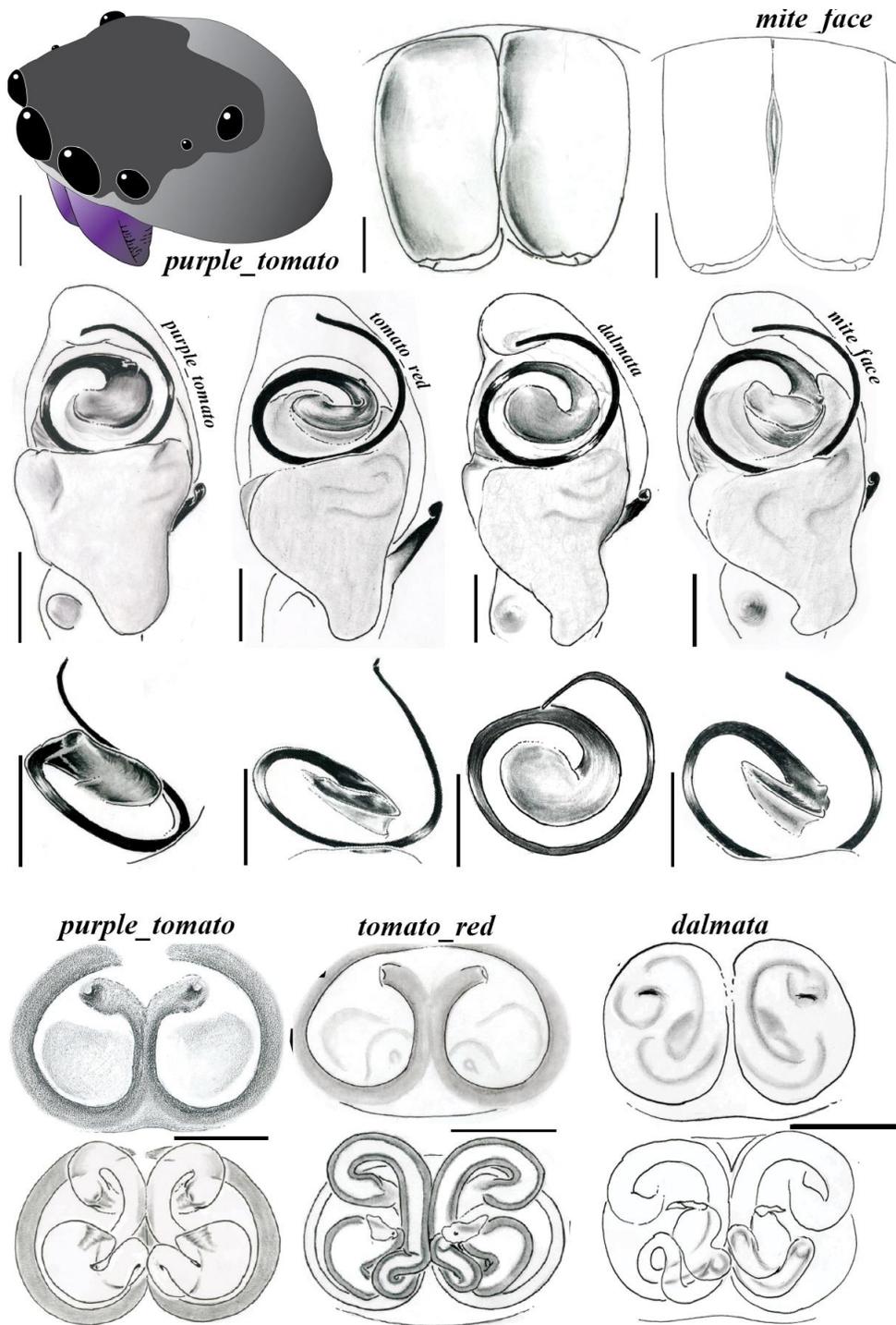
(fig. 26; map 4)

This group with five species is primarily found in the western side of Mexico, with strong association to dwarf *Quercus*. Most of the species can be found on the borders of clearings under short-leaf oaks with heights of around 2 m tall. They seem to be especially speciose in the highlands of Oaxaca near Putla, Villa de Guerrero. Species in the \$tomato\_red group are median sized cryptic spiders, dark and glabrous with strong sexual dimorphism.

**Diagnosis.** Species in the group can be easily identified by the robust femora of males complemented by crests of iridescent or black setae covering the first legs (fig. 27; 7, fig. 28; 7, fig. 29; 10), the coloured faces of the male clypeus and the wide horizontal bands of pale integument covered in pale setae that outlined the thoracic region of the male carapace (fig. 27; 5, fig. 28; 5). The embolus is very long forming an open spiral and arising from the embolar disk after 12:00 (fig. 26). The embolar disk is elevated and rotated having a conical spur at the base of the outer edge of the embolus (fig. 26). The copulatory openings are located at the anterior margin of the genital plate and the ducts are long and loop at the posterior edge of the genital plate forming 'hitch knot" shapes (fig. 26).

The male carapaces are black with a horizontal band of pale integument covered in white setae outlining the cephalic region, emerging below the PLE and extending into the fovea, similar to those seen in the \$banderas group and longer, to the extent of almost reaching the fovea. The patellae in the first legs often shows a lateral fringe of colourful setae that contrast with a naked metatarsus and tarsus making the leg look somewhat conical (fig. 30; 7). The male clypeus, chelicerae and palps are often heavily ornamented by dense patches of colourful or iridescent setae, iridescent integument or banding patterns, and often complement each other (fig. 27; 7, fig. 28; 7, fig. 29; 10 and fig. 30; 10). The tegulum is conical and in most species, there is a

posterior bump pointing prolaterally, shaped as a hook (fig. 26). Females have orange to green integument with somewhat transparent carapaces and legs (fig. 27; 8-10, fig. 28; 8-10). The ocular region is black and often outlined by the combination of reddish setae between the secondary eyes. The band below the PLE is sometimes present in females as a trace of horizontal patches of yellow or pale setae (fig. 29; 12). The copulatory openings are located at the anterior margin of the genital plate. The copulatory ducts are long and very convoluted with high degree of intraspecific variation in the specific shape of the loops, with some specimens having a high degree of asymmetry between the two ducts (fig. 30; 14).



**Fig. 26.** Morphological diversity in somatic and genital structures distinctive of the *tomato\_red* morphological group.

***Mexigonus \$tomato\_red* sp. nov.**

Fig. X (A-I)

**Holotype.** Male from MÉXICO: OAXACA: San Andres Chicahuaxtla, area II on pine trees on trail facing south, 17.16228 °N, 97.83434 °W, 2504 m, 2 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@017, (\$m = MXN\_8217).

**Paratypes.** 3 males, 2 females, 1 juveniles from MÉXICO: OAXACA: San Andres Chicahuaxtla, area II on pine trees on trail facing south: 17.16228 °N, 97.83434 °W, 2504 m, 2 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@017 (1\$m, 1\$f: \$f = MXN\_8265, \$m = MXN\_8527); OAXACA: San Andres Chicahuaxtla, area II on slope with pine facing west: 17.16085 °N, 97.83288 °W, 2521 m, 3 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@020 (1\$f, 1\$j: \$j = MXN\_1440, \$f = MXN\_0272); OAXACA: San Andres Chicahuaxtla, area II along curve on road facing southeast: 17.162 °N, 97.83416 °W, 2515 m, 2 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@016 (2\$m: \$m = MXN\_7817).

**Diagnosis.** The species is unique by the dense patches of orange-red setae entirely covering the male chelicerae and cymbium, complemented by yellowish setae covering the patella and tibiae. Other species morphologically similar are *M. \$red\_moon*, *M. \$dalmata* and *M. \$purple\_tomato* in having the lateral sides of femora widened and the cuticle of femora I iridescent. However, the iridescence is purple and the fringes of dorsal setae are black as in *\$mite\_face*. The copulatory ducts fold dorsally forming a hitch before turning into the spermathecae.

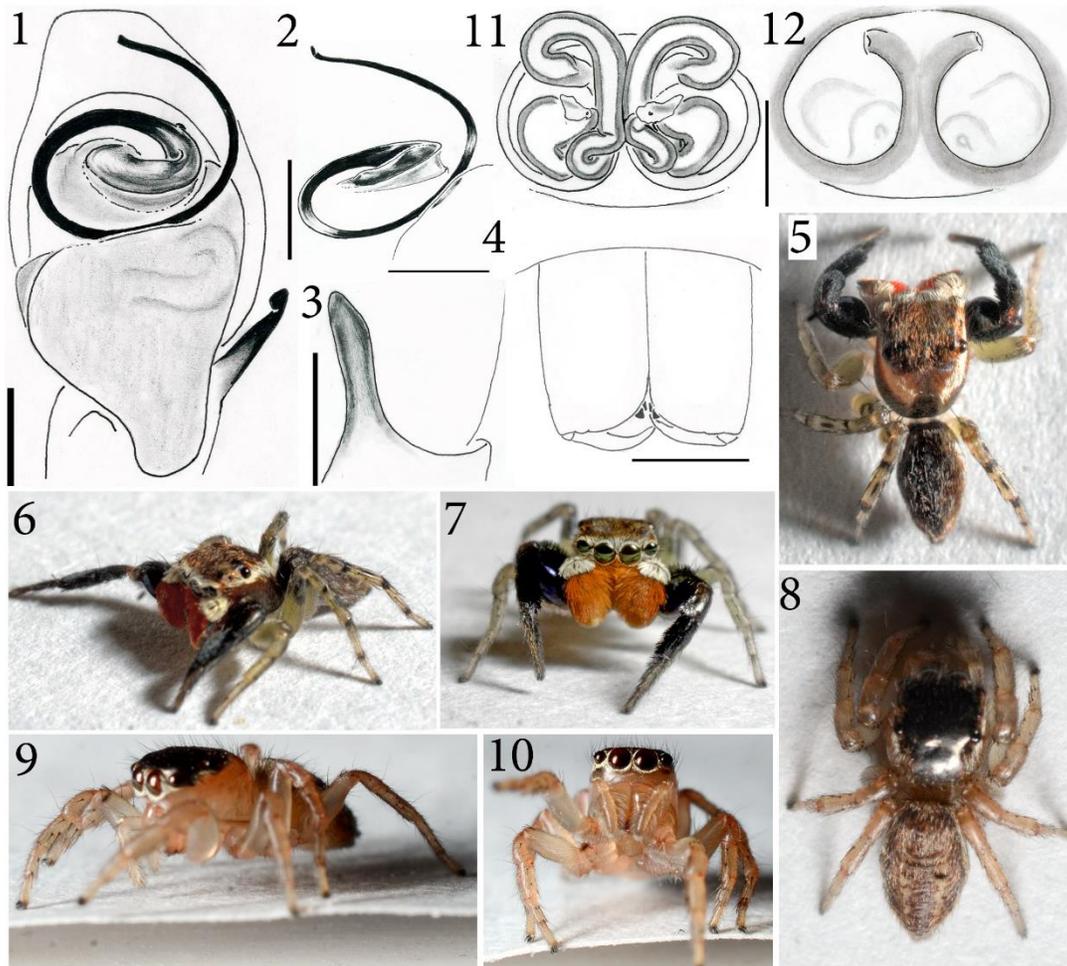
Compounded noun taken from the Trique language in apposition to the genus name; dachre (noun; spider) + mare (adjective; red); Latinization in the nominative singular in second declension; masculine. dachremareus = 'red face'. "The red-faced *Mexigonus*".

**Description.** *Male* (holotype). Carapace length 2.3. Abdomen length 2.0. **Carapace** bicolored. Ocular area and margins of carapace dark. Area below the eyes with orange transparent integument. Area below PLE with a yellow cream horizontal band that increases its width towards the thoracic region towards the fovea, leaving a dark triangular projection from the fovea to the back of the carapace. **Clypeus** entirely covered by carmin red setae that extend into the cheeks. AME with green reflection circled by yellow cream setae, some of which extend to the sides creating a semi-continuous mask. **Chelicerae** entirely covered by carmin setae, smooth and non excavated. Promargin with two teeth. Retromargin with one tooth. **Palp** with pale integument densely covered by yellow cream setae from distal part of femora to tibiae. Cymbium covered by carmin setae. **Embolus** arising from its disk ca. 1:00 rapidly reducing its size and forming a long spiral completing an entire circumference. Tip of the embolus bent ventrally. Embolar disk small and inclined dorsally, with a small spur at the beginning of the embolus. Tegulum ending in a small bump pointing prolaterally. RTA fingerlike and long. **Legs** 1>4>3>2. transparent yellow cream and olive except for femora to tibiae I, where the integument is entirely black and covered on the sides by black setae. Prolateral side of femora I glabrous with an iridescent purple integument. **Abdomen** dark with dark medial band slightly darker and with irregular borders ending in a dark triangle ober the anal tubercle. Anterior margin covered by pale yellow setae. Prespiracular bump present.

*Female* (paratype; MXN\_8265). Carapace length 2.5. Abdomen length 2.6. **Carapace** as in male but with a transparent yellow integument except on the black ocular region. **Clypeus** glabrous with a yellow transparency. **Chelicerae** with the same colour of integument as in clypeus, smooth and non excavated. **Epigyne** with the copulatory openings located at the

antero medial part of the genital plate, which followed by the atrium forms semicontinuous windows. Copulatory ducts thin pointing away from the epigynum, looping anteriorly and descending vertically while touching their counterpart. A second folding occurs at the level of the epigastric furrow forming two pins before entering the primary spermatheca (hitch knot shape), which are teardrop shaped and almost the same diameter as the entering ducts. **Legs** 4>1>3>2. Completely yellow. **Abdomen** as in male with a paler integument.

**Additional material examined.** 11 males, 5 females, 9 juveniles from MÉXICO: OAXACA: San Andres Chicahuaxtla, area II along curve on road facing southeast: 17.162 °N, 97.83416 °W, 2515 m, 2 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@016 (8\$m, 5\$j); OAXACA: San Andres Chicahuaxtla, area II on pine trees on trail facing south: 17.16228 °N, 97.83434 °W, 2504 m, 2 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@017 (1\$m, 3\$f); OAXACA: San Andres Chicahuaxtla, area II heading to Cerro Zarzamora: 17.16093 °N, 97.83034 °W, 2581 m, 3 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@022 (1\$m, 1\$f, 4\$j); OAXACA: San Andres Chicahuaxtla, area II on slope with pine facing west: 17.16085 °N, 97.83288 °W, 2521 m, 3 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@020 (1\$m, 1\$f).



**Figure 27.** *Mexigonus \$tomato\_red*. Figures 1-7 male holotype MXN\_8217. 8-12 female paratype MXN\_8265. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$red\_moon* sp. nov.**

(fig. 28; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: San Andrés Chicahuaxtla, 17.168 °N, 97.842 °W, 2460 m, 21 Jul 2017, W. Maddison, U. Garcilazo, Tello, Fernández, Ł. Trębicki, WPM#17-065, (\$m = MX17-3824).

**Paratypes.** 3 males, 3 females from MÉXICO: OAXACA: San Andrés Chicahuaxtla: 17.168 °N, 97.842 °W, 2460 m, 21 Jul 2017, W. Maddison, U. Garcilazo, Tello, Fernández, Ł. Trębicki, WPM#17-065 (1\$m, 1\$f: \$f = MX17-3838, \$m = MX17-3782); OAXACA: San Andres Chicahuaxtla, area I property of Amador Tello Rojas: 17.16772 °N, 97.84242 °W, 2436 m, 1 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@013 (2\$f: \$f = MXN-9917, \$f = MXN-9869); OAXACA: San Andres Chicahuaxtla, area I property of Amador Tello Rojas on road heading south west: 17.16733 °N, 97.84248 °W, 2436 m, 1 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@015 (2\$m: \$m = MXN-9750, \$m = MXN-9632).

**Diagnosis.** Glabrous dark medium sized species with marked sexual dimorphism. Males are very colourful with hirsute iridescent first legs and females orange yellow with some transparency. The species is unique among members of the \$tomato\_red group by the dorso-ventral fringes of black setae covering the metatarsus I, a fringe of iridescent setae covering the dorsal face of the femora and sides of tibiae, complemented by a ventrolateral fringe of carmine red, AME surrounded by bluish scattered setae with a horizontal patch of whitish setae, and in females the two “hitch-knot” loops of the copulatory ducts at the posterior end of the epigyna. Other species morphologically similar are *M. \$tomato\_red* and *M. \$mite\_face*. It differs from these species mainly on the replacement of iridescent cuticle for hirsuteness, paler first legs,

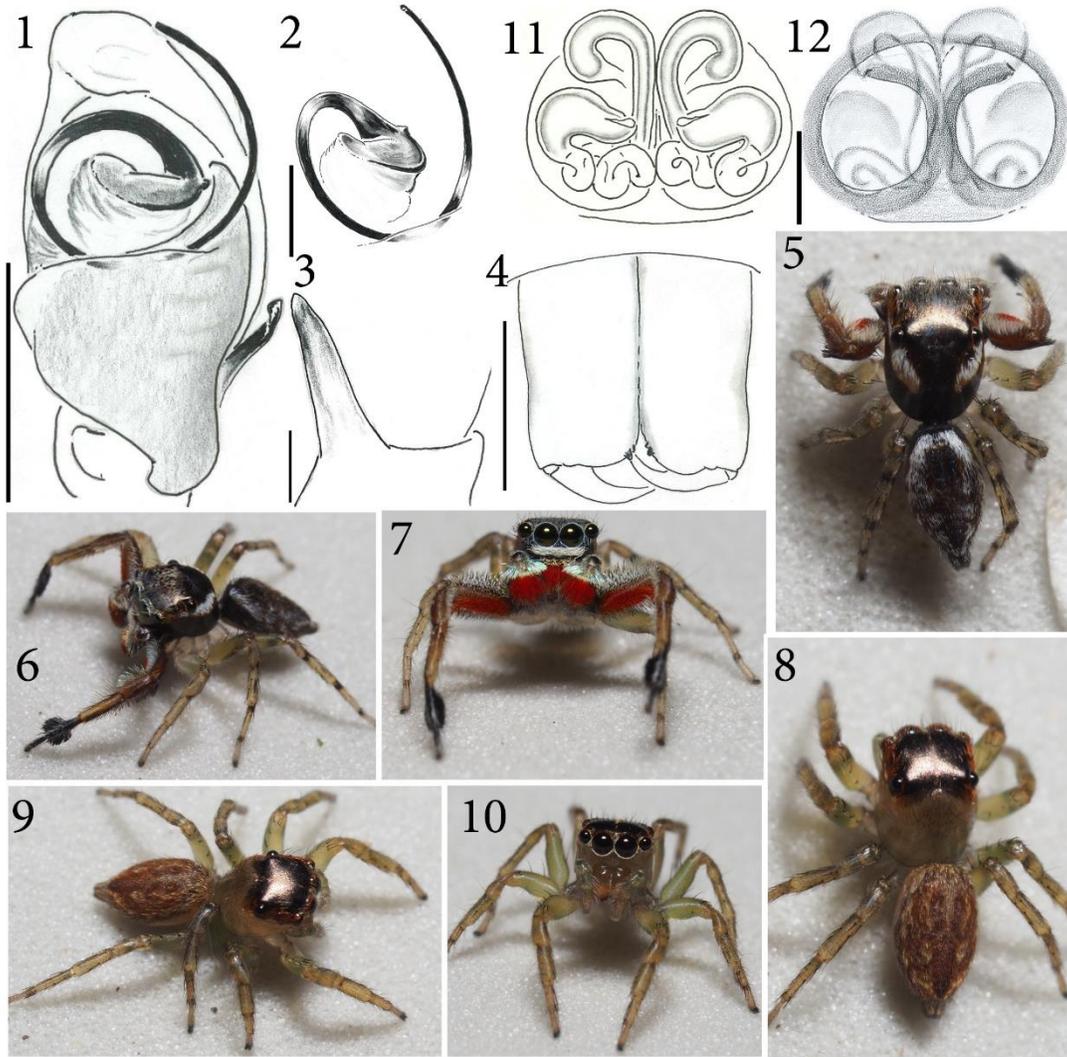
and femora I with lateral faces as wide as II-IV. The hooked shape of the tegular bump is similar to *M. \$mite\_face* and different from other members in the \$tomato\_red group.

**Description.** Male (holotype). Carapace length 2.2. Abdomen length 2.2. **Carapace** dark red including ocular area. A horizontal stripe of white setae and pale integument emerges below PME and extends towards fovea increasing its height. Ocular region covered by scattered shiny reddish and bluish setae. **Clypeus** covered by a horizontal line of white setae. AME with a green iridescence and surrounded by a ring of blue setae. Area above AME covered with glabrous setae tightly close to the integument creating a smooth surface. **Chelicerae** black and covered by carmin setae except at the very basis of paturon, which has a horizontal line of yellow cream setae. Promargin with two teeth. Retromargin with one tooth. **Palp** black covered by iridescent setae from the distal portion of femur to tibia, glowing in green neon. Distal end of tibiae with a line of yellow setae and cymbium entirely covered by carmin setae. **Embolus** arising ca. 4:00 creating a strong spiral that passes behind a folding behind the tegulum and ends into a flat tip. Embolar disk elevated with a retromarginal spur at the point where it becomes the embolus. Tegulum ending in a bump pointing prolaterally. RTA fingerlike. **Legs** 1>4>3>2. Legs I dark yellow densely covered by setae. Femora covered by red setae ventrally and bluish setae dorsally. Patella covered by cream yellow setae laterally. Metatarsi with a ventral serrated comb of black setae. Tarsi black. Legs II to IV olive green at femora fading into pale transparent yellow at more distal segments. Joints of segments dark spotted creating rings. **Abdomen** hirsute by reddish shiny setae antero-dorsally with a margin of white-blue setae, transitioning into a naked black integument at its posterior end. Dark medial band present only as chevrons at the last half of abdomen ending in a pigmented triangle over anal tubercle. Prespiracular bump present.

Female (paratype; MXN-9917). Carapace length 2.2. Abdomen length 2.5. **Carapace** transparent yellow except for dark ocular area, which has a margin of red shiny setae between eyes. **Clypeus** glabrous and gray yellow with some transparency. **Chelicerae** smooth of the

same colour as clypeus at the base of paturon with distal end orange. **Epigyne** with copulatory openings emerging at the anterior edge of genital plate followed by the atrium, forming semi continuous windows. Copulatory ducts thin looping anteriorly and descending vertically until the posterior end, where they start forming two hitch knots before entering the teardrop shaped spermatheca, slightly bigger than the diameter of the entering ducts. **Legs** 4>1>3>2. Olive green with darker green spots at the basis of the joints and medial part of tibiae. **Abdomen** dark yellow and black integument covered by shiny yellow and reddish setae.

**Additional material examined.** 10 males, 3 females, 12 juveniles from MÉXICO: OAXACA: San Andrés Chicahuaxtla: 17.168 °N, 97.842 °W, 2460 m, 21 Jul 2017, W. Maddison, U. Garcilazo, Tello, Fernández, Ł. Trębicki, WPM#17-065 (2\$m); OAXACA: San Andres Chicahuaxtla, area I property of Amador Tello Rojas on road heading south west: 17.16733 °N, 97.84248 °W, 2436 m, 1 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@015 (2\$m, 3\$j); OAXACA: San Andres Chicahuaxtla, area I property of Amador Tello Rojas: 17.16772 °N, 97.84242 °W, 2436 m, 1 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@013 (2\$m, 3\$f, 8\$j); OAXACA: San Andres Chicahuaxtla, area I property of Amador Tello Rojas on crop's edge: 17.16792 °N, 97.84294 °W, 2444 m, 1 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@014 (4\$m, 1\$j).



**Figure 28.** *Mexigonus \$red\_moon*. Figures 1-7 male holotype MX17-3824. 8-12 female paratype MX17-9917. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$purple\_tomato* sp. nov.**

(fig. 29; 1-16)

**Holotype.** Male from MÉXICO: OAXACA: Santa Catarina Lachatao, 17.2503 °N, 96.466 °W, 2575 m, 1 Jul 2017, U. Garcilazo, W. Maddison, R. Paredes, Hernandez, WPM#17-010, (\$m = MX17-0404).

**Paratypes.** 2 males, 2 females from MÉXICO: OAXACA: Santa Catarina Lachatao: 17.2503 °N, 96.466 °W, 2575 m, 1 Jul 2017, U. Garcilazo, W. Maddison, R. Paredes, Hernandez, WPM#17-010 (2\$m, 2\$f: \$f = MX17-0412, \$f = MX17-0411, \$m = MX17-0393, \$m = MX17-0382).

**Notes.** Most of the type specimens, including the holotype, are fixed in 80% alcohol.

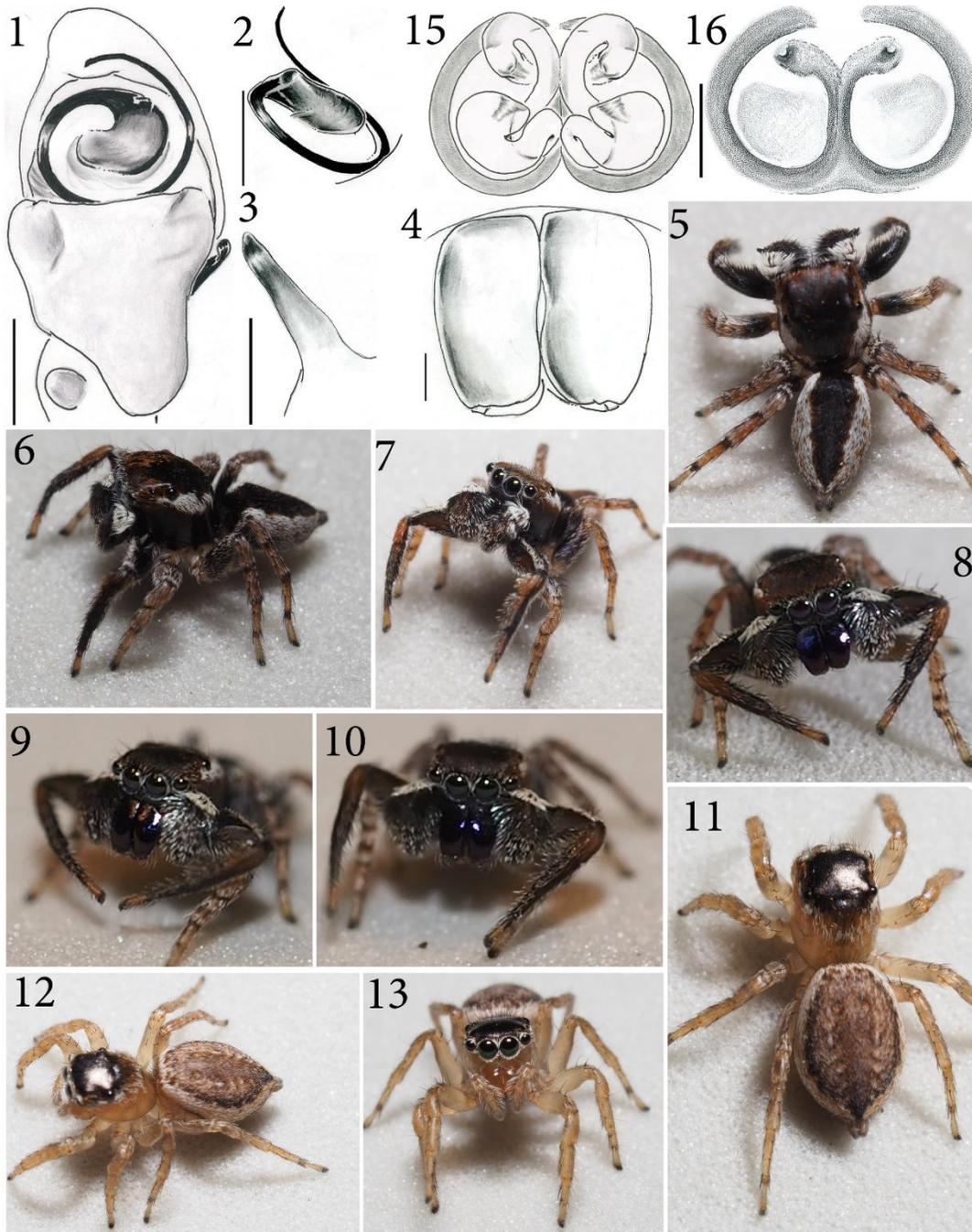
**Diagnosis.** A dark glabrous medium sized species with marked sexual dimorphism. Females are cream yellow with somewhat transparent bodies with the abdomen outlined with black integument forming a dark perimeter (fig. 29; 11-13). Males have robust first legs and are darker than the female (fig. 29; 5-10). The species can be distinguished from other species of *Mexigonus* by the purple iridescence in the integument of the male chelicerae (fig. 29; 10), the circular spiral projected by the embolus accompanied by a prominent triangular spur at its base (fig. 29; 1-2), blunt tegular bump instead of “hook” shaped like *M. \$red\_moon*, and RTA bent dorsally (fig. 29; 3). In females the copulatory ducts are thicker and shorter than other species and “butterfly” shaped (fig. 29; 15) with the ducts bending dorsally at the posterior edge forming a constricted loop (fig. 29; 15). This species is morphologically similar to *\$dalmata*, *\$tomato\_red* and *\$mite\_face*. However, the dorsal fringe of setae over the femora I is short making the femora appear triangular. The patella is covered by a prolateral iridescent red bristle like in *\$mite\_face* lacking the distinctive facial colouration or the golden cuticle covering the prolateral surface of the femora, being in this species glabrous rather than iridescent (fig. 29; 8).

**Description.** *Male* (holotype). Carapace length 2.2. Abdomen length 1.9. **Carapace** black, shiny and glabrous including ocular region, which has a margin of red setae between the eyes. Area under PME and PLE with a horizontal band of white setae and pale integument. **Clypeus** glabrous and black. AME encircled by white setae, some of which extend beyond the ring of the eyes forming a semi continuous mask. Area above AME with shiny red setae. **Chelicerae** with an iridescent purple integument, concave and non excavated. Promargin with two teeth. Retromargin with one simple tooth. **Palp** with black integument but covered by white setae at patella. Lateral side of tibia covered by iridescent long dark setae. Cymbium mostly dark brown with scattered white setae. **Embolus** arising from its disk ca. 12:00 forming a strong spiral ending in a tip slightly bent ventrally. Embolar disk elevated with a retrolateral spur at the base of the embolus. Tegulum ending in a bump and with a promarginal notch. RTA fingerlike folding away from cymbium medially ending in a 'spoon' shape. **Legs** 1>4>3>2. Integument is amber yellow or black. Femora I dark brown with lateral surfaces widened and glabrous. Dorsal area covered by a line of white setae. Patella to metatarsus dark brown except for a thin line of pale integument at the prolateral margin covered by long white setae. Tarsus amber yellow. Legs II-IV except for dark spots in femora (less in II). **Abdomen** with a dark medial band continuous and uniform covered by shiny reddish setae and reducing its size from anterior to posterior side ending in a triangle over the anal tubercle. Rest of dorsal side of abdomen covered by white setae over a pale integument. Prespiracular bump present.

*Female* (paratype; MX17-0412). Carapace length 2.7. Abdomen length 3.3. **Carapace** transparent yellow except for the black ocular region, which has a margin of reddish setae between the eyes. PME and PLE with a narrow horizontal patch of white setae that slightly follows the posterior margin of the ocular region. **Clypeus** glabrous and yellow. Chelicerae transparent yellow. **Epigyne** with copulatory openings originating at the anterior side of the genital plate, with thick atria forming well delimited semi-continuous windows. Copulatory ductus

looping anteriorly after the openings and descending relatively parallel to each other forming an "S" (looking at the right duct in dorsal view) that folds dorsally at the posterior side before connecting with the teardrop shaped spermatheca. **Legs** transparent yellow. **Abdomen** of yellow integument with a margin of dark integument encircling the dorsal area, which is covered by white setae, especially dense at the anterior edge. Dark medial band only visible as a dark triangle over the anal tubercle.

**Additional material examined.** 1 males, 5 females, 1 juveniles from MÉXICO: OAXACA: Santa Catarina Lachatao: 17.2503 °N, 96.466 °W, 2575 m, 1 Jul 2017, U. Garcilazo, W. Maddison, R. Paredes, Hernandez, WPM#17-010 (2♀: ♀ = MX17-0414); OAXACA: 50 km NW of Oaxaca on HWY 190: 17.2333 °N, 97.0 °W, 1981 m, 6 Aug 1983, W. Maddison (2♀, 1♂); OAXACA: Cerro Yucunuchica, near Laguna de Guadalupe on Putla-Tlaxiaco road: 17.1625 °N, 97.834 °W, 2500 m, 1998, W. Maddison, WPM#98-040 (1♂); VERACRUZ: Acultzinapa, Mara chihuato: 18.67685 °N, 97.19939 °W, 2801 m, 14 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@035 (1♀).



**Figure 29.** *Mexigonus purple\_tomato*. Figures 1-10 male holotype MX17-0404. 11-16 female paratype MX17-0412. 1-3 palp, embolus and RTA. 15-16 epigyna dorsal and ventral view.

***Mexigonus \$mite\_face* sp. nov.**

(fig. 30; 1-15)

**Holotype.** Male from MÉXICO: OAXACA: San Andres Chicahuaxtla, area III on slope facing south, 17.14909 °N, 97.83832 °W, 2249 m, 3 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@019, (\$m = MXN\_9133).

**Paratypes.** 2 males, 2 females from MÉXICO: OAXACA: San Andres Chicahuaxtla, area III on slope facing south: 17.14909 °N, 97.83832 °W, 2249 m, 3 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@019 (2\$m, 2\$f: \$f = MXN-0766, \$m = MXN-0747, \$f = MXN\_0807).

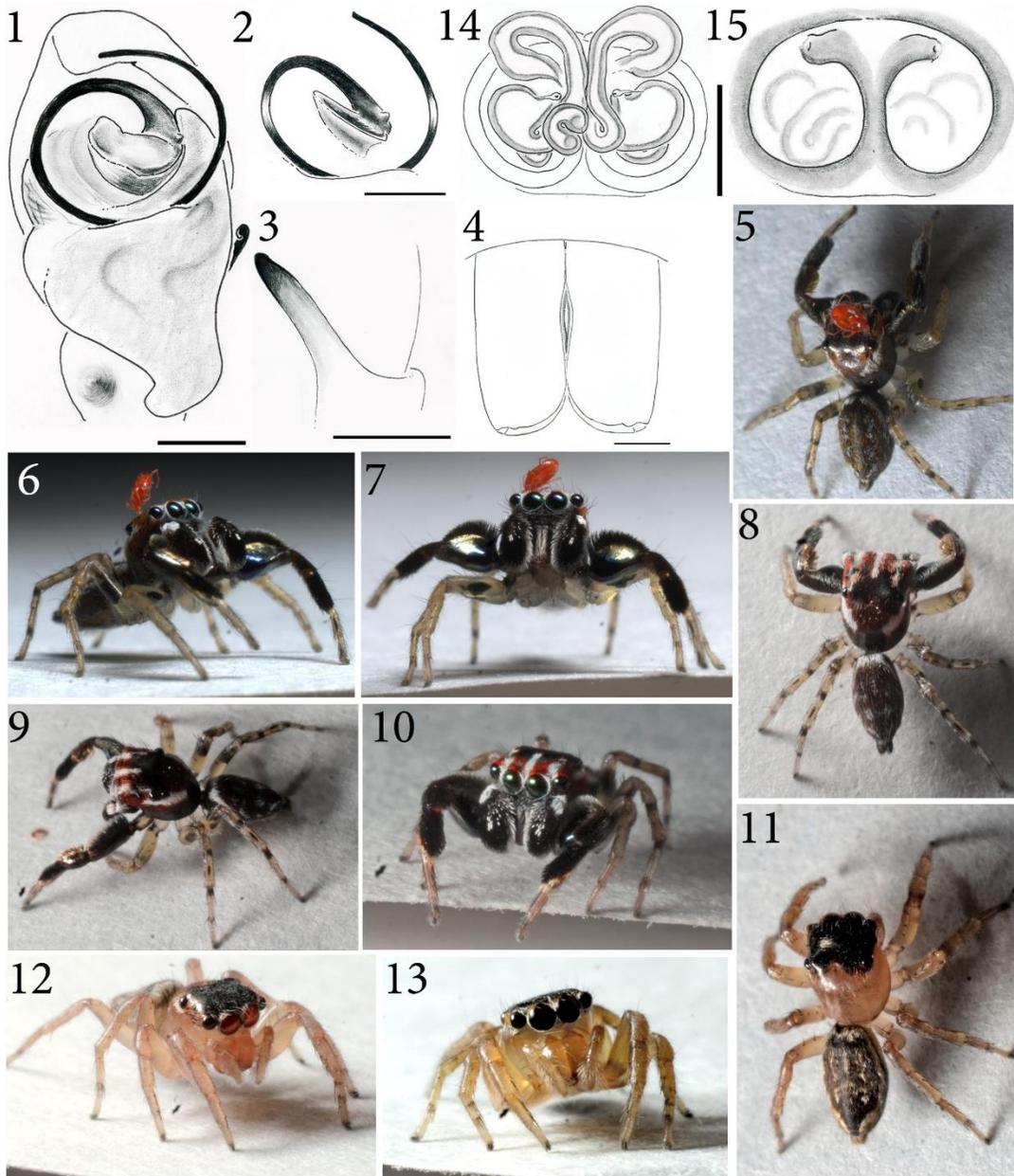
**Notes on holotype.** When captured and photographed, the specimen had attached an unidentified species of mite attached to the carapace.

**Diagnosis.** Medium sized species with strong sexual dimorphism. Males are colorful with heavily ornamented faces and widened and crested femora (fig. 30; 7), whereas females are pale yellow and transparent with dark abdomens (fig. 30; 11). Distinctive among species in the \$tomato\_red group are a facial pattern constituted of vertical red-white stripes above the anterior eyes of males (fig. 30; 10), the chelicerae covered by a middle vertical dark stripe surrounded by white setae, a bumpy prolateral face of the femora I covered in iridescent blue and golden cuticle (fig. 30; 7), and the looping pattern in the copulatory ducts (fig. 30; 14). Other species morphologically similar are M. \$tomato\_red and M. \$purple\_tomato. The black crests at the dorsal surface of femora are like those seen in M. \$purple\_tomato except they gradually reduce their length distally forming an arc rather than a straight triangular slope. The prolateral bristle of patellar setae are golden rather than iridescent reddish.

**Description.** Male (holotype). Carapace length 2.3. Abdomen length 1.6. **Carapace** dark brown including the ocular area. Anterior and lateral margins of ocular area densely covered by reddish setae. Area below PLE with a horizontal patch of white setae extending into the thoracic region and increasing its size. Area between AME with a white fringe extending half the height of ocular area. **Clypeus** black covered by white setae. AME with a circle of white setae. Area above AME and ALE with a fringe of red setae, area above the area between eyes with a white fringe. AME iridescent green. **Chelicerae** longer than wide, with pale amber integument but entirely covered by black setae on the center and white setae on the sides of the paturon respectively. Promargin with two teeth. Retromargin with one simple tooth slightly bigger than those in promargin. **Palp** dark with distal portion of femora, patella and retrolateral dorsal side of tibia covered in white setae. Black setae covering the integument otherwise. Cymbium has scattered laminar white setae. **Embolus** arising from its disk ca. 1:00 forming a wide spiral that completes a circumference before ending into a thin tip. Embolar disk elevated over the distal haematodocha and rotated off the perpendicular axis of palp in retrolateral direction. Base of the embolus with a spur. Tegulum with a posterior bump pointing prolaterally, and with a folding that protects the embolus. RTA fingerlike. **Legs** 1>4>3>2. II-IV pale transparent yellow with distal areas of femora darker, especially in femora III and IV. Base of the joints darker forming rings. Legs I entirely black. Femur widened laterally and covered by purple iridescent integument, with a dorsal margin of bicolored long setae, black at the base and white at the tip. Patella golden red. Metatarsus entirely and densely covered by black setae except for boundary with metatarsus, which is covered by golden yellow setae. Metatarsus and tarsus dark yellow, darker than tarsi II-IV. **Abdomen** black with a faded dark medial stripe, inconspicuous in alive specimens except for a dark triangle over the anal tubercle. Abdomen entirely covered by reddish and white setae forming a mottled pattern. Anterior margin of abdomen covered by white setae. Prespiracular bump present.

*Female* (paratype; MXN-0766). Carapace length 1.9. Abdomen length 1.9. **Carapace** transparent amber and glabrous except for black ocular area. Area below PLE with a small horizontal patch of setae. **Clypeus** glabrous and transparent yellow. AME slightly encircled by pale yellow setae. **Chelicerae** smooth and reddish. **Epigyne** with copulatory openings originating at the anterior margin followed by sclerotized atria that form semicontinuous windows. Copulatory ducts looping anteriorly after the openings and descending vertically, forming a convoluted knot with two hitch-like knots before entering the teardrop shaped spermatheca. **Legs** reddish amber and transparent, fading into yellow from basal to proximal areas. **Abdomen** as in male except mora glabrous and less hirsute, highlighting the black colour of the integument and the black triangle over the anal tubercle, which has a margin of pale yellow integument.

**Additional material examined.** 1 females from MÉXICO: OAXACA: San Andres Chicahuaxtla, area III on slope facing south: 17.14909 °N, 97.83832 °W, 2249 m, 3 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@019 (1\$f).



**Figure 30.** *Mexigonus smite\_face*. Figures 1-7 male holotype MXN\_9133. 8-10 male paratype MXN-0766. 11-15 female paratype MXN-0766. 1-3 palp, embolus and RTA. 14-15 epigyna dorsal and ventral view.

***Mexigonus \$dalmata* sp. nov.**

(fig. 31; 1-12)

**Holotype.** Male from MÉXICO: JALISCO: San Sebastian del Oeste. Cerro de la Bufa, 20.7518 °N, 104.8328 °W, 1629 m, 28 Jun 2019, D. Guerrero, G. Contreras, G. Montiel, J. Martínez & D. Ble, CNAN-Ar011305.

**Paratypes.** 3 males, 1 females from MÉXICO: JALISCO: between San Sebastian and La Bufa: 20.7457 to 20.7474 °N, 104.8213 to 104.8221 °W, 1870 m, 7 Feb 2014, W. Maddison, H. Proctor, I. Navarro, WPM#14-011 (1\$m, 1\$f: \$f = JAL14-8726, \$m = JAL14-8723); JALISCO: San Sebastian del Oeste. Cerro de la Bufa: 20.7495 °N, 104.8284 °W, 1681 m, 28 Jun 2016, D. Guerrero (2\$m).

**Diagnosis.** Medium-small species with marked sexual dimorphism. Male is spotted with thick first legs and hirsute. Females are dark orange and somewhat transparent with a dark dorsal abdomen. The species is distinctive among *Mexigonus* by the lime-yellow coloured integument of the first legs (fig. 31; 6), which is unique among *Mexigonus*, the bluish patch of scattered setae covering the ocular region (fig. 31; 5, 7), the black spots at the prolateral face of femora and dorsal face of patella (fig. 31; 6), the ivory pink colour of the abdomen (fig. 31; 7), the lack of a prominent spur at the base of the embolus (fig. 31; 1-2) and the coiling pattern of the copulatory ducts (fig. 31; 11).

**Description.** *Male* (holotype). Carapace length 2.4. Abdomen length 2.3. **Carapace** black with the ocular area covered by bluish setae, and an anterior horizontal band of reddish setae. A band of white setae emerges over the PME passing below PLE and increasing their width as they extend into the thoracic area descending parallel to their counterpart towards the pedicel.

**Clypeus** dark covered by long bluish setae. AME encircled by short white setae. **Chelicerae**

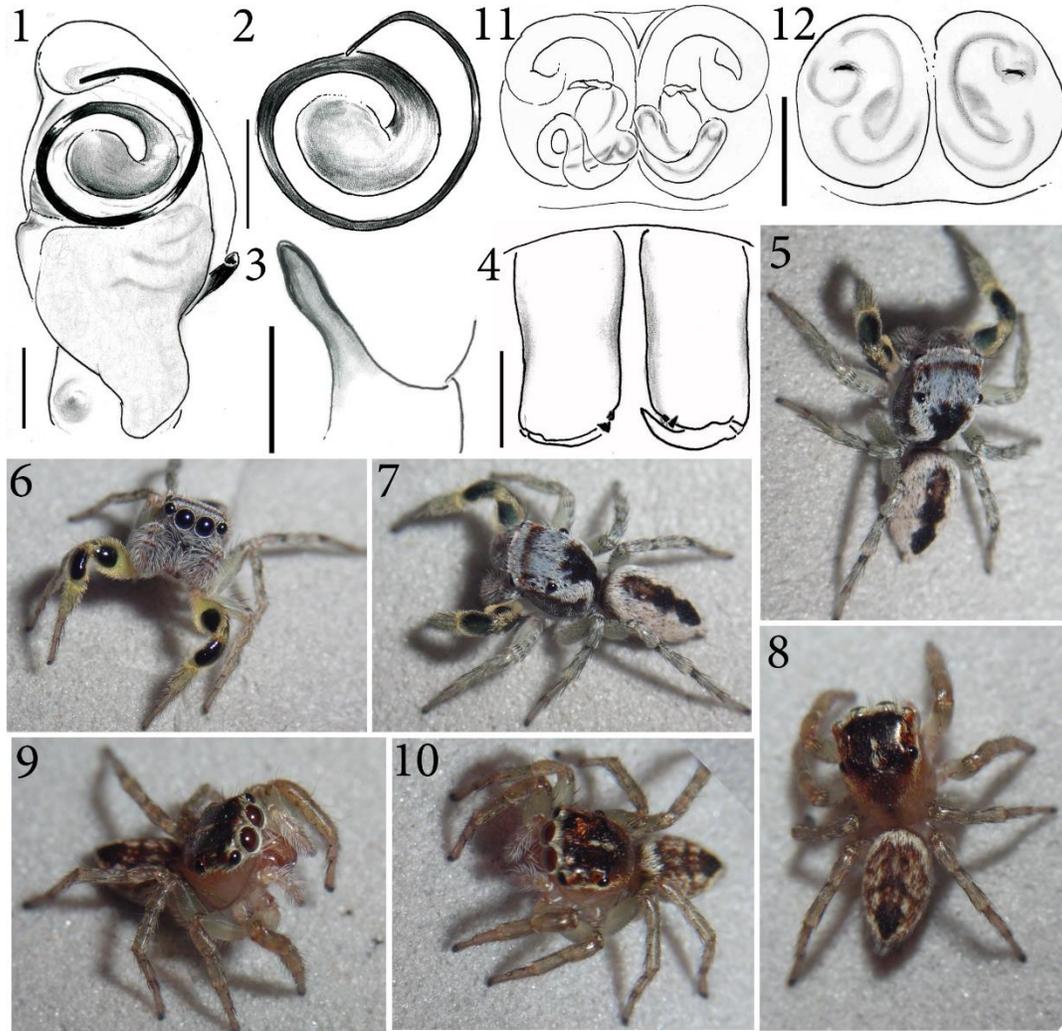
longer than wide, dark yellow and covered by long bluish setae. Promargin with two teeth. Retromargin with one tooth slightly bigger than the one in promargin. **Palp** with reddish integument and covered by bluish setae. **Embolus** arising from its disk ca. 3:00 forming a wide spiral that coils an entire circumference ending in a small tip pointing prolaterally. Disk elevated over the distal haematodocha and teardrop shaped. Tegulum with a posterior bump pointing prolaterally. RTA long and finger shaped bent at its distal end. **Legs** 1>4>3>2. II=IV transparent olive grey with joints dark spotted forming rings. Legs I with lime green integument. Femora I widened laterally exposing a distal iridescent purple spot, which also appears at the dorsal edge of the patella. Dorsal and ventral edges of femur-metatarsus covered in yellow setae. Metatarsus and tarsus as in legs II-IV. **Abdomen** with a dark medial band of irregular borders forming three rhomboid figures at the anterior, medial and posterior area of abdomen. Rest of the abdomen of a pink ivory colour.

*Female* in alcohol (paratype; JAL14-8726). Carapace length 2.4. Abdomen length 2.6.

**Carapace** yellow with ocular region black. **Clypeus** yellow. **Chelicerae** smooth and yellow.

**Epigyne** with copulatory openings located at the anterior margin of genital plate. Copulatory ducts looping anteriorly descending parallel to each other, turning away from the plate and forming a hitch-like knot before entering the teardrop primary spermatheca. **Legs** yellow.

**Abdomen** yellow and mottled black with dark medial band reduced to a dark triangle over the anal tubercle.



**Figure 31.** *Mexigonus salsomata*. Figures 1-4 male holotype, 5-7 male paratype JAL14-8723. 8-12 female paratype JAL14-8726. 1-3 palp, embolus and RTA. 11-12 epigyna dorsal and ventral view.

### ***albidus* group**

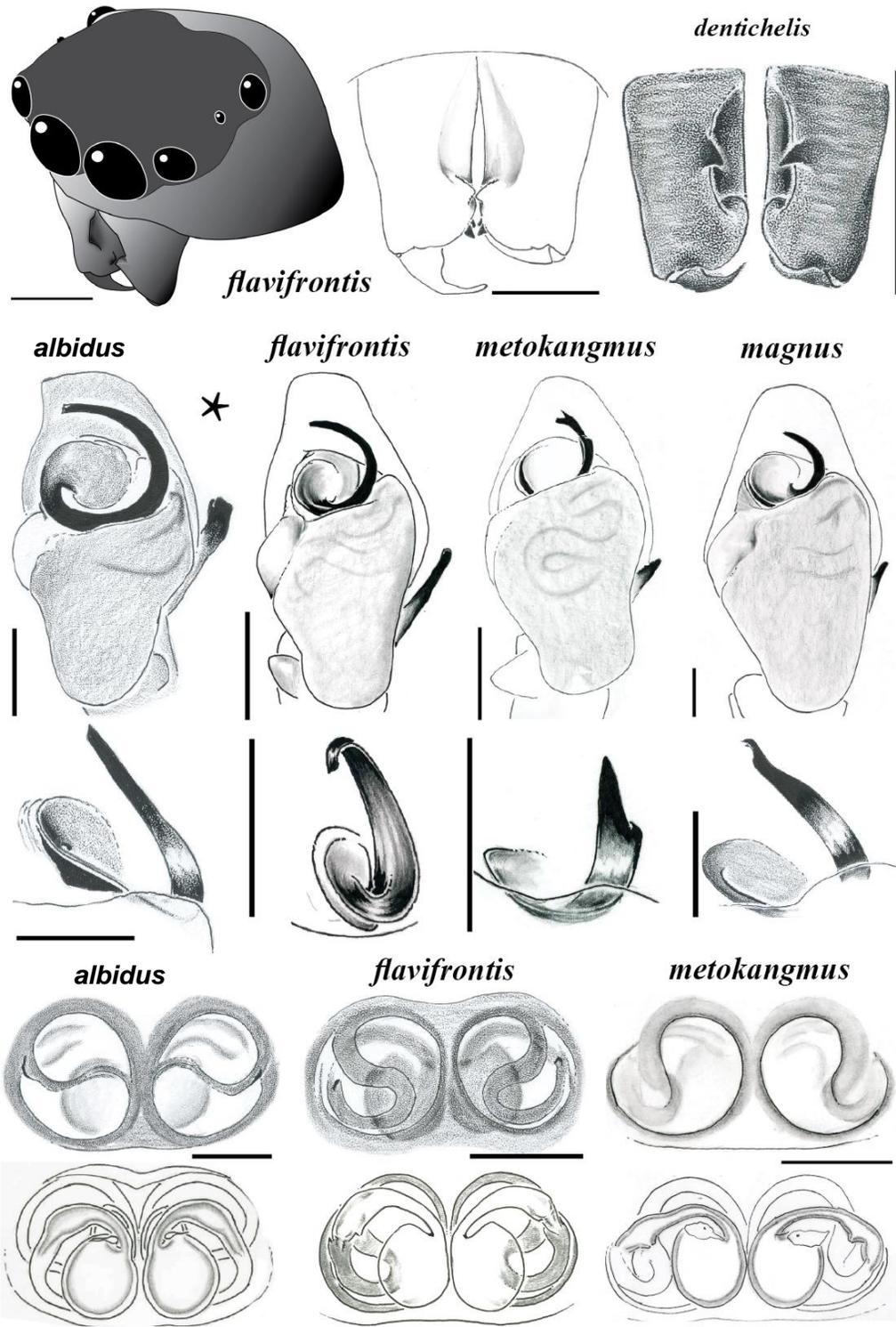
(fig. 32; map 5)

The species of *Mexigonus* in the *albidus* group probably represent most of the species that taxonomists over the years have considered Nearctic *Tylogonus* for the excavation in male chelicerae. This group with 10 species is primarily distributed over the Trans Mexican Volcanic Belt with some species reaching USA. *Mexigonus* in the *albidus* group seem to have preference for rocky walls protected from direct sunlight. Human settlements seem to have promoted the expansion of some species in this group including M. '*albidus*' (F.O.P. Cambridge, 1901) (Durán-Barrón et al., 2009; Desales-Lara et al., 2013; Maldonado-Carrizales & Ponce-Saavedra, 2017) from USA to Colombia and Ecuador. Other species live in oak-tree forests in cryptic habitats such as bark or suspended leaf litter. Species in the *albidus* group include small (ca. 3 mm) to big (ca. 1 cm) very hirsute spiders with ringed legs and cryptic colouration often represented by mottled patterns of brown and black patches (fig. 33; 11). There is very little sexual dimorphism relative to other groups, with the main male ornamentations seen mostly as patches of setae on the clypeus (fig. 39; 7).

**Diagnosis.** Species in this group can be identified by the brown and hirsute habitus in both male and females (fig. 33; 5, 8, 13), with a margin of pale brown setae outlining the ocular region passing below or through the PLE-PME and connecting to the AME (fig. 33; 8). The embolus is laminar and spiraled projecting half a circle leaning prolaterally and often widened and rotating dorsally (towards the viewer in the ventral view of the palp) looking wider at the tip (fig. 33; 1-2). The copulatory ducts are located at the outer medial margins of the genital plate near the lateral edge of the windows, sometimes distorting the shape of the atrial rims around them (fig. 32). The atria following the ducts often divide the windows into teardrop shaped subwindows. The

copulatory ducts are relatively short and arching while entering the spermathecae horizontally relative to the longitudinal axis of the plate (fig. 32).

Males are darker than females with the cephalic region outlined by a denser margin of pale setae passing between the secondary eyes. In some species these bands enlarge anteriorly forming triangular patches that diagonally connect with the AME and ALE. The chelicerae are deeply excavated, with the edges of the groove sometimes projecting outside of the paturon creating conical projections (e.g. *M. dentichelis*: fig. 38; 4). The first pair of legs are sometimes slightly darker and a bit longer than the rest with the tibia and patella slightly elongated but as slender as in the rest of the legs (fig. 38; 7). The dark dorsal abdominal band is wide anteriorly with an inverted vase shape ending in two dots at the middle of the abdomen and sometimes becoming discontinuous (fig. 35; 5). This pattern is somewhat shared with the *\$triste* group, but the abdomens are not elongated. The embolus arises from its disk ca. 7:00, it's wide and laminar reducing its width from basal to distal and sometimes showing medial constrictions like those seen in some species in the *\$matlizaha* group. Females are paler than males (fig. 33; 11), often missing the dark abdominal dorsal band, and the first legs are not very elongated. The copulatory ducts arch anteriorly and sometimes show widened chambers right after the openings that are long and not too bulky as to be considered secondary spermathecae (fig. 32). The primary spermathecae are big and spherical, covering ca. half the area of the genital plate (fig. 32).



**Fig. 32.** Morphological diversity in somatic and genital structures distinctive of the *albidus* morphological group.

***Mexigonus albidus* (F.O.P. Cambridge, 1902) comb. nov.**

(fig. 33; 1-17)

*Sidusa albida* F. O. Pickard-Cambridge, 1901a: 213, pl. 16, f. 9 (Df).

*Tylogonus minutus* Richman & Cutler, 1978: 101 (Sf).

*M. minutus* Edwards, 2003a: 70, f. 9-12. (female only).

**Holotype.** MÉXICO: Guerrero; Amula (\$f) (F.O.P. Cambridge, 1902).

Notes: Richman and Cutler (1978) synonymized *M. minutus* and *M. albidus*, and both taxa have been referred together as "*minutus*" in a few publications ever since (Durán-Barrón et al., 2009; Maldonado- Carrizales & Ponce-Saavedra, 2017). These aren't in fact synonyms. The holotype female of *albidus* matches females of the common widespread species seen as far north as Arizona, and often on houses (Durán-Barrón et al., 2009; Maldonado- Carrizales & Ponce-Saavedra, 2017). The males of that widespread species do not match Cambridge's male type of *minutus* (note difference in embolus). Thus, the common species, the one described here, is *albidus*. *M. minutus* is not well known, with only a single male from Guerrero collected so far.

**Notes on variation.** The specimens from Oaxaca and Chiapas have a darker black pigmentation than other individuals seen alive, in addition for the males lacking the patch of brownish setae covering the clypeus and paturon. The ventral view of the embolus and the dorsal view of the epigynum in these specimens is not more similar to one another than with specimens from other locations, so we consider these differences as variation. These darker specimens are deposited in the SEM-UBC museum under the label *M. black\_face*.

**Etymology.** Latin adjective in the first declension; *albidus* = white.

**Diagnosis.** Medium-small sized hirsute and cryptic spiders usually with two dark spots at the middle of the abdomen masked by the dark dorsal medial longitudinal band in the male abdomen. The species is distinctive by the embolus rotated ventrally exposing a wide laminar surface, making the embolus appear big from ventral view (fig. 33; 1-2), and a long and slender RTA ending in a bipartite flat surface (fig. 33; 3). In females the genital plate is divided in the middle by the atria, which invades the plate forming two drop-like sub-windows in an arrange similar to a 'yin-yan' (fig. 33; 16-17). Males have an abdomen bisected by a longitudinal band with the attachments to the ligaments of the heart pigmented forming two dark spots, whereas in the female this pattern is reduced to a triangular shape above the spinnerets (fig. 33; 8, 11); male chelicerae are excavated leaving a groove shaped as a vase (fig. 33; 4). The genitalia of *M. albidus* are among the most distinctive among *Mexigonus*. Other species share teardrop shaped sub windows dividing the genital plates like *M. \$river\_rock*, *M. \$yellow\_face*, *M. \$yeti* and *M. \$yuka*, but *M. albidus* and *M. \$yellow\_face* are the only species where the division produces sub windows of roughly the same size. It differs from *M. \$yellow\_face* in the long and laminar embolus, a shorter RTA and the face discretely covered in brown, not white setae.

**Description.** *Male* (MX17-2792). Carapace length 2.0. Abdomen length 2.1. **Carapace** dark and hirsute, covered by a mix of white to brown. Ocular area with a margin of white setae between the PME, passing over ALE and merging to the dorsal side of the ring of setae surrounding the AME. **Clypeus** dark and covered by long brown setae that cover the base of the chelicera. AME with a thin margin of white setae. **Chelicerae** dark brown and deeply excavated leaving a vase shaped groove. Promargin with two teeth. Retromargin with one simple tooth. **Palp** dark covered by pale brown setae from distal portion of femora to tibia. Tibia with a lateral patch of long pale brown setae. Cymbium black. **Embolus** arising from its disk ca. 9:00 and rotated ventrally exposing the wide surface of the embolus, forming a wide spiral. Embolar disk and embolus

separated by a deep groove. RTA long with a bipartite tip. **Legs** amber red fading into dark yellow from proximal to distal segments and from anterior to posterior legs, especially on tibiae. Femora and patella hirsute by pale brown setae except on the dorsal side of tibia to tarsus. Base of the joints black spotted creating ringed legs. **Abdomen** hirsute by pale and dark brown setae reducing the contrast between the dark medial band and the rest of the abdomen. Dark dorsal medial band discontinuous, broad anteriorly ending into two dark medial spots and reappearing as a dark triangle over the anal tubercle.

*Female* (MXN-3172). Carapace length 2.0. Abdomen length 2.3. **Carapace** is more uniformly hirsute than in male. **Clypeus** covered by pale brown setae. AME encircled by a ring of white setae. **Chelicerae** smooth and covered by pale brown setae. **Epigyne** with copulatory ducts emerging at the external medial side of the plate. Atria bisecting each side of the plate into two teardrop shaped subwindows forming a "'yin-yan' shape. Copulatory ducts slightly widened following the openings, arching anteriorly before entering the big primary spermatheca from above. **Legs** as in male except all legs have the same tonality of pale yellow.

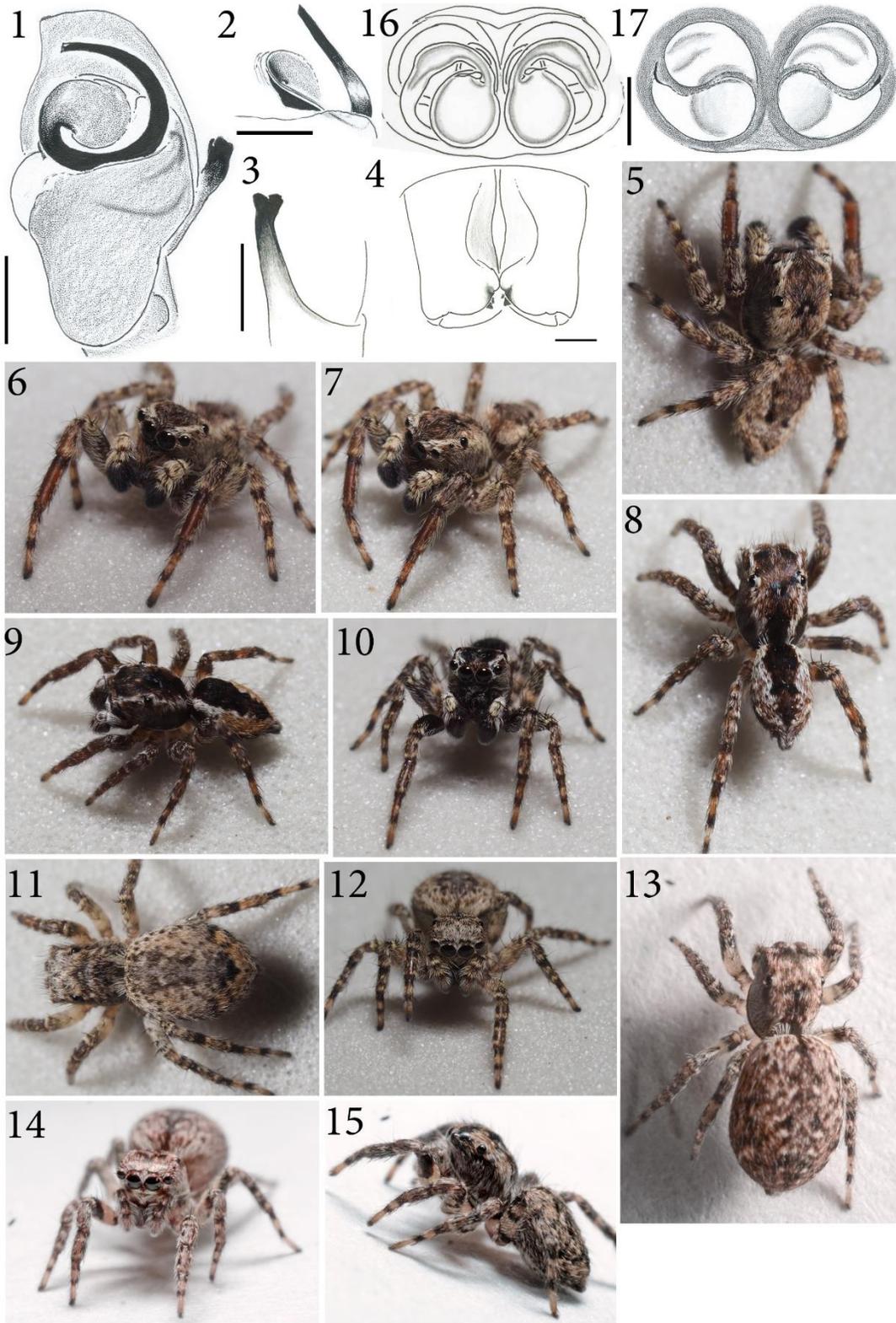
**Habitat:** the species has preference for rocky walls protected from direct sunlight. Human settlements seem to have promoted the expansion of the species (Durán-Barrón et al., 2009; Maldonado-Carrizales & Ponce-Saavedra, 2017). Other species live in oak-tree forests in cryptic habitats such as bark or suspended leaf litter.

**Taxonomic notes:** Three syntypes of *Corythalia nigropicta* labelled as *Sidusa vittata* in the NHM belong to *M. albidus*. The name bearer of *S. vittata* wasn't revisited, so the species couldn't be taken as a synonym of *M. albidus*.

**Distribution:** The known distribution includes the TMVB, SCH and SMS. The distribution *sensu lato* goes from USA to Colombia.

**Material examined.** 20 males, 35 females, 11 juveniles from MÉXICO: CHIAPAS: Tzisco: 16.0839 °N, 91.6716 °W, 1480 m, 14 Jul 2017, Ł. Trębicki, W. Maddison, U. Garcilazo, WPM#17-041 (1\$m, 4\$f, 1\$j); CHIAPAS: San Cristobal de las Casas, ECOSUR: 16.707 °N, 92.616 °W, 2090 m, 15 Jul 2017, Ł. Trębicki & U. Garcilazo Cruz, WPM#17-048 (5\$m, 3\$f, 1\$j: \$f = MX17-2814, \$m = MX17-2802, \$m = MX17-2792); PUEBLA: 19 km SE of Tehuizingo on HWY 190, microwave station near El Papayo: 18.22 °N, 98.18 °W, 1219 m, 7 Aug 1983, W. Maddison & I. Neo, WPM#83-145 (1\$f); PUEBLA: Nicolas Bravo II: 18.6277683 °N, 97.298393 °W, 2748 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@032 (2\$f: \$f = MXN-3172, \$f = MXN\_3115); SAN LUIS POTOSI: Charcas: 7 Jul 1984, Jul 1934, 7 Mar 1974, 1934, unknown collector, A.M. Chickering? (4\$m, 2\$f, 2\$j); MORELOS: Municipio Huitzilac, Barrio de la Cruz: 19.004 to 19.007 °N, 99.228 to 99.232 °W, 2250 m, 2 Aug 2014, W. Maddison, WPM#14-071 (\$m = NA14-2120); MICHOACAN: Morelia, Cuanajillo, El Aguila: 19.647 to 19.645 °N, 101.339 to 101.349 °W, 2150 m, 29 Jul 2014, W. Maddison, Ruiz et al., WPM#14-064 (\$f = NA14-1660); MICHOACAN: Morelia, Universidad Michoacana San Nicolas de Hidalgo: 19.689 °N, 101.208 °W, 1907 m, 28 Jul 2014, W. Maddison, Ruiz et al., WPM#14-062 (1\$f); 19.689 °N, 101.204 °W, 1911 m, 30-31 Jul 2014, W. Maddison, Ruiz et al., WPM#14-065 (1\$f); MEXICO CITY: UNAM, Pedregal de San Angel, REPSA: 19.317 to 19.318 °N, 99.192 to 99.195 °W, 2322-2327 m, 4 Aug 2014, W. Maddison, Ruiz et al., WPM#14-072 (1\$m, 2\$f: \$f = NA14-2166, \$f = NA14-2228, \$m = NA14-2221); MEXICO CITY: Jardin Botanico REPSA UNAM: 19.31875 °N, 99.19473 °W, 2327 m, 5 Aug 2019, E. Mikkelsen, U. Garcilazo, A. Galan-Sanchez, GCU/19@023 (1\$m, 6\$f: \$f = MXN\_9374, \$f = MXN\_9394, \$m = MXN\_9323); MEXICO CITY: REPSA Nucleo Oriente: 19.31284 °N, 99.19416 °W, 2332 m, 7 Aug 2019, E. Mikkelsen, U. Garcilazo, A. Galan-Sanchez, GCU/19@025 (1\$m, 3\$j); MEXICO CITY: Jardin Botanico II REPSA UNAM: 19.31285 °N, 99.19646 °W, 2347 m, 7 Aug 2019, E. Mikkelsen, U. Garcilazo, A. Galan-Sanchez, GCU/19@024 (1\$f, 2\$j); MEXICO CITY: Coyoacán. REPSA: 19.317294 °N, 99.316619 °W,

3097 m, 14 Aug 2019, D. Guerrero & M. Vargas, D. Guerrero, A. Carlos & M. Vargas, CNAN-Ar0011307 (3\$m, 2\$f); MEXICO CITY: Coyoacán. REPSA Jardín Botánico: 19.317294 °N, 99.316619 °W, 3097 m, 14 Aug 2019, 2 Oct 2018, D. Guerrero & M. Vargas, D. Guerrero, J. Arreguín, A. Carlos & K. Hernández, CNAN-Ar011302 (1\$m, 1\$f); VERACRUZ: Jesus Maria Acatla, Xocotla: 19.18443 °N, 97.13235 °W, 2206 m, 19 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@048 (1\$m, 1\$j: \$m = MXN\_3503, \$j = MXN-3491); VERACRUZ: Road to Perote II: 19.60431 °N, 97.38354 °W, 2573 m, 25 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@061 (\$f = MX2\_6758); OAXACA: Monte Alban, top at pine patches: 17.05254 °N, 96.76371 °W, 1866 m, 29 Jul 2019, E. Mikkelsen & U. Garcilazo, GCU/19@011 (1\$f, 1\$j); JALISCO: Tala. Bosque de la Primavera, Río el salado: 2019 m, 24 Jun 2019, D. Guerrero, G. Contreras, G. Montiel, J. Martínez & D. Ble, CNAN-Ar 011308 (1\$f); GUANAJUATO: Xichu: 30 May 1999, J.L. Castelo & W. Maddison (1\$f).U.S.A: ARIZONA: Santa Cruz Co., Santa Rita Mts., Madera Canyon, nr. Bog Springs Cmpgd: 1524 m, 8 Aug 1956, V. Roth (1\$m, 1\$f).U.S.A.: ARIZONA: Pima Co., Santa Catalina Mts, General Hitchcock Campground on Catalina Hwy from Tucson to Mt Lemmon: 20 Jun 1985, W. Maddison, WPM#85-064 (1\$f); ARIZONA: Santa Cruz Co., Madera Canyon, Santa Rita Lodge: 31.725 °N, 110.881 °W, 643 m, 9 Aug 2013, 20-21 Aug 2013, H. Proctor, S.C. Evans, WPM#13-059 WPM#13-091 (2\$f: \$f = AZS13-7431).



**Figure 33.** *Mexigonus albidus*. Figures 1-7 male MX17-2792. 8-10 male MX17-0290. 11-12 female MX17-2814. 13-15 female MXN-3172. 1-3 palp, embolus and RTA. 4 chelicerae. 16-17 epigyna dorsal and ventral view.

***Mexigonus arizonensis* (Banks, 1904)**

(fig. 34; 1-10)

*Sidusa arizonensis* Banks, 1904a: 116, f. 9 (Df).

*Habrocestum belli* Gertsch, 1935a: 30, f. 38-39 (Dm).

*Tylogonus arizonensis* Richman & Cutler, 1978: 101 (Tf from *Sidusa*, Sm).

*Tylogonus arizonensis* Richman, 1981: 197, f. 1 (m).

*Mexigonus arizonensis* Edwards, 2003a: 70 (Tmf from *Tylogonus*).

*Mexigonus arizonensis* Zhang & Maddison, 2015: 59, f. 250-256 (mf).

**Holotype.** female from USA: Arizona: Townsend (Banks, 1904).

**Etymology.** Name given after the type locality of the species.

**Diagnosis.** Medium sized cryptic and very hirsute species with males having long thick legs and females are pale brown. The species is distinctive by the strongly serrated finger-like RTA (fig. 34; 3), the open spiral of the embolus while maintaining a laminar shape (fig. 34; 1-2), palps completely covered in white setae (fig. 34; 7), horizontal fringe of white setae covering the clypeus and an abdomen with a pectinated dorsal medial band (fig. 34; 5, 8). Other species morphologically similar are *M. neglectus*, *M. lynx* and *M. dentichelis*. The body shape is hirsute but not as hairy as in *M. neglectus*, especially on the abdomen where the setae are

parallel to the longitudinal axis of the abdomen making it look smooth and white rather than olive green and velvety as in *M. neglectus*. The hirsute appearance is like *M. \$dentichelis* but the legs are messier looking and without a strong contrast produced by patches of pale setae over pale integument. The palp in *M. \$arizonensis* is entirely covered by white setae unlike *M. \$dentichelis*. The embolus is laminar, narrow and slightly reduces its width towards the tip as in *M. neglectus*, but the laminar face of the tip is not rotated dorsally. The RTA is serrated in the three species but the pattern of deep indentations are found only on *M. \$arizonensis* and *M. neglectus*.

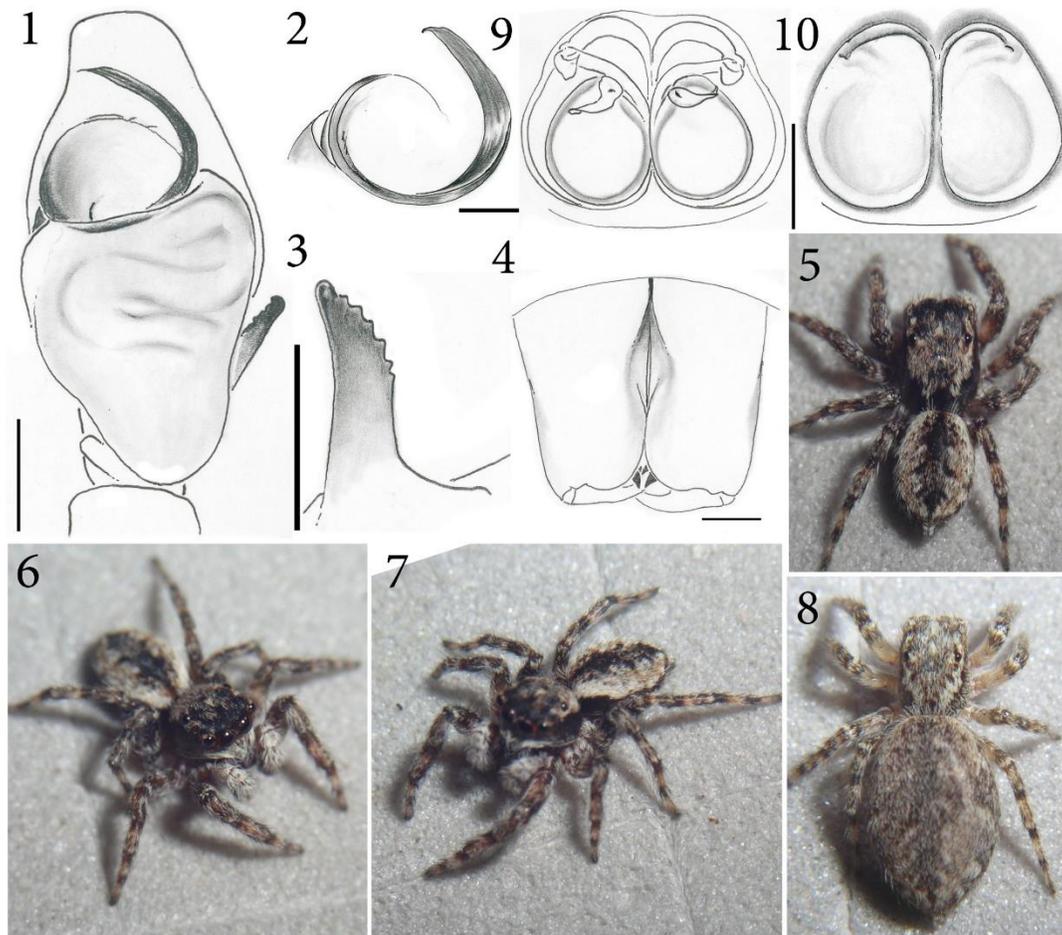
**Description.** *Male* (AZS13-7514). Carapace length 1.9. Abdomen length 2.0. **Carapace** black and hirsute. Ocular region covered in pale brown setae and outlined by a margin of cream yellow setae between the ALE-PME-PLE and extending beyond behind the PLE besides the fovea while increasing its width, then descending running parallel from their counterpart and merging at the posterior margin of the carapace. **Clypeus** black and densely covered in whitish brown setae. AME encircled by a margin of reddish brown setae. **Chelicerae** dark brown and slightly covered by scattered white setae. Narrowly excavated. Promargin with two teeth. Retromargin with one simple tooth. Palp densely covered in pale brown and whitish setae. **Embolus** arising from its disk ca. 7:00 forming a spiral arching prolaterally while maintaining a constant width before ending into a triangular shape with an acute tip. RTA fingerlike and dorsally serrated ending into a bump bent dorsally. **Legs** 1>4>3>2. brown with joints black producing a ringed pattern. Hirsute by pale brown setae, especially dense at the prolateral margin of patella I and lateral faces of femora. **Abdomen** with a dorsal medial band irregular and discontinuous represented at the anterior half by a mottled pattern outlined by a margin of pale white brown setae, two spots in the middle of the abdomen and a dark triangle over the anal tubercle surrounded by brown setae.

*Female* (AZ09-7380). Carapace length 2.4. Abdomen length 3.2. **Carapace** black and hirsute. Ocular region entirely covered by hairy-looking yellow brown pale setae, outlined by a margin of reddish brown setae between ALE-PME-PLE and extending behind the PLE descending the thoracic region parallel from its counterpart. **Clypeus** dark brown and slightly covered in scattered pale brown setae. **Chelicerae** dark brown with the base of the paturon covered in scattered pale brown setae. **Epigyne** with openings located at the anterior medial-external margin of the plate, followed by the atria from the inner margin delimiting the walls of the cuticular windows. Ducts are thin and bent dorsally right after the openings forming small "pockets" and descending diagonally and horizontally towards their counterpart before entering the big spermatheca from the inner side. **Legs** reddish brown with joints black and hirsute, with distal parts of segments covered in a horizontal patch of pale brown setae, creating in combination with the dark joints a ringed pattern. **Abdomen** dark brown and mottled by a combination of yellow cream brown setae over a black integument. Dorsal dark medial band narrow covered in black setae and ending into a dark triangle over the anal tubercle. Band covered by pale brown setae gradually increasing in density until forming the outline of the band.

**Notes on female specimen.** The photovoucher tag used to identify the specimen is 7379. However, the images catalog of the second author shows this specimen as AZ09-7380.

**Material examined.** 15 males, 8 females, 2 juveniles from U.S.A: ARIZONA: Pima Co. Bear Canyon, Catalinas: (1\$m); ARIZONA: Coconino Co., Sedona: 1966 (1\$m); ARIZONA: Navajo Co.: Show Low: 2000 m, 1964, W. Eberhard (1\$m); ARIZONA: Santa Cruz Co., Santa Rita Mnts., Madera Canyon: 0 m, 1998 (1\$m); ARIZONA: Cochise Co., Huachuca Mnts., Miller Canyon: 31.416 °N, 110.276 °W, 1750 m, 14 Aug 2013, W. Maddison, Proctor, S.C. Evans & L. Robert, WPM#013-075 (\$m = AZS13-7514); ARIZONA: Santa Cruz Co., Santa Rita Mnts., Madera Canyon, Santa Rita lodge: 31.725 °N, 110.881 °W, 643 m, 2013, S. C. Evans, WPM#013-091 (1\$m, 1\$f); ARIZONA: Graham Co., Galiuro Mtns, North Ash Creek: 1400 m, 17

Aug 1982, D. Maddison (1\$m, 1\$f); COLORADO: El paso Co., Colorado Springs: 1945, R. Gregg (1\$f); COLORADO: Gunnison Co. 5 mi S of Gunnison Gold Basin Rd: 2438 m, 1959, H&L. Levi (1\$m); COLORADO: Las Animas Co. Weston, 7800: 1979, B. Ellinger (1\$m); COLORADO: Las Animas Co.: 2377 m, 1979, B. Ellinger (1\$m); NEW MEXICO: Sandoval Co., Sandia Man cave trail. Las Huertas Creek Canyon. Bernalillo Co.: 2438 m, 1971 (1\$m). U.S.A.: ARIZONA: Pima Co., Santa Catalina Mountains, San Pedro Vista: 32.399 °N, 110.69 °W, 2240 m, W. & D. Maddison, WPM#09-008 (\$f = AZ09-7397); ARIZONA: Santa Cruz Co., Madera Canyon: 31.707 °N, 111.878 °W, 1780 m, 2009, W. Maddison, WPM#09-013 (1\$m, 1\$f, 1\$j); ARIZONA: Santa Cruz Co., Santa Rita Mts., Madera Canyon, Roundup Picnic Area: 16 Sep 1990, W. Maddison, WPM#90-003 (1\$m, 1\$j); ARIZONA: Santa Cruz Co., Santa Rita Mts., Mt. Hopkins summit: 31.69 °N, 110.88 °W, 8500 m, 23 Jul 1993, W. Maddison & M.C. Hedin, WPM#93-076 (2\$f); ARIZONA: Graham Co., E side of Pinaleño Mts., Wet Canyon Picnic area on HWY 366: 1920 m, 1992, W. Maddison, WPM#92-061 (1\$m); ARIZONA: Cochise Co., Huachuca Mts., Carr Peak: 8000 m, 8 Aug 1993, W. Maddison, WPM#93-111 (1\$f); NEW MEXICO: Grant Co., Lake Roberts: 33.03 °N, 108.157 °W, 10 Aug 1997, W. Maddison & M.C. Hedin, WPM#97-029 (1\$m).



**Figure 34.** *Mexigonus sarizonensis*. Figures 1-7 male AZS13-7514. 8 female AZ09-7380. 1-3 palp, embolus and RTA. 4 chelicerae. 9-10 epigyna dorsal and ventral view.

***Mexigonus \$stripe\_wall* sp. nov.**

(fig. 35; 1-15)

**Holotype.** Male from MÉXICO: OAXACA: Santa Catarina Lachatao, 17.269 °N, 96.473 °W, 2090 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, R. Paredes, WPM#17-012, (\$m = MX17-0107).

**Paratypes.** 1 males, 2 females from MÉXICO: OAXACA: Ixtlán de Juárez, Universidad de la Sierra Juárez: 17.313 °N, 96.486 °W, 1950 m, 1-2 Jul 2017, Ł. Trębicki, W. Maddison, A. Casasola, WPM#17-014 (1\$m, 1\$f: \$f = MX17-0667, \$m = MX17-0650); CHIAPAS: Tziscoo: 16.0839 °N, 91.6716 °W, 1480 m, 14 Jul 2017, Ł. Trębicki, W. Maddison, U. Garcilazo, WPM#17-041 (\$f = MX17-2317).

**Diagnosis.** A medium-small sized cryptic and hirsute species where males have slightly longer and wider first legs than the rest of the legs and females a mottled brown abdomen. The species is distinctive among other *Mexigonus* by the short embolus reducing its size while maintaining a laminar shape suddenly constricted forming a fin (fig. 35; 1-2) and the shape of the atria in the female genital plate, which seems to get wider at the external edges leaving a single drop-like window (fig. 35; 15). Other species similar in the genitalia are *M. \$yellow\_face* and *M. \$yeti*. It differs from *\$yellow\_face* on the darkness of the face and the margin over the anterior eyes entering diagonally from above the lateral eyes. It differs from *M. \$yeti* by the lack of orange setae on the ocular region and densely covered first legs. The species is very similar in habitus and hard to separate from *M. albidus* by the body alone. The clypeus of *M. albidus* is often brown but there seems to have much variation to be a reliable character to separate from this species.

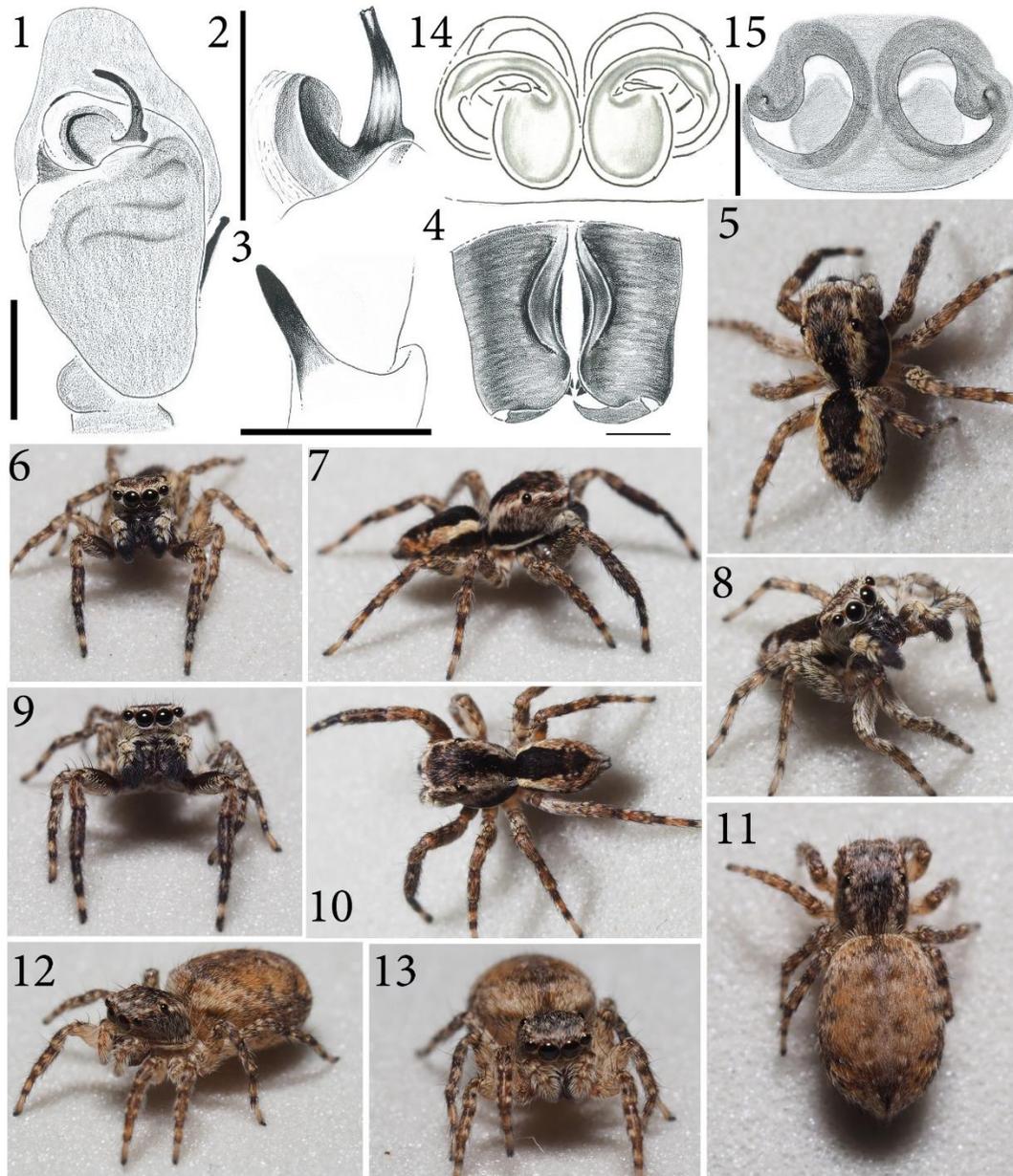
**Description.** *Male* (holotype). Carapace length 1.9. Abdomen length 1.7. **Carapace** dark and moderately hirsute, with the ocular area covered by a mix of white to brown setae. Ocular area

with a margin of white setae between the PME, passing across and over ALE and merging with the dorsal side of the ring of setae surrounding the AME. **Clypeus** dark and glabrous surrounded by pale brown setae on the cheeks. AME with a ring of white setae that extend into the ALE forming a semi continuous mask. **Chelicerae** black and deeply excavated forming a vase shaped groove. Promargin with two teeth fused at the base. Retromargin with one simple tooth. Palp dark covered with pale brown setae from distal part of femora to tibiae, with a small patch extending into the cymbium. A lateral patch of setae covers the retromargin of tibiae. Cymbium black. **Embolus** arising from its disk ca. 3:00 in left palp forming a short spiral with a spur at the middle close to the tegular shoulder. Embolar disk is small relative to the distal haematodocha. RTA fingerlike. **Legs** I dark brown except for a pale yellow tarsus and patella. Hirsute at the dorsal surface of all segments, especially at the distal end, by pale yellow setae. **Legs** II-IV as in legs I except the integument is uniform pale yellow, exposing dark spots at the base of the joints of each segment, forming a ringed pattern. **Abdomen** hirsute. Dorsal dark medial band with an anterior inverted vase shape, discontinuous and emerging at the posterior margin of abdomen as a dark triangle over the anal tubercle. Rest of abdomen covered in pale to dark brown setae.

*Female* (paratype; MX17-0667). Carapace length 1.9. Abdomen length 2.7. **Carapace** hirsute covered by scattered pale and dark brown setae. **Clypeus** covered by a narrow horizontal line of long pale yellow setae extending into the chelicerae. **Chelicerae** smooth and dark brown. **Epigyne** with copulatory openings located at the external medial side of the genital plate forming a single teardrop shaped window. The atrium is especially thick at the anterior margin of the openings. Copulatory ducts widening slightly after the openings and arching upwards before descending into the big spherical spermatheca. **Legs** as in male except integument is pale pink-ivory fading into transparent pink from distal to proximal segments. **Abdomen** pink-ivory

covered by short pale yellow setae and mottled by black patches of integument. Dark dorsal medial band visible only as a dark triangle at the distal end over the anal tubercle.

**Additional material examined.** 6 males, 1 females from MÉXICO: OAXACA: Ixtlán de Juárez, Universidad de la Sierra Juárez: 17.313 °N, 96.486 °W, 1950 m, 1-2 Jul 2017, Ł. Trębicki, W. Maddison, A. Casasola, WPM#17-014 (6\$m, 1\$f: \$m = MX17-0656).



**Figure 35.** *Mexigonus stripe\_wall*. Figures 1-7 male holotype MX17-0107. 8-10 male paratype MX17-0650. 11-15 female paratype MX17-0667. 1-3 palp, embolus and RTA. 14-15 epigyna dorsal and ventral view.

***Mexigonus \$river\_rock* sp. nov.**

(fig. 36; 1-15)

**Holotype.** Male from MÉXICO: MÉXICO: Coyoltepec, 19.0703 °N, 99.3876 °W, 2800 m, 2 Aug 2014, W. Maddison, WPM#14-068, (\$m = NA14-1939).

**Paratypes.** 2 males, 2 females from MÉXICO: MÉXICO: Coyoltepec: 19.0703 °N, 99.3876 °W, 2800 m, 2 Aug 2014, W. Maddison, WPM#14-068 (\$f = NA14-1945); MEXICO CITY: UNAM, Pedregal de San Angel, REPSA: 19.317 to 19.318 °N, 99.192 to 99.195 °W, 2322-2327 m, 4 Aug 2014, W. Maddison, Ruiz et al., WPM#14-072 (2\$m: \$m = NA14-2162, \$m = NA14-2225); MORELOS: Municipio Huitzilac, Barrio de la Cruz: 19.004 to 19.007 °N, 99.228 to 99.232 °W, 2250 m, 2 Aug 2014, W. Maddison, WPM#14-071 (\$f = NA14-2123).

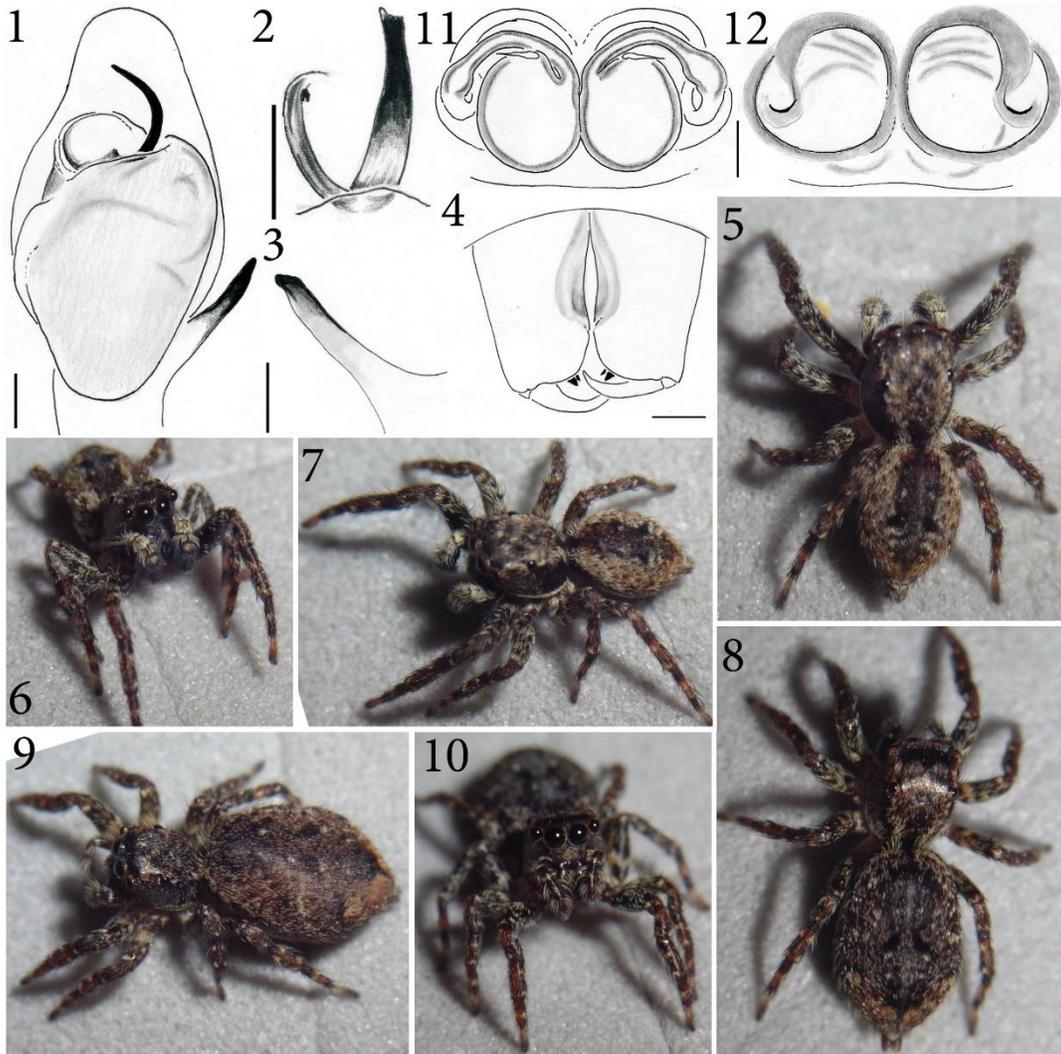
**Diagnosis.** A medium-small sized dark hirsute and cryptic species. This species is distinctive among other *Mexigonus* species by the shape and length of the embolus reducing its width ending into a small tip (fig. 36; 1-2), whereas in females the genital plate has small lateral grooves and the copulatory ducts are slightly widened following the openings (fig. 36; 11-12). The species is very similar to *M. \$stripe\_wall* in the habitus and general shape of genitalia, but the embolus of *M. \$river\_rock* lacks the deep medial constriction seen in *M. \$stripe\_wall*, the RTA is long and thin with a square tip instead of fingerlike shaped and the copulatory ducts have bigger and more spherical spermathecae whereas the atria are not as sclerotized.

**Description.** *Male* (holotype). Carapace length 2.1. Abdomen length 2.2. **Carapace** black and hirsute, covered with random patches of white setae. Margins of carapace with a line of white setae. **Clypeus** black and glabrous. AME with a thin margin of reddish setae. **Chelicerae** dark and glabrous. Deeply excavated leaving a vase shaped groove. Promargin with two teeth. Retromargin with one simple tooth. **Palp** black covered by pale yellow setae from the distal part

of femur to tibia. Tibia with a retromarginal patch of messy looking setae. Cymbium black with base covered by pale setae. **Embolus** arising from its disk ca. 6:00 arching prolaterally forming a shallow spiral. RTA long and fingerlike shaped, with its tip bent ventrally. Legs 1>4>3>2. Dark red at the distal part of metatarsus and tarsus, and dark brown otherwise, especially in legs I. Hirsute by pale yellow setae covering most of the dorsal and lateral sides of segments (less in femora), with small patches concentrated at the distal end of segments and medial side of tibia. **Abdomen** with a dark medial dorsal band semi continuous with irregular borders, slightly reducing its size ending in a triangle over the anal tubercle. Middle of abdomen with two dark dots. Medial band surrounded by pale whitish setae covering the rest of the dorsal side of the tagma. Prespiracular bump present.

*Female* (paratype; NA14-9622). Carapace length 2.3. Abdomen length 3.8. **Carapace** as in male except less hirsute. **Clypeus** dark and glabrous. **Chelicerae** smooth and dark. **Epigyne** with openings located at the external medial margin of epigyne. Atrium enters the windows anteriorly suddenly inverting direction forming "pockets". Ducts slightly widened following the openings and arching anteriorly before entering the big spherical spermathecae. **Abdomen** as in male except the dark medial band is faded against the dark dorsal side of abdomen.

**Additional material examined.** 2 males, 8 females from MÉXICO: HIDALGO: Pachuca: (1\$); MICHOACAN: tancitaro: 1981 m, Jul 1941, Aug 1940, unknown collector, H. Hoogstraal (3\$f); MÉXICO: Coyoltepec: 19.0703 °N, 99.3876 °W, 2800 m, 2 Aug 2014, W. Maddison, WPM#14-068 (1\$f); MORELOS: Municipio Huitzilac, Barrio de la Cruz: 19.004 to 19.007 °N, 99.228 to 99.232 °W, 2250 m, 2 Aug 2014, W. Maddison, WPM#14-071 (2\$m, 1\$f); MEXICO CITY: Jardin Botanico REPSA UNAM: 19.31875 °N, 99.19473 °W, 2327 m, 5 Aug 2019, E. Mikkelsen, U. Garcilazo, A. Galan-Sanchez, GCU/19@023 (1\$f); STATE OF MEXICO: Coatepec Harinas. Meyuca de Morelos, Cerro de las Huacas: 18.8525 °N, 99.7584 °W, 1929 m, 15 Aug 2019, D. Guerrero, M. Vargas & R. Miranda, CNAN-Ar0011306 (1\$f).



**Figure 36.** *Mexigonus \$river\_rock*. Figures 1-7 male holotype NA14-1939. 8-12 female paratype JAL14-9622. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus dentichelis* (F.O.P. Cambridge, 1901)**

(fig.37; 1-12)

*Sidusa dentichelis* F. O. Pickard-Cambridge, 1901a: 212, pl. 15, f. 13 (Dm).

*Tylogonus dentichelis* Simon, 1903a: 790, 801.

*Mexigonus dentichelis* Edwards, 2003a: 70 (Tm from *Tylogonus*).

**Etymology.** Name given by the combination of the Latin noun *dentis* = teeth and the Greek noun *khele* = claw, Latinised in the genitive singular of the third declension as *chelis* = of the claw. *dent-i-chelis* = teeth of the claw. Species was named by F.O.P. Cambridge based on the big projections at the inner margin of the paturon of males.

**Diagnosis.** A medium-big sized smoothly hirsute and whitish species distinctive among *Mexigonus* by the projection in the inner margin of the chelicerae forming a tooth (fig.37; 4) and the shape of the 'fin' like constriction at the middle of the laminar embolus (fig.37; 1-2). The male abdominal dark dorsal band is also irregular over its entire length with projections forming small diverticula giving the band a pectinate appearance (fig.37; 5), whereas the ventral side of the first femora are covered by whitish setae while the prolateral and retrolateral margins of segment are glabrous (fig.37; 6-7). the RTA is semi-triangular and serrated on its dorsal margin (fig.37; 3) as in *M. neglectus*, and the copulatory ducts after the openings are invaginated forming 'pockets' (fig.37; 11).

**Description.** *Male* (MX17-0673). Carapace length 2.7. Abdomen length 1.3. **Carapace** dark brown with anterior cephalic area entirely covered by a mix of white and reddish setae, especially above the AME and ALE where it forms a narrow white margin. Two parallel stripes of cream white setae descend parallel to each other from behind PLE to pedicel. **Clypeus** with

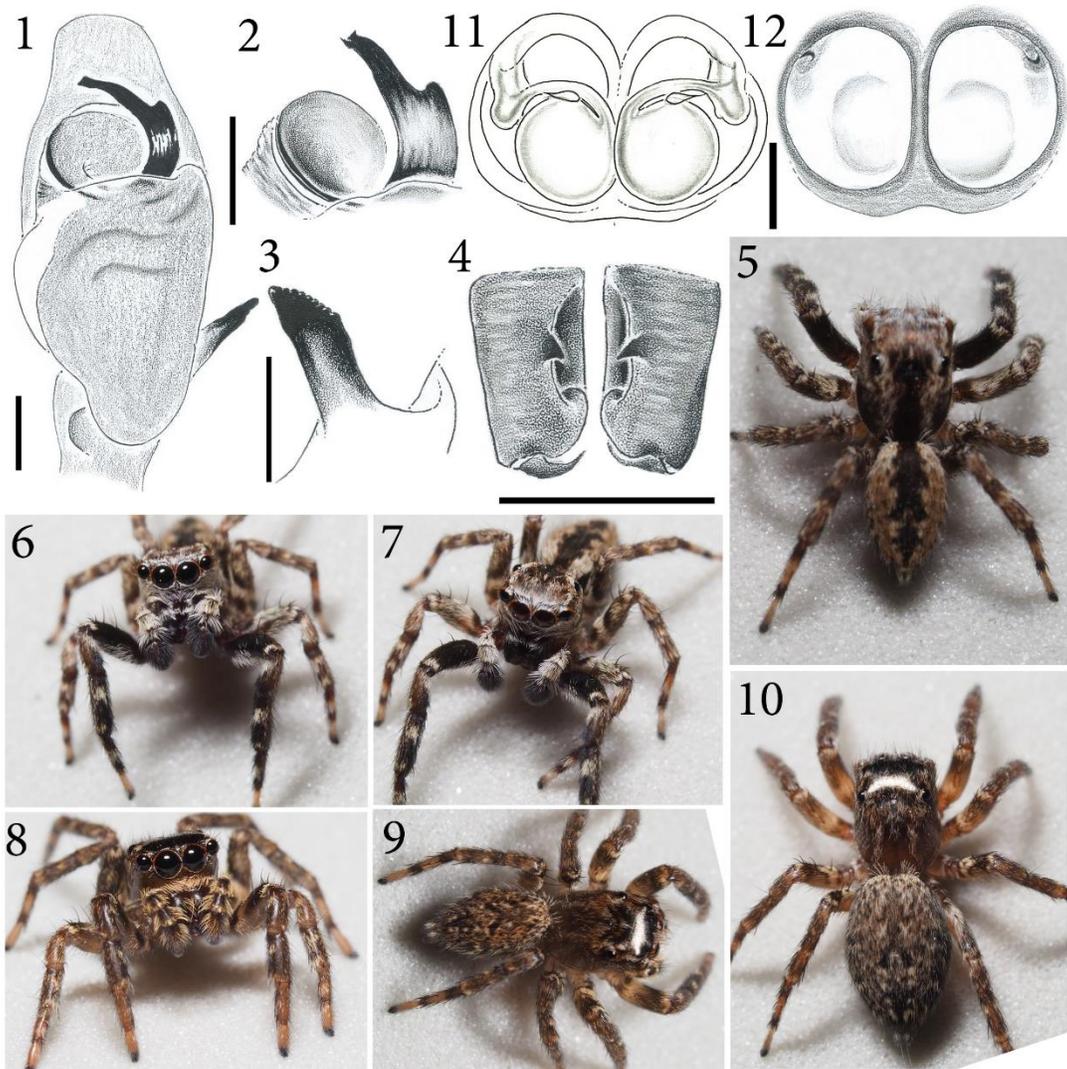
dark integument but entirely covered by long white setae and surrounded by pale yellow setae on the sides. AME encircled by a bicolored ring of setae: white at the top and bottom, and red on the sides. Red seta extending into other eyes forming a semicontinuous mask. **Chelicerae** dark with a patch of white setae covering the basal portion of paturon. Deeply excavated leaving a big groove. Medial margin of the groove with a projection of integument forming a tooth. Promargin with two teeth. Retromargin with one simple tooth. **Palp** dark covered by white to yellow setae from distal part of femur to tibia. Setae on the tibia are irregular in orientation and longer forming a bristle at the retrolateral side of the palp. Cymbium black. **Embolus** arising from its disk ca. 7:00 forming a close spiral that almost forms a circumference in combination with the embolar disk. The embolus is partially rotated ventrally exposing the laminar side revealing a sudden constriction at the last third of its length before ending in a blunt and irregular tip. **Legs** 1>4>3>2. Legs I like rest of the legs except darker, more hirsute with metatarsus and dark. Dorsal side of femora glabrous and ventral margin covered in white setae. Dorsal distal portion of femora and dorsal medial side of tibia with a patch of white and yellow setae. Ventral side of tibia covered by black setae. Femora II-IV covered by pale yellow setae. Basal portion of metatarsus and tarsus dark forming rings. **Abdomen** mostly brown yellow with dark dorsal medial band irregular with the margins forming a pectinated pattern ending in a triangle over the anal tubercle. Prespiracular bump present.

*Female* (MX17-0847). Carapace length 3.1. Abdomen length 3.8. **Carapace** amber brown with a black ocular area with a margin of brown and pale yellow setae between the eyes and around the fovea. Two pale lines of faded clear integument run parallel down the thoracic region to the fovea. **Clypeus** mostly glabrous with a horizontal line of yellow setae that cover the base of the chelicerae. AME with a margin of red brown setae. **Chelicerae** dark brown and mostly glabrous except for inner basal margin which is covered by a patch of yellow setae over the smooth chelicerae. **Epigyne** with copulatory openings located at the anterior lateral margin of the plate

inside the windows. Copulatory ducts abruptly inverting from a posterior to anterior direction and arching before entering the big round spermatheca. **Legs** 4>3>1>2 and as in male except for legs I which are like the rest of legs and paler than in male, especially visible at the base of femora. **Abdomen** mottled mostly orange and black. Dark dorsal medial band reduced into two black dots at the middle of abdomen and a dark triangle over the anal tubercle.

Note on the type locality: The locality for the taxon is currently not recognized as an official municipality. The locality might have been between 17.5 N, -99.7 W (Omiteme) and Chilpancingo.

**Material examined.** 16 males, 7 females, 5 juveniles from MÉXICO: OAXACA: Ixtlán de Juárez, Universidad de la Sierra Juárez: 17.313 °N, 96.486 °W, 1950 m, 1-2 Jul 2017, Ł. Trębicki, W. Maddison, A. Casasola, WPM#17-014 (12\$m, 5\$f, 3\$j: \$m = MX17-0673, \$j = MX17-0675, \$f = MX17-0847); OAXACA: 27.4 km SW Valle Nacional: 17.5963 °N, 96.4744 °W, 2280 m, 12 Aug 2009, M.G. Branstetter (1\$f, 2\$j); OAXACA: 9 mi E of El Cameron: 1310 m, 6 Aug 1972, A. Newton (2\$m); OAXACA: Zimatlán de Juárez. Casa de Ana Carlos Delgado: 16.840483 °N, 96.783433 °W, 1503 m, 1493 m, 17 Aug 2018, A. Carlos-Delgado, CNAN-Ar011312 (1\$m, 1\$f); OAXACA: Cuicatlan: 17 Oct 1998, J.L. Castelo, C. Duran-Barron (1\$m).



**Figure 37.** *Mexigonus dentichelis*. Figures 1-7 male voucher MX17-0673. 8-9 female voucher MX17-0675. 10-12 female paratype MX17-0847. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral.

***Mexigonus \$yellow\_face* sp. nov.**

(fig.38; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: Ixtlán de Juárez, Universidad de la Sierra Juárez, 17.314 to 17.316 °N, 96.48 to 96.482 °W, 1950-2070 m, 2 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-013, (\$m = MX17-0250).

**Paratypes.** 2 males, 3 females from MÉXICO: OAXACA: Santa Catarina Lachatao: 17.25 °N, 96.464 to 96.466 °W, 2570 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, R. Paredes, A. Casasola, Hernandez, WPM#17-009 (1\$m, 2\$f: \$f = MX17-0543, \$m = MX17-0537, \$f = MX17-0544); OAXACA: Ixtlán de Juárez, Universidad de la Sierra Juárez: 17.314 to 17.316 °N, 96.48 to 96.482 °W, 1950-2070 m, 2 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-013 (1\$m, 1\$f: \$f = MX17-0266, \$m = MX17-0257).

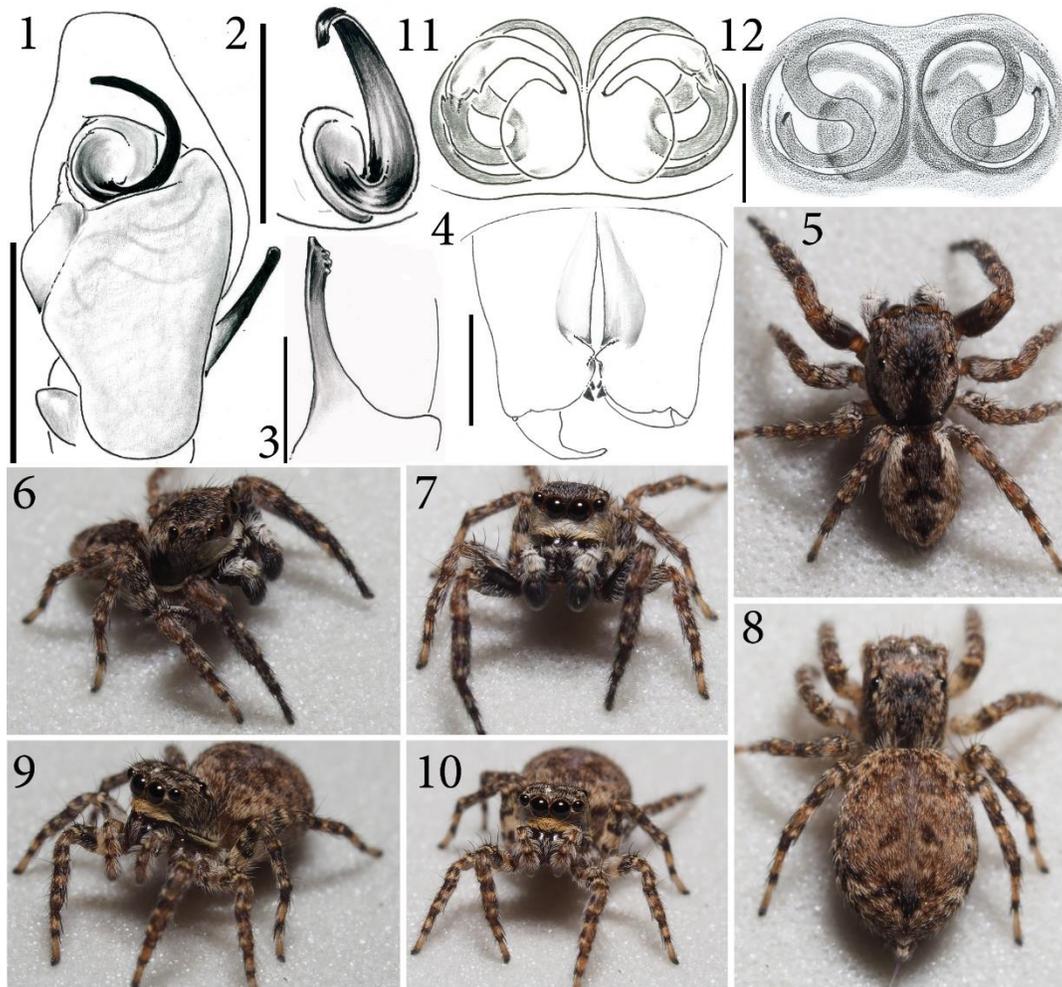
**Diagnosis.** Medium-small sized cryptic and hirsute species with males having longer and slightly thicker first legs than the rest. The species is distinctive among most *Mexigonus* by the very dense horizontal patch of white-yellow setae covering the clypeus of males (fig.38; 1-12) reduced to a narrow horizontal patch in females (fig.38; 10), shared with *M. \$dentichelis* and *M. \$stripe\_wall*. The embolus is circular with a wide embolar gap (fig.38; 1-2), the chelicerae are deeply excavated leaving a groove shaped as an arrowhead (fig.38; 4) and the RTA is very long (fig.38; 3). In females the atria invade and bisect the genital plate just as in *M. albidus*, but the sub windows formed at the posterior external side of the genital plate are much smaller (fig.38; 11-12) in *M. \$yellow\_face*. The species is morphologically very similar to *M. albidus*, but the anterior eyes are not dorsally covered by a margin of setae entering diagonally from the ocular region, the embolus is not dorsally rotated, and the RTA is considerably longer and dorsally serrated.

**Description.** *Male* (holotype). Carapace length 2.1. Abdomen length 1.9. **Carapace** dark brown and hirsute by the combination of pale-brown and red brown setae scattered over the ocular region and condensing behind the PLE where they descend parallel to their counterpart towards the pedicel. Cheeks densely covered by white-yellowish setae. Margins of carapace with a narrow margin of yellow setae. **Clypeus** entirely and densely covered by white-yellow setae. AME encircled by a ring of brown setae. **Chelicerae** chocolate brown. Basal portion of paturon with a thin horizontal line of yellow setae. Deeply excavated leaving a lanceolate groove. Promargin with two teeth. Retromargin with one simple tooth. **Palp** black and smoothly covered by long white setae from the distal portion of femora to patella. Cymbium black. **Embolus** arising ca. 6:00 from its disk forming a spiral that covers half a circumference relative to the embolar disk and widest at the middle and ending into a small tip. RTA long and fingerlike with tip dorsally serrated with three cuspids and a ventral bump. **Legs** 1>4>3>2. Legs I darker than the rest with a black integument except for the amber patella, and especially visible at the promargin of the femora. Ventral side of the femora covered by white setae, promargin glabrous. Dorsal medial and dorsal distal side of tibia and distal side of metatarsus with a patch of yellow setae. Tarsus black. Legs II-IV mostly amber yellow except at the base of the femora and the basal side of the joints, forming a ringed pattern. Dorsal portion of femora covered by white setae. Rest of the segments hirsute with tibiae showing the same yellow patches than legs I. Tarsi amber yellow. **Abdomen** hirsute with a dark medial band of an inverted vase shape, discontinuous at the second half and ending into a triangle over the anal tubercle. Sides of the dorsal side of abdomen hirsute by white setae, fading into dark brown at the posterior half. Prespiracular bump present.

*Female* (paratype; MX17-0544). Carapace length 2.0. Abdomen length 2.1. **Clypeus** densely covered by yellow brown setae not covering the cheeks. AME encircled by a thin brown margin of setae. **Chelicerae** smooth, chocolate brown and glabrous. **Epigyne** with copulatory openings

located at the external medial margin, with atrium bisecting the plate into two subwindows forming a pair of teardrop shapes from which the posterior is the smallest one. Copulatory openings slightly wider after the ducts, arching anteriorly and reducing its size before entering the oval spermatheca from above. **Legs** amber transparent and ringed with dark spots at the base of the joints and distal portion of femora. Hirsute with narrow patches of yellow setae at the dorsal distal portion of segments except for tibiae, which has two. **Abdomen** as in male except as noted. Dark medial band is reduced into a pair of spots in the middle of the abdomen and a dark triangle over the anal tubercle. The anterior dorsal margin of white setae is covered instead by yellow pale brown setae.

**Additional material examined.** 2 males, 1 females, 1 juveniles from MÉXICO: OAXACA: 50 km NW of Oaxaca on HWY 190, 7.4 km E of La Herradura: 17.23 °N, 97 °W, 1981 m, 6 Aug 1983, W. Maddison, WPM#83-143 (2\$m, 1\$f, 1\$j).



**Figure 38.** *Mexigonus yellow\_face*. Figures 1-7 male holotype MX17-0250. 8-12 female paratype MX17-0544. 1-3 palp embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$yuka* sp. nov.**

(fig.39; 1-12)

**Holotype.** Male from MÉXICO: PUEBLA: Nicolas Bravo, 18.62918 °N, 97.29688 °W, 2861 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@031, (\$m = MXN\_2460).

**Paratypes.** 2 males, 4 females from MÉXICO: PUEBLA: Nicolas Bravo: 18.62918 °N, 97.29688 °W, 2861 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@031 (2\$f: \$f = MXN\_2388, \$f = MXN\_2493); PUEBLA: Road to Perote: 19.62004 °N, 97.38352 °W, 2795 m, 25 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@060 (\$m = MX2\_6348); VERACRUZ: Road to Perote II: 19.60431 °N, 97.38354 °W, 2573 m, 25 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@061 (1\$m, 1\$f: \$f = MX2\_6923, \$m = MX2\_6870); VERACRUZ: Road to Humeros, Frijol Colorado: 19.60656 °N, 97.38615 °W, 2580 m, 25 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@058 (\$f = MX2\_6435).

**Diagnosis.** Big very dark and glabrous species where males have long first legs. The species is very distinctive in its big size roughly of 1 cm, the small circular short embolus relative to the size of the tegulum (fig.39; 1-2) and the long finger like RTA (fig.39; 3). Other species morphologically similar are *M. neglectus* but the palp of both males and females is not densely covered by setae in contrast to the messy looking habitus of *M. neglectus*, whereas the embolus is short and doesn't rotate ventrally (fig.39; 1). The species has very similar genitalia to some other species of *Mexigonus* that live in the TVMB such as *M. \$river\_rock* and *M. \$yeti*,

particularly on the genital plate. None of these species however have the habitus and size of *M. \$yuka*.

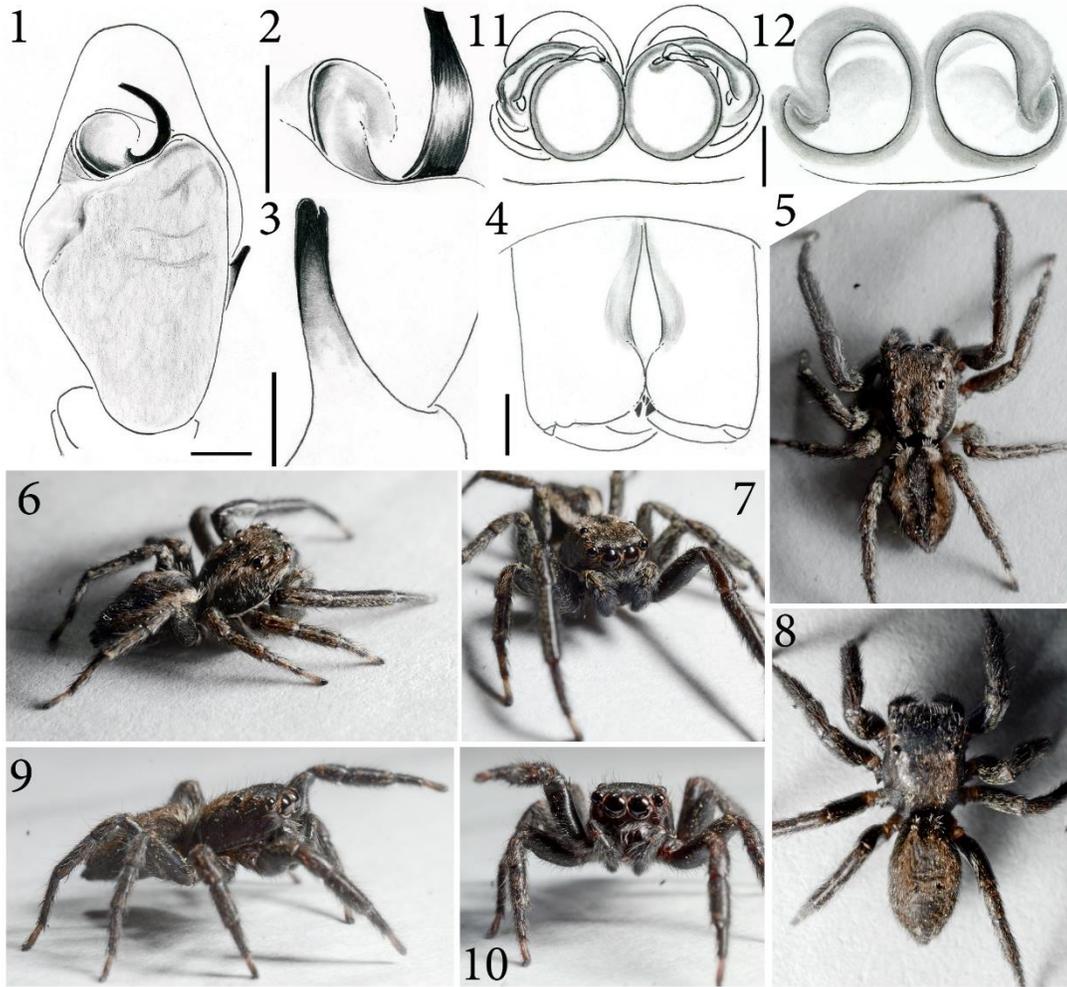
**Description.** *Male* (holotype). Carapace length 4.2. Abdomen length 4.0. **Carapace** black with ocular area covered by red brown setae. Area between PME and PLE with a band of pale yellow setae extending pass the PLE transforming into parallel stripes that descend to the back of the carapace towards the pedicel. An irregular margin of the red brown setae covering the ocular region follows these lines. **Clypeus** dark and covered by scattered long whitish setae that extend into the cheeks. AME encircled by a margin of red brown setae. **Chelicerae** dark brown and deeply excavated, leaving a lanceolated groove. Promargin with two teeth. Retromargin with one simple tooth, bigger than those in promargin. Palp mostly black with distal side of femora to patella slightly covered by red brown and pale yellow setae. Cymbium black.

**Embolus** short emerging from its diks ca. 4:00 forming a spiral and leaving a deep embolic gap. Tegulum with a depression at its prolateral margin. RTA long and fingerlike and bipartite at its end, from which ventral is the biggest of the two. **Legs** 1>4>3>2. Black except for tarsus in legs I and metatarsus and tarsus in legs II-IV. Prolateral margin of femora I glabrous. Legs dorsally hirsute at the femora by pale yellow setae and patella to metatarsus by red brown and pale yellow setae. Base of metatarsus and tarsus dark forming rings. **Abdomen** dorsally hirsute by dense margins of yellow setae surrounding a narrow dark medial band, which has regular borders and slightly decreases in size ending into a triangle over the anal tubercle. Prespiracular bump present.

*Female* (paratype; MXN\_2493). Carapace length 4.0. Abdomen length 4.2. **Carapace** black with a glabrous ocular region. Thoracic region is covered by scattered red brown setae pointing in different directions creating a messy pattern. **Clypeus** glabrous and dark with a very few long setae at the boundaries with the cheeks. AME encircled by a very thin layer of red brown setae. **Chelicerae** smooth, dark and glabrous. **Epigyne** with copulatory openings located at the

external medial margin of the plate. Atria following the openings and widening anteriorly, producing strong sclerotized arcs, and then forming a small hook. Copulatory ducts right after openings slightly widened and arching anteriorly before descending into the big spherical primary spermatheca. **Legs** black and hirsute with dark brown and black setae. Tarsi amber yellow. **Abdomen** with the same dorsal pattern as in male except dark medial band fading against the darkness of the surrounding integument by the lack of hirsuteness, which also creates a more reddish colouration than in male.

**Additional material examined.** 8 males, 8 females, 39 juveniles from MÉXICO: PUEBLA: Nicolas Bravo: 18.62918 °N, 97.29688 °W, 2861 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@031 (5\$m, 1\$f, 10\$j; \$m = MXN\_2295); PUEBLA: Nicolas Bravo II: 18.6277683 °N, 97.298393 °W, 2748 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@032 (2\$m, 3\$f, 15\$j); PUEBLA: Road to Perote: 19.62004 °N, 97.38352 °W, 2795 m, 25 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@060 (4\$j); VERACRUZ: Road to Humeros, Frijol Colorado: 19.60656 °N, 97.38615 °W, 2580 m, 25 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@058 (1\$m, 2\$f, 6\$j; \$j = MX2\_6381); VERACRUZ: Road to Perote II: 19.60431 °N, 97.38354 °W, 2573 m, 25 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@061 (2\$f, 4\$j).



**Figure 39.** *Mexigonus Syuka*. Figures 1-7 male holotype MXN\_2460. 8-10 female paratype MXN\_2493. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$yeti* sp. nov.**

(fig.40; 1-12)

**Holotype.** Male from MÉXICO: PUEBLA: Nicolas Bravo II, 18.6277683 °N, 97.298393 °W, 2748 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@032, (\$m = MXN\_2067).

**Paratypes.** 4 males, 1 females from MÉXICO: PUEBLA: Nicolas Bravo II: 18.6277683 °N, 97.298393 °W, 2748 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@032 (4\$m, 1\$f: \$m = MXN\_2155, \$f = MXN\_2211).

**Diagnosis.** A small whitish yet cryptic species with marked sexual dimorphism. Males have a contrasting white/black colour with velvety first legs (fig.40; 5-7) whereas females are brown and hirsute covered in black dots (fig.40; 8-10). The species is distinctive among *Mexigonus* by the dense fringes of velvety white setae over a yellow integument covering the entire first legs in the male (fig.40; 6-7). The species morphologically similar are *M. \$big\_foot* in the orange setae covering the ocular region (fig.40; 7) and to *M. \$river\_rock* in the resemblance of the embolus and genital plate. However, the embolus has a middle constriction forming a fin (fig.40; 1-2) and the chelicerae are non excavated (fig.40; 4) unlike *M. \$river\_rock* and the body is not as cryptic. In contrast to \$big\_foot, the embolus presents a medial constriction shaped as a fin (fig.40; 1-2).

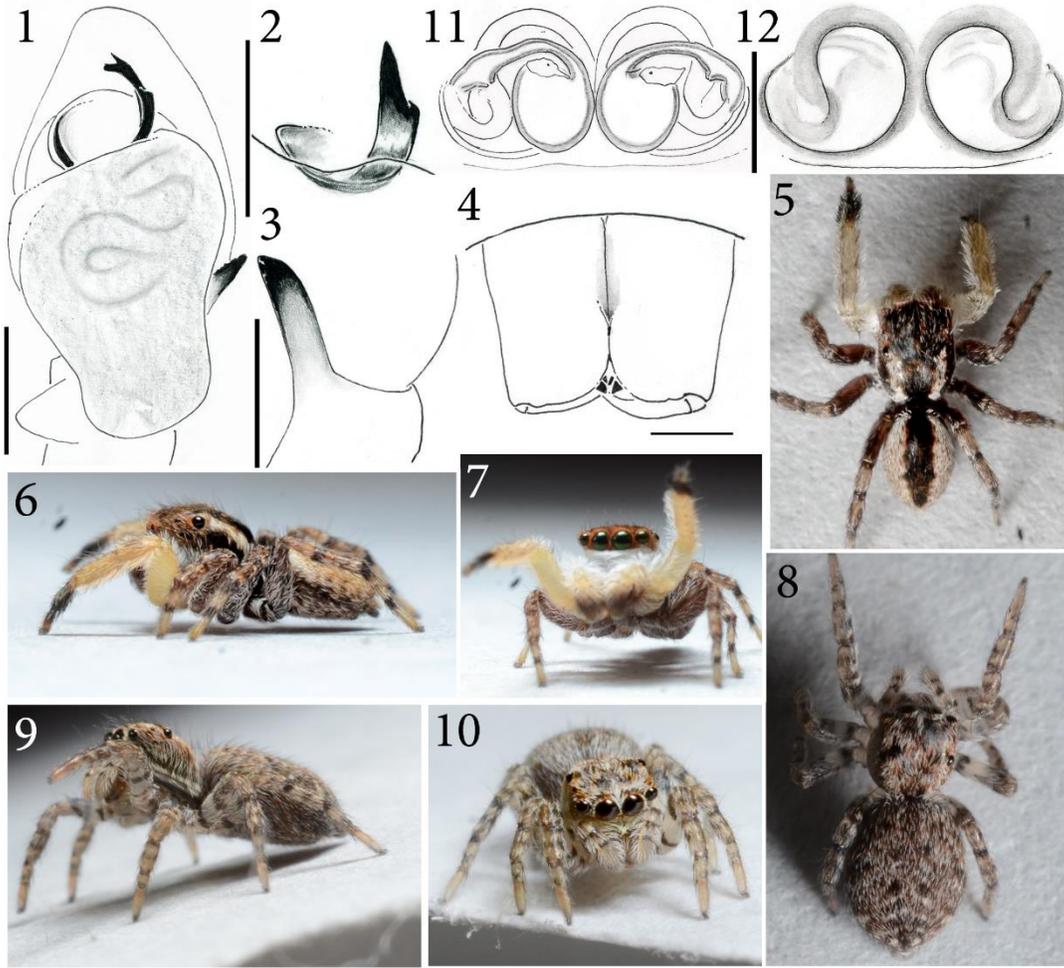
**Description.** Male (holotype). Carapace length 1.9. Abdomen length 1.6. **Carapace** with scattered red brown and white setae over a black integument. Parallel stripes descending from behind PLE towards pedicel and covered by white setae. Margins of carapace covered by a narrow line of white setae that increase in width towards the cephalic area, densely covering most of the cheeks. **Clypeus** entirely covered by white setae. AME encircled by a margin of

orange red setae, which extend between and around the ALE producing a continuous mask that contrasts against the white clypeus. **Chelicerae** dark yellow without excavation. Promargin with two teeth. Retromargin with one simple tooth. Palp transparent yellow except for a dark brown cymbium. Hirsute from distal side of femora to patella by scattered long white setae that complement the pattern seen in the clypeus. **Embolus** arising from its disk ca. 5:00 and partially hidden behind the tegular ledge. Spiraled and increasing its width and suddenly constricting at the middle forming a fin, then gradually reducing size ending in a triangular tip. RTA fingerlike. **Legs** 1>4>3>2. Legs I hirsute by long white setae and integument is pale yellow and transparent except for metatarsus, which is densely covered by black setae forming a bristle. Legs II-IV chocolate brown with metatarsus and tarsus pale yellow, except at the base of the tarsus, which is black. **Abdomen** white anteriorly and pink ivory otherwise, caused by a mixture of white and pale brown setae. A dark medial band bisects the abdomen, and is continuous with regular borders. It gradually reduces its width ending into a triangle over the anal tubercle.

Female (paratype; MXN\_2211). Carapace length 1.9. Abdomen length 1.9. **Carapace** hirsute, almost entirely covered by a mottled pattern of pale yellow and red brown caused by setae. **Clypeus** covered by pale yellow setae. AME encircled with a bicolored margin of setae; red at the dorsal and ventral side and pale yellow otherwise. A white vertical stripe arises from between AME towards the ocular region. **Chelicerae** dark yellow and smooth. **Epigyne** with copulatory openings located at the external medial margin of the plate but slightly moved inwards, partially invading the windows. Atria follow the openings, partially bisecting the windows and forming a "hook" of sclerotized cuticle. Copulatory ducts following the openings slightly widened with a posterior conical exit that suggests the presence of glands. Ducts bending anteriorly projecting an almost horizontal arc before descending into the spherical primary spermatheca from above. **Legs** pale transparent yellow and ringed with black integument at the base of the joints. Hirsute by black and white setae. Femora transparent grey.

**Abdomen** very hirsute and mottled caused by the combination of white and red setae over a black integument. Dark medial band absent and only visible as two black spots at the middle of the abdomen and a dark triangle over the anal tubercle.

**Additional material examined.** 7 males, 12 juveniles from MÉXICO: PUEBLA: Nicolas Bravo II: 18.6277683 °N, 97.298393 °W, 2748 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@032 (4\$m, 12\$j: \$j = MXN\_2173); OAXACA: 36.4 km from San Francisco Ixtlahuac: 1998 (3\$m).



**Figure 40.** *Mexigonus yeti*. Figures 1-7 male holotype MXN\_2067. 8-10 female paratype MXN\_2211. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$big\_foot* sp. nov.**

(fig.41; 1-9)

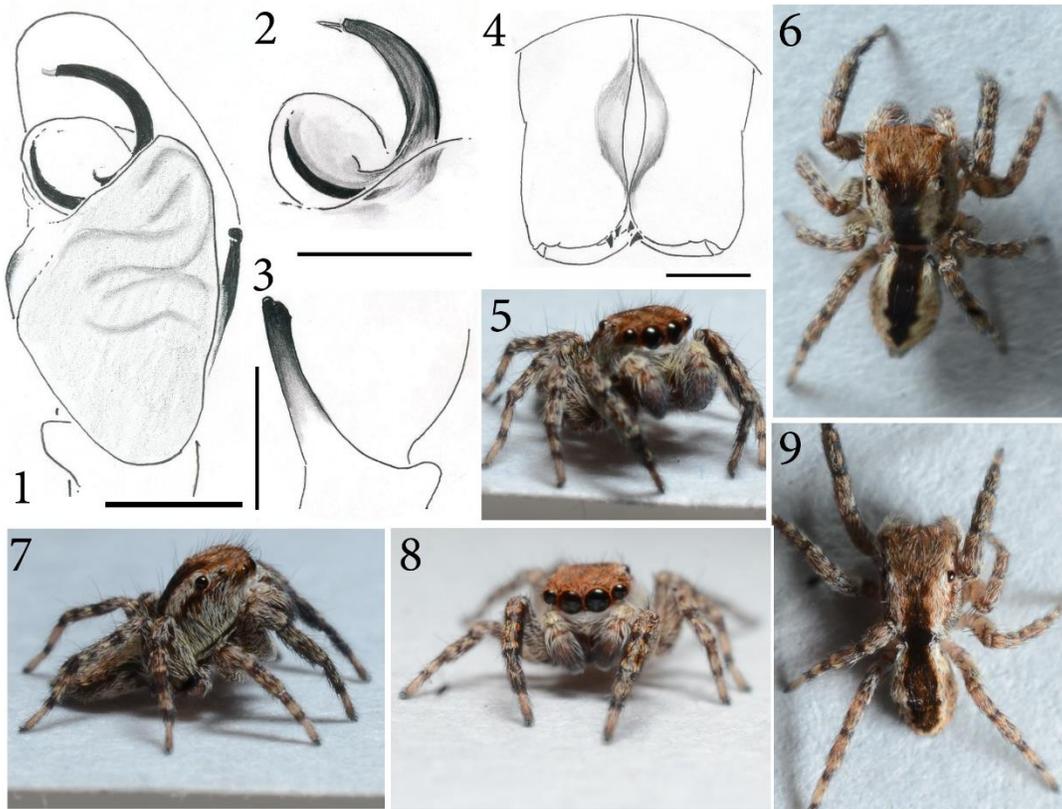
**Holotype.** Male from MÉXICO: PUEBLA: Nicolas Bravo II, 18.6277683 °N, 97.298393 °W, 2748 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@032, (\$m = MXN\_2112).

**Paratypes.** 2 males from MÉXICO: PUEBLA: Nicolas Bravo II: 18.6277683 °N, 97.298393 °W, 2748 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@032 (\$m = MXN\_3238); PUEBLA: Nicolas Bravo: 18.62918 °N, 97.29688 °W, 2861 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@031 (\$m = MXN\_2514).

**Diagnosis.** Brown-orange small sized and cryptic species with the face covered in orange setae (fig.41; 5-9). The species is distinctive by a combination of traits: an orange pattern of setae covering the ocular region (fig.41; 5, 8) as in *M. \$yeti* and *M. \$orange\_ghost*, with a circular and thin embolus and a long and excavated RTA (fig.41; 3) as in *M. \$river\_rock*, *M. \$yellow\_face* and *M. \$yuka*. The species is morphologically similar to *M. \$yeti*, but the first legs are dark and hirsute covered in orange-brown setae instead of the velvety white fringes, and the embolus is laminar with uniform edges (fig.41; 1-2).

**Description.** Male (holotype). Carapace length 1.6. Abdomen length 1.3. **Carapace** black but almost entirely covered by brown setae at the ocular area and white setae at the sides. Band of white setae originating behind and dorsal from PLE and descending parallel to their counterpart towards the pedicel. Borders of carapace at the thoracic region covered by a wide margin of pale yellow setae. **Clypeus** entirely covered by white setae. AME encircled by orange setae which extend between the eyes and over the ocular region giving a bicolored pattern when

contrasted with the white clypeus. **Chelicerae** dark brown and deeply excavated, forming a trapezoid shaped groove. Promargin with two teeth. Retromargin with one simple tooth. **Palp** transparent orange but covered by smooth looking yellow setae from the distal end of femur to patella. Tip of cymbium black. **Embolus** arising from its disk ca. 5:00 and partially hidden behind tegulum. Spiraled with the laminar surface decreasing in size ending into a conical shape. RTA long, fingerlike and slightly bipartited from which a ventral bump is the most conspicuous. **Legs** 1>4>3>2. Legs I slightly darker than the rest and dorsally covered by redd setae. Base of the joints for all legs darkened, producing a ringed pattern. Distal dorsal side of all segments except for tarsus with a narrow patch of yellow setae. Ventral side of femora covered in white setae. **Abdomen** hirsute, dorsally white anteriorly and fading into yellow towards the anal tubercle by effect of setae. Dark medial band present and wide, uniform gradually reducing its width ending into a dark triangle over the anal tubercle.



**Figure 41.** *Mexigonus \$big\_foot*. Figures 1-7 male holotype MXN\_2112. 8-9 male paratype MXN\_2514.  
1-3 palp, embolus and RTA. 4 chelicerae.

### ***Smatlizaha* group**

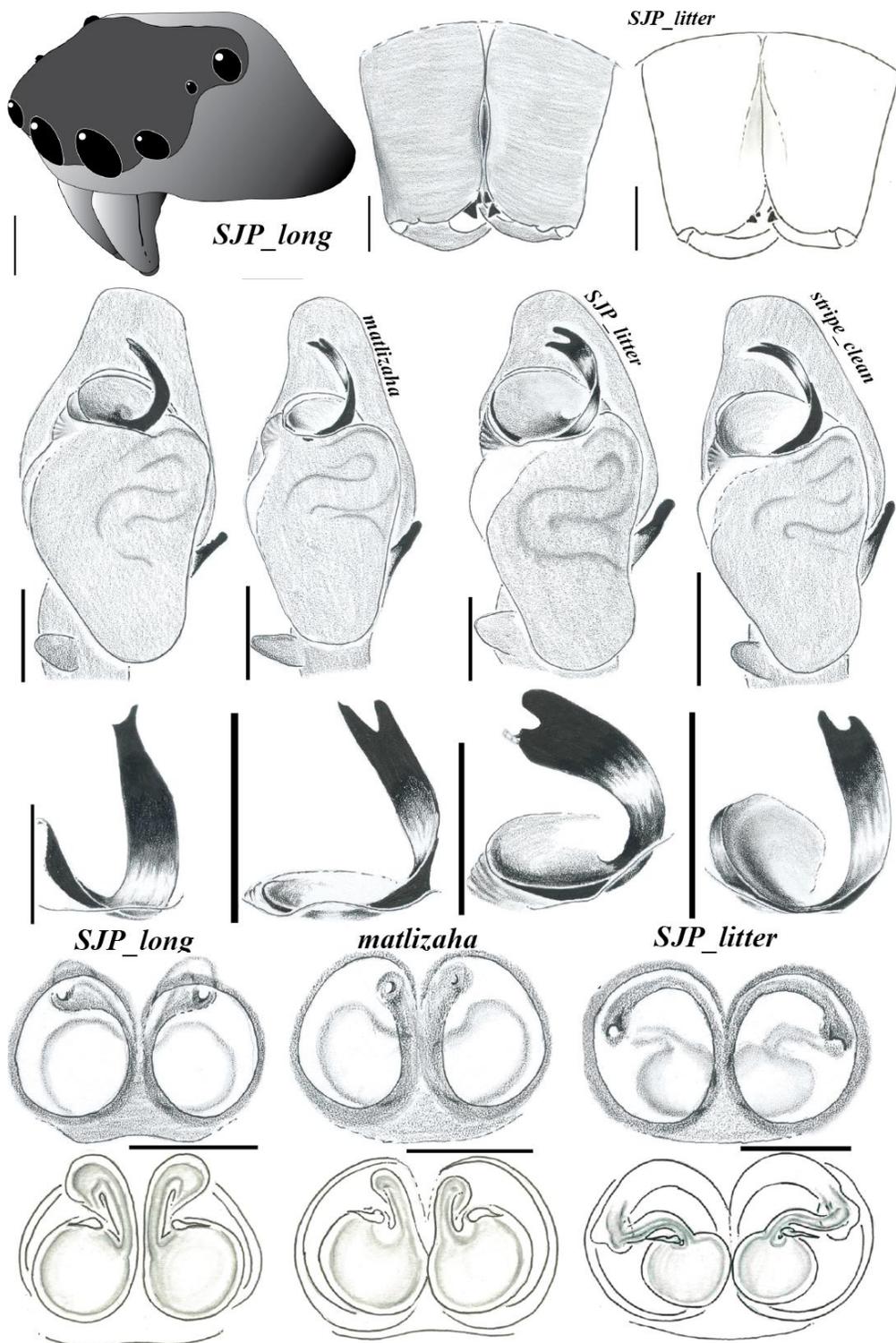
(fig. 42; map 6)

This group with 14 species is primarily distributed in southern Mexico, with small to medium-sized spiders with elegantly hirsute bodies covered by smooth setae and strong sexual dimorphism. Their habitats include dried suspended litter at the boundaries of cleared areas and convoluted vines close to the ground and bushes of *Baccaris* or other plants around 2 m height.

**Diagnosis.** The species can be identified by the slender and long first legs of males often black and densely covered by lateral bristles of brown setae making the legs look wider when seen from above (fig. 43; 5-7) and the anterior margin of white or pale setae covering the anterior edge of the ocular region (fig. 43; 7). The embolus is laminar and bipartite in most species or with a strong fin shaped constriction (fig. 42). The copulatory openings are located at the anterior margin of the genital plate near the spermatheca with the copulatory ducts being short and descending almost parallel to the longitudinal axis of the genital plate into the spherical spermatheca (fig. 42).

The lateral fringes covering the first legs are of different colours among species and start from the distal edge of femora to metatarsus and sometimes including the tarsus (fig. 42; 7, fig. 45; 7). The male ocular region is outlined by pale setae often denser at the anterior margin creating the broad anterior band over the anterior eyes (fig. 43; 7). The secondary eyes are outlined by a stripe of pale setae passing through the eyes and extending behind the PLE, descending parallel to their counterpart down the thoracic region. Most species have smooth or very shallowly notched chelicerae (fig. 43). The often-bipartite embolus tip sometimes is reduced into a fin shape from which the embolus reduces its width (fig. 43). The tibial bump is somewhat horizontal. Females are orange to very dark showing transparency in the carapace and femora

when the specimen is not too dark (fig. 43; 8-10). Abdomens in females are velvety hirsute with short setae over a dark integument mottled with dots of unpigmented cuticle (fig. 47; 8).



**Fig. 42.** Morphological diversity in somatic and genital structures distinctive of the *matlizaha* morphological group.

***Mexigonus \$matlizaha* sp. nov.**

(fig. 43; 1-18)

**Holotype.** Male from MÉXICO: OAXACA: Puente Barranca Matlizahua, 15.995 °N, 96.534 °W, 1560 m, 9 Jul 2017, W. Maddison, Ł. Trębicki, R. Paredes, U. Garcilazo, WPM#17-035, (\$m = MX17-1876).

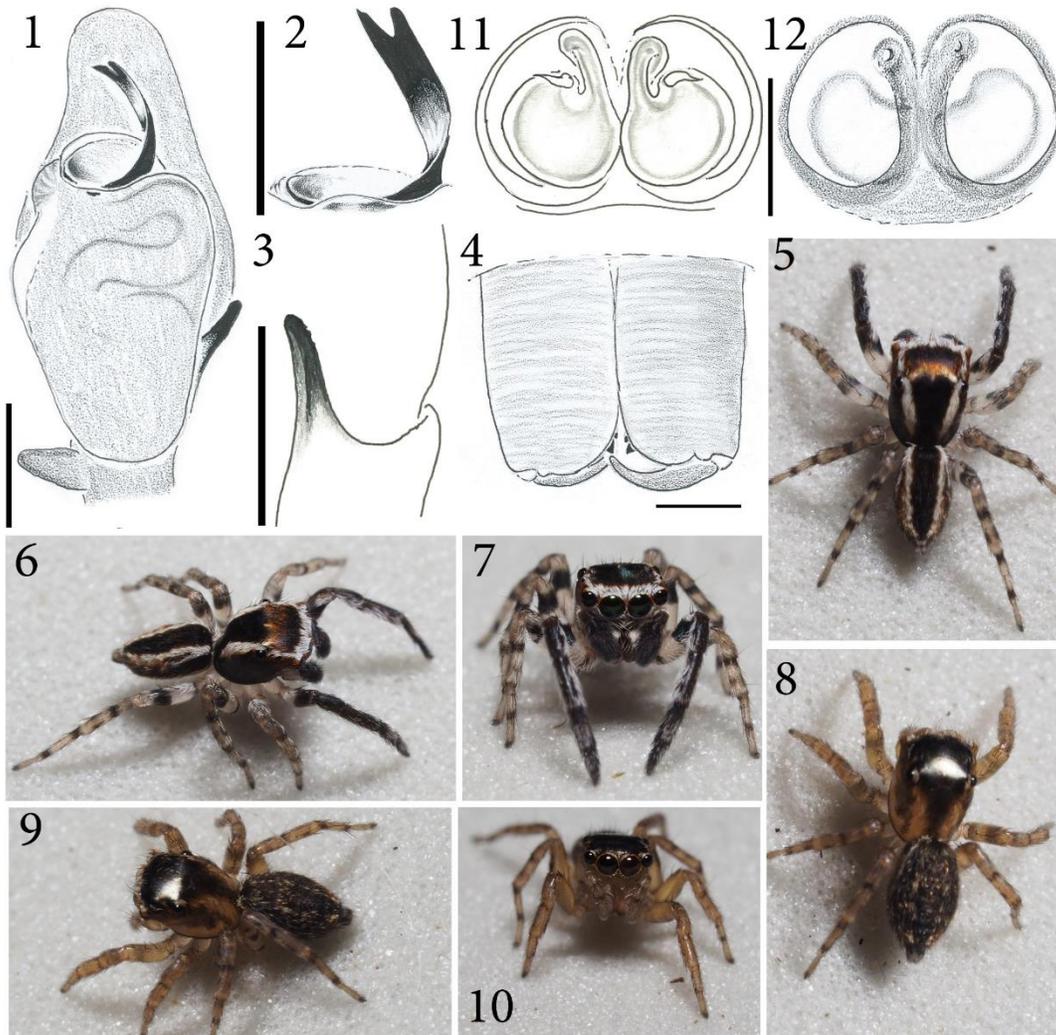
**Paratypes.** 4 males, 1 females, 1 juveniles from MÉXICO: OAXACA: Puente Barranca Matlizahua: 15.995 °N, 96.534 °W, 1560 m, 9 Jul 2017, W. Maddison, Ł. Trębicki, R. Paredes, U. Garcilazo, WPM#17-035 (4\$m, 1\$f, 1\$j: \$f = MX17-1882, \$m = MX17-1940).

**Diagnosis.** A small species with marked sexual dimorphism. Males are smoothly hirsute black and white with the ocular region covered by an anterior margin of white setae (fig. 43; 7), and hirsute white first legs over an entirely black integument with a conical shaped tarsus I (fig. 43; 7). Females are cryptic mottled dark brown with orange carapaces somewhat transparent (fig. 43; 8-10). The species is distinctive in the colour of the lateral and dorsal fringes of white setae covering the first pair of male legs from the patella to the tarsus, and the pattern of white setae covering the male chelicerae (fig. 43; 7). Other species morphologically similar are *M. \$pluma*, *M. \$SJP\_litter*, *M. \$SJP\_long* and *M. \$chicachica*. It differs from *M. \$pluma* in the grey ringed legs in males rather than orange and smooth (fig. 43; 5-7). The margin of setae over the anterior eyes is similar but less dense in *M. \$pluma* instead of brown or peach ivory as in *M. \$SJP\_litter* and *M. \$SJP\_long*. The first legs are hirsute by white lateral setae less dense than the black brown fringes in *M. \$SJP\_litter*. The embolus is slender (fig. 43; 1-2) as in *M. \$chicachica* in contrast with the other species and bipartite unlike *M. \$SJP\_long*. The embolus of this species differs from *M. \$chicachica* by being slightly slenderer, and the atria of the epigynum doesn't divide the plate into sub windows.

**Description.** *Male* (holotype). Carapace length 1.7. Abdomen length 1.5. **Carapace** black and glabrous with ocular area covered in shiny red brown setae. All eyes are connected by a stripe made of white setae passing over the PME and PLE extending behind the ocular region and descending towards the pedicel parallel to its counterpart. **Clypeus** covered by long pale brown setae. AME encircled by a margin of setae of compound colour; red at the sides and white otherwise. These setae extend dorsally and transform into a wide horizontal band. **Chelicerae** chocolate brown with the base of paturon covered by a patch of pale yellow setae. Smooth without excavation. Promargin with two teeth. Retromargin with a simple tooth. **Palp** entirely dark chocolate coloured except for the dorsal surface of femora which is covered by white setae and black cymbium. **Embolus** arising from its disk ca. 6:00 rotating ventrally exposing its laminar side at the middle of its length. Tip is bipartited with both sides of similar length. RTA fingerlike and slightly aserrated dorsally. Tibial bump is long and horizontal, pointing prolaterally. **Legs** 1>4>3>2. Legs I black from distal portion of femora to tarsus, and covered from patella to tibia by velvety fringes of white setae at the sides of patella and tibia and dorsal surface of metatarsus and tarsus. Legs II-IV pale transparent yellow with joints black giving a ringed appearance. Dorsal side of femora hirsute. **Abdomen** mostly black by effect of a wide dark medial band that covers almost all the dorsal surface. The band is hirsute and regular on the edges gradually reducing its width ending into a triangle over the anal tubercle. Margin of white setae surrounding the band, especially dense anteriorly.

*Female* (paratype; MX17-1882). Carapace length 1.7. Abdomen length 1.8. **Carapace** glabrous with ocular area black, projecting this colour into the fovea and descending towards the pedicel. Cheeks dark. Area surrounding the fovea and margins of carapace honey coloured forming a stripe from behind the PLE and descending towards the pedicel, parallel to their counterpart and merging with the amber yellow of the margins. **Clypeus** glabrous and amber. AME encircled by a margin of complex colouration; range at the anterior lateral side and pale yellow otherwise.

**Chelicerae** amber and smooth. **Epigyne** with copulatory openings located at the anterior interior margin of the plate and the atria forming oval windows. Copulatory ducts bent dorsally right after the openings, descending into the ovoid primary spermatheca from above. Legs amber yellow with base of the joints of each segment darker creating a ringed pattern. Hirsute with scattered black short setae. **Abdomen** black and mottled with patches of pale yellow setae. Dark medial band inconspicuous in alive specimen and only visible in context of a margin of unpigmented spots that form an outline in the specimen fixed in alcohol. Band ends into a dark triangle over the anal tubercle.



**Figure 43.** *Mexigonus smatlizaha*. Figures 1-7 male holotype MX17-1876. 8-9 male paratype MX17-1882. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$pluma* sp. nov.**

(fig. 44; 1-15)

**Holotype.** Male from MÉXICO: OAXACA: near Pluma de Hidalgo, 15.921 to 15.9216 °N, 96.4223 °W, 1150 m, 9 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-032, (\$m = MX17-1901).

**Paratypes.** 2 males, 4 females from MÉXICO: OAXACA: near Pluma de Hidalgo: 15.921 to 15.9216 °N, 96.4223 °W, 1150 m, 9 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-032 (2\$m, 4\$f: \$f = MX17-1910, \$m = MX17-1840, \$f = MX17-1845, \$m = MX17-1891, \$f = MX17-1853, \$f = MX17-1916).

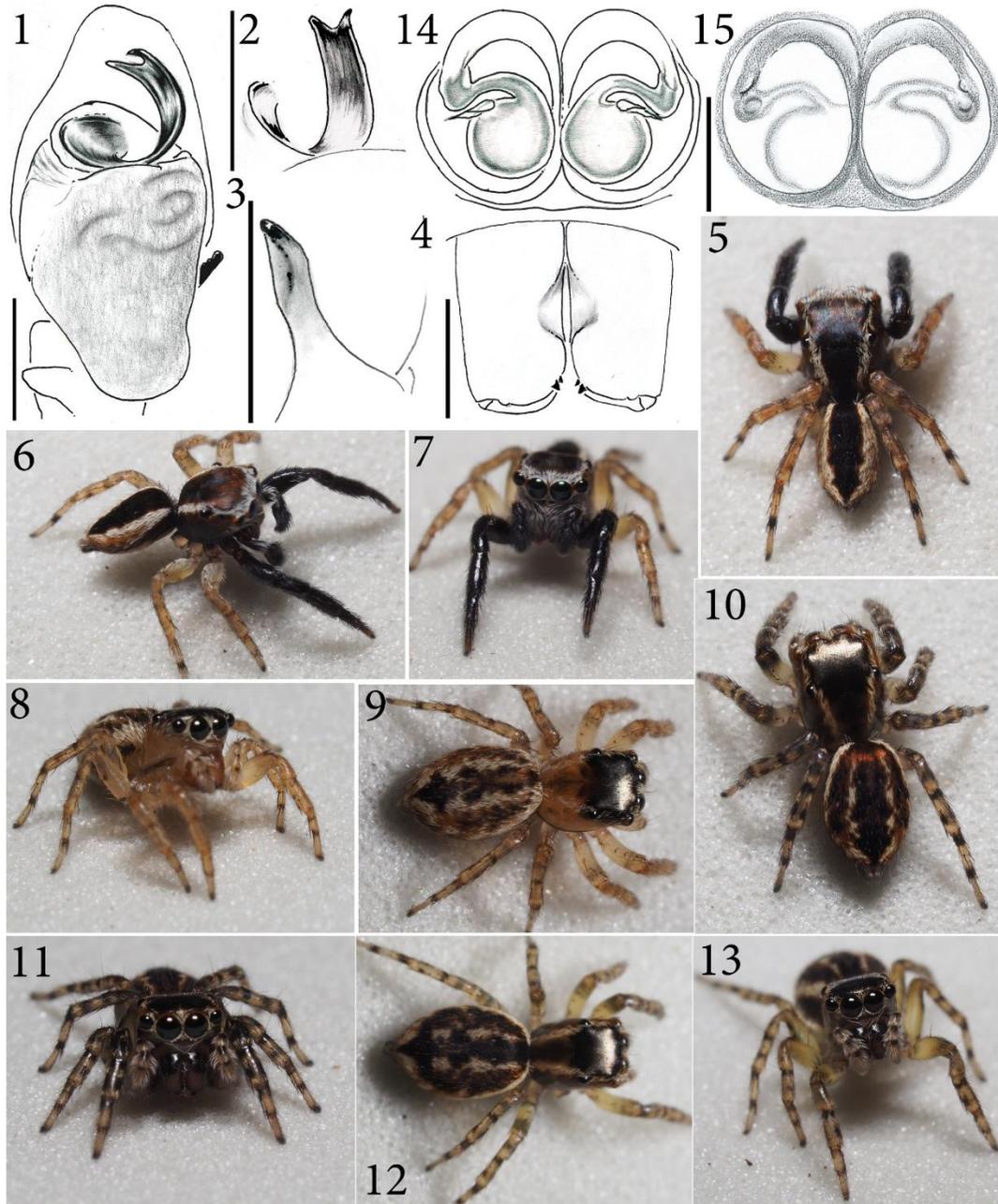
**Diagnosis.** Small sized species with marked sexual dimorphism. Males are mostly black including only the first legs with the ocular region covered by an anterior margin of white setae (fig. 44; 7). Females are dark and grey-yellow somewhat transparent in the legs and carapace (fig. 44; 10-13). The species is distinctive by the male glabrous black first legs (fig. 44; 5-7), white anterior margin of white setae covering the dorsal area of the anterior eyes (fig. 44; 7), chelicerae uniformly covered by pale setae and a bipartite embolus (fig. 44; 1-2). In females the dorsal abdomen has a dark dorsal medial stripe highly contrasted against a combination of a pale outline and then reddish setae over a black integument (fig. 44; 10-13). Other species morphologically similar are *M. \$matlizaha*, *M. \$SJP\_litter*, *M. \$SJP\_long* and *M. \$chicachica*. It differs from *M. \$matlizaha* and *M. \$SJP\_long* by having glabrous black first legs instead of lateral fringes, whereas the rest of the legs are uniformly orange rather than ringed grey in *M. \$matlizaha* and *M. \$SJP\_litter* contrast with the other species. The embolus is wide rather than slender as in *M. \$matlizaha* and *M. \$chicachica* and very similar to *M. \$chicachica*. However, the genital plate in *M. \$chicachica* is divided in two sub windows and the male lacks the pale margin covering the anterior eyes seen in this species.

**Description.** *Male* (holotype). Carapace length 1.8. Abdomen length 1.7. **Carapace** black and glabrous with ocular area covered in shiny red brown setae. All eyes are connected by white setae although the area between ALE and PME is thinner. The setae pass over the PME and PLE extending into a stripe that descends towards the pedicel parallel to its counterpart. **Clypeus** dark and covered by white setae. AME encircled by a margin of setae of compound colouration. orange red on the anterior external side and white otherwise. The white setae extend dorsally transforming into a horizontal broad line and laterally forming a semicontinuous mask. **Chelicerae** chocolate brown and covered at the base of paturon by scattered long white setae. Slightly excavated. Promargin with two teeth. Retromargin with one simple tooth. **Palp** entirely dark except for dorsal side of femora covered by scattered long white setae. **Embolus** arising from its disk ca. 6:00 and partially hidden behind tegulum. Spiraled and rotated ventrally exposing the laminar surface at the middle of its length and ending into a bipartite tip form which the ventral is the longest. RTA fingerlike. Ventral bump horizontal and running prolaterally. **Legs** 1>4>3>2. Legs I entirely black and glabrous over its entire length. Metatarsus and tarsus with a velvety patch of black setae. Legs II-IV honey coloured except for femora, which is olive transparent. Distal side of metatarsus black, whereas distal side of femora, basal and medial side of tibia and basal side of metatarsus dusky-washed giving the legs a ringed appearance. **Abdomen** mostly black by the dark medial band, continuous and uniform, reducing its size ending into a dark triangle over the anal tubercle. Band accompanied on the sides by a margin of white setae. Rest of dorsal side of abdomen unpigmented and covered in red brown setae.

*Female* (paratype; MX17-1853). Carapace length 1.9. Abdomen length 2.2. **Carapace** dark and as in male except red brown setae over ocular area missing. **Clypeus** glabrous and dark. **Chelicerae** smooth, glabrous and dark brown. **Epigyne** with copulatory openings located at the medial external side of the plate, slightly off the margin of the windows. Atria following the openings projecting arcs. Copulatory ducts after the openings abruptly bends at a sharp angle,

arching anteriorly close to the spherical spermatheca before merging with them from above. Legs honey coloured with base of the joints black creating a ringed pattern. **Abdomen** mostly dark with dorsal medial band visible only in perspective of a discontinuous margin of unpigmented cuticle, running parallel towards the end of the abdomen and enclosing a dark triangle over the anal tubercle. Anterior margin of abdomen with an outline of clear pigment covered in pale yellow setae.

**Additional material examined.** 8 males, 4 females, 4 juveniles from MÉXICO: OAXACA: near Pluma de Hidalgo: 15.921 to 15.9216 °N, 96.4223 °W, 1150 m, 9 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-032 (7\$m, 3\$f, 4\$j: \$j = MX17-1926); 15.94 °N, 96.433 °W, 1140 m, 9 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-033 (1\$f); OAXACA: Puente Barranca Matlizahua: 15.995 °N, 96.534 °W, 1560 m, 9 Jul 2017, W. Maddison, Ł. Trębicki, R. Paredes, U. Garcilazo, WPM#17-035 (1\$m).



**Figure 44.** *Mexigonus spluma*. Figures 1-7 male holotype MX17-1901. 8-9, 14-15 female paratype MX17-1853. 10-11 female paratype MX17-1845. 12-13 female paratype MX17-1916.

***Mexigonus \$SJP\_litter* sp. nov.**

(fig. 45; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: San José del Pacifico, 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-029, (\$m = MX17-1765).

**Paratypes.** 3 males, 1 females from MÉXICO: OAXACA: San José del Pacifico: 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, R. Paredes, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-028 WPM#17-029 (2\$m, 1\$f: \$f = MX17-1678, \$m = MX17-1769, \$m = MX17-1767); 16.173 to 16.177 °N, 96.5 to 96.503 °W, 2600-2800 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-027 (\$m = MX17-1579).

**Diagnosis.** A small cryptic species with marked sexual dimorphism. Males have dark and very hirsute first legs with the ocular region of carapace covered in pale brown setae (fig. 45; 5-7). Females are dark orange with somewhat transparent carapaces and legs (fig. 45; 8-10). The species is distinctive by the colour, distribution and density of setae forming fringes in the first legs including the tarsus producing a velvety pattern of dorsal grey brown patches over a dark brown integument. Other characters seen in males that in combination make the species distinctive a clypeus covered by a horizontal patch of white setae extending into the cheeks and restricted to the margins of the carapace, the ivory peach colour of the margin covering above the anterior eyes (fig. 45; 5-7) and the widened tips of the laminar face of the embolus (fig. 45; 1-2). Other species morphologically similar are *M. \$matlizaha*, *M. \$pluma*, *M. \$SJP\_long*, *M. \$chicachica* and *M. \$SJP\_orange\_black*. The species shares the black legs with *M. \$pluma*, *M. \$SJP\_long*, *M. \$chicachica* and *M. \$SJP\_orange\_black*, but they are hirsute unlike *M. \$pluma* and *M. \$chicachica*, shorter than *M. \$SJP\_long* and the tarsus are black and the fringes smooth unlike *M. \$SJP\_orange\_black*. The embolus is bipartite and wide unlike *M. \$chicachica* and *M. \$matlizaha* and wide at its tips with the dorsal tip the longest unlike any of these species.

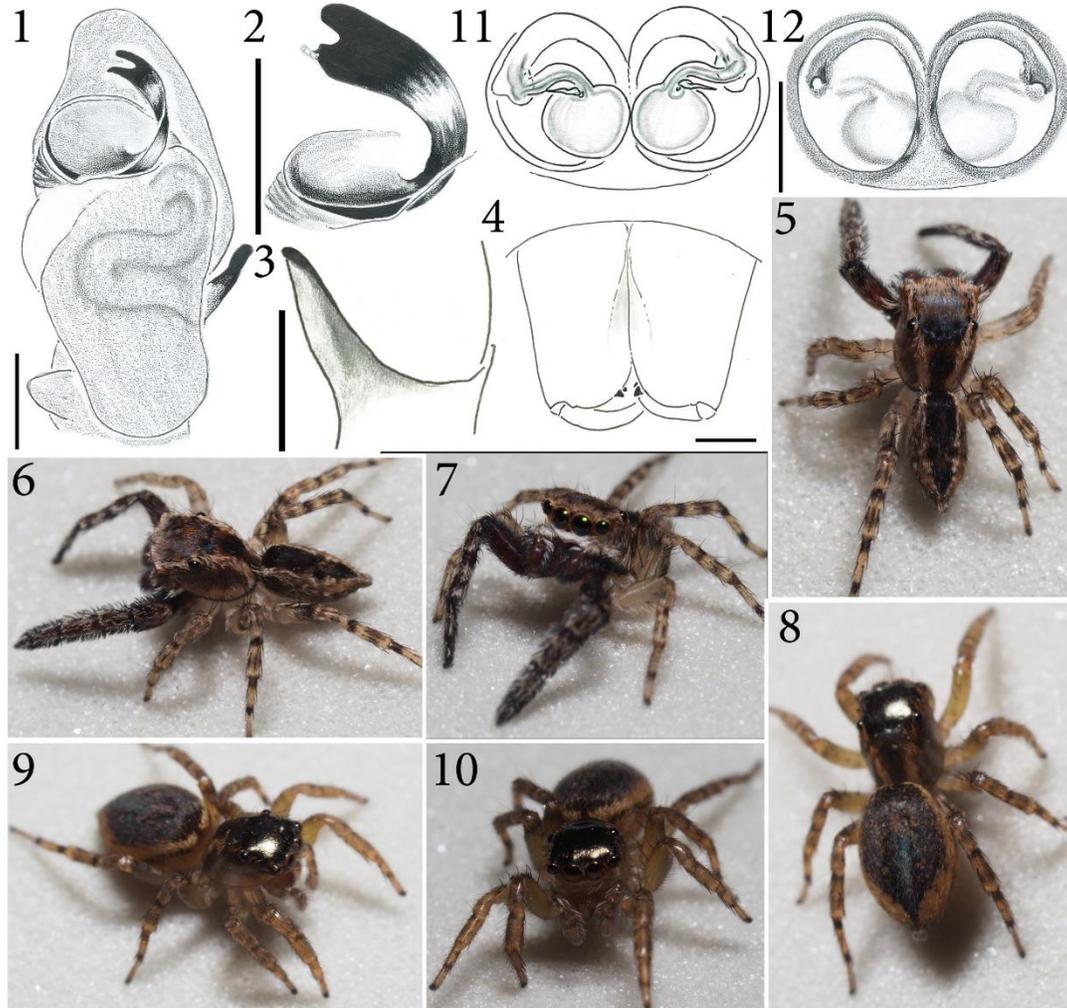
**Description.** *Male* (holotype). Carapace length 2.1. Abdomen length 1.8. **Carapace** hirsute with bicolored integument, amber yellow at the margins of carapace fusing at the posterior end of the thoracic region with a stripe descending from behind the PLE. These lines form a parallel pattern relative to each other and are covered by pale yellow setae that extend between the eyes. Ocular region black covered by shiny red brown setae, especially at the anterior margin. A horizontal line of pale setae crosses through the black fovea. **Clypeus** entirely covered by a horizontal line of white setae that extend slightly into the cheeks. AME encircled by a margin of red brown setae surrounded by pale orange cream brown setae forming a continuous mask, and making the clypeus bicolored. **Chelicerae** dark red without excavation. Promargin with two teeth. Retromargin with one simple tooth. **Palp** dark red brown except for femur and patella, where the integument is transparent yellow and covered by white setae. A small patch of white setae gets projected from the promarginal margin of the tibia. **Embolus** arising from its disk ca. 4:00 and spiraled, rotating ventrally and exposing the laminar face of the embolus, ending into a bipartite shape where both tips have roughly the same size. The ventral tip is slightly bent. RTA fingerlike ending in a bumpy tip slightly bent ventrally. Tibial bump almost round and slightly horizontal pointing prolaterally. **Legs** 1>4>3>2. Legs I entirely dark and very hirsute, especially laterally where a bristle of dark setae extends from tibia to tarsus making the legs look bigger when looked at dorsally. Distal sides of segments and medial side of tibia covered by horizontal patches of pale yellow setae. Legs II-IV transparent cream yellow with distal portion of femora and base of the joints black, creating a ringed pattern. **Abdomen** mostly mottled by a composite of white and red brown setae. Dorsal dark medial band reduced to two dots at the middle of the abdomen and reappearing as a dark triangle over the anal tubercle. A thin margin of white setae surrounds the medial band.

*Female* (paratype; MX17-1474). Carapace length 2.4. Abdomen length 3.0. **Carapace** dark honey coloured with the upper half of the cheeks, ocular region and a stripe descending from

the fovea dark. A pair of pale stripes emerge from behind of each of the PLE parallel to each other towards the pedicel. **Clypeus** glabrous and amber brown. AME encircled by a margin of pale yellow setae. **Chelicerae** dark brown amber and smooth. **Epigyne** with copulatory openings located at the external medial margin of the plate with the atria connecting from above without touching the margin of the windows forming arcs. Ducts following the openings twisting inwards creating a horizontal arc that connects with the primary spermatheca from above. **Legs** transparent amber orange, especially at the tip of the legs and transparent at the femora. Joints of the segments dark spotted forming rings, complemented by small horizontal patches of orange setae at the distal side of patella and tibia. **Abdomen** with black integument dorsally and cream orange otherwise. Dark dorsal medial band merged with the black colouration of the integument ending into a dark triangle over the anal tubercle. A small transversal margin of pale yellow setae covers the anterior side of the abdomen.

**Remarks.** Two males from San Jose Del Pacifico show a great reduction in the hirsuteness of the first legs, restricted to the metatarsus and tarsus.

**Additional material examined.** 1 males, 6 females, 1 juveniles from MÉXICO: OAXACA: San José del Pacifico: 16.173 to 16.177 °N, 96.5 to 96.503 °W, 2600-2800 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-027 (1\$m, 3\$f); 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, W. Maddison, U. Garcilazo, R. Paredes, WPM#17-029 WPM#17-028 (3\$f, 1\$j).



**Figure 45.** *Mexigonus* *\$SJP\_litter*. Figures 1-7 male holotype MX17-1442. 8-12 female paratype MX17-1474. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$SJP\_long* sp. nov.**

(fig. 46; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: San José del Pacifico, 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-029, (\$m = MX17-1714).

**Paratypes.** 3 males, 3 females from MÉXICO: OAXACA: San José del Pacifico: 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-029 (3\$m, 3\$f: \$m = MX17-1698, \$m = MX17-1709, \$f = MX17-1741, \$f = MX17-1731, \$f = MX17-1728, \$m = MX17-1712).

**Diagnosis.** Small sized species with marked sexual dimorphism. Males are green with dark and hirsute first legs and the ocular region covered by an anterior margin of pale brown setae (fig. 46; 5-7). Females are very dark with a mottled pattern of white over the abdomen (fig. 46; 8-10). The species is distinctive by a brown fringe of setae covering the sides of the first legs, which are dark brown the lime colour of the integument in the rest of the legs (fig. 46; 5-7), the peach ivory margin of setae and the laminar embolus ending into a flat rectangle. Other species morphologically similar are *M. \$matlizaha*, *M. \$pluma*, *M. \$SJP\_litter*, *M. \$SJP\_orange\_black* and *M. \$chicachica*. It differs from these species by having longer first legs (fig. 46; 6-7) and a non bipartite embolus (fig. 46; 1-2). The lateral fringes are less dense than *M. \$SJP\_litter* and *M. \$matlizaha* and more hirsute than *M. \$pluma* and *M. \$chicachica*.

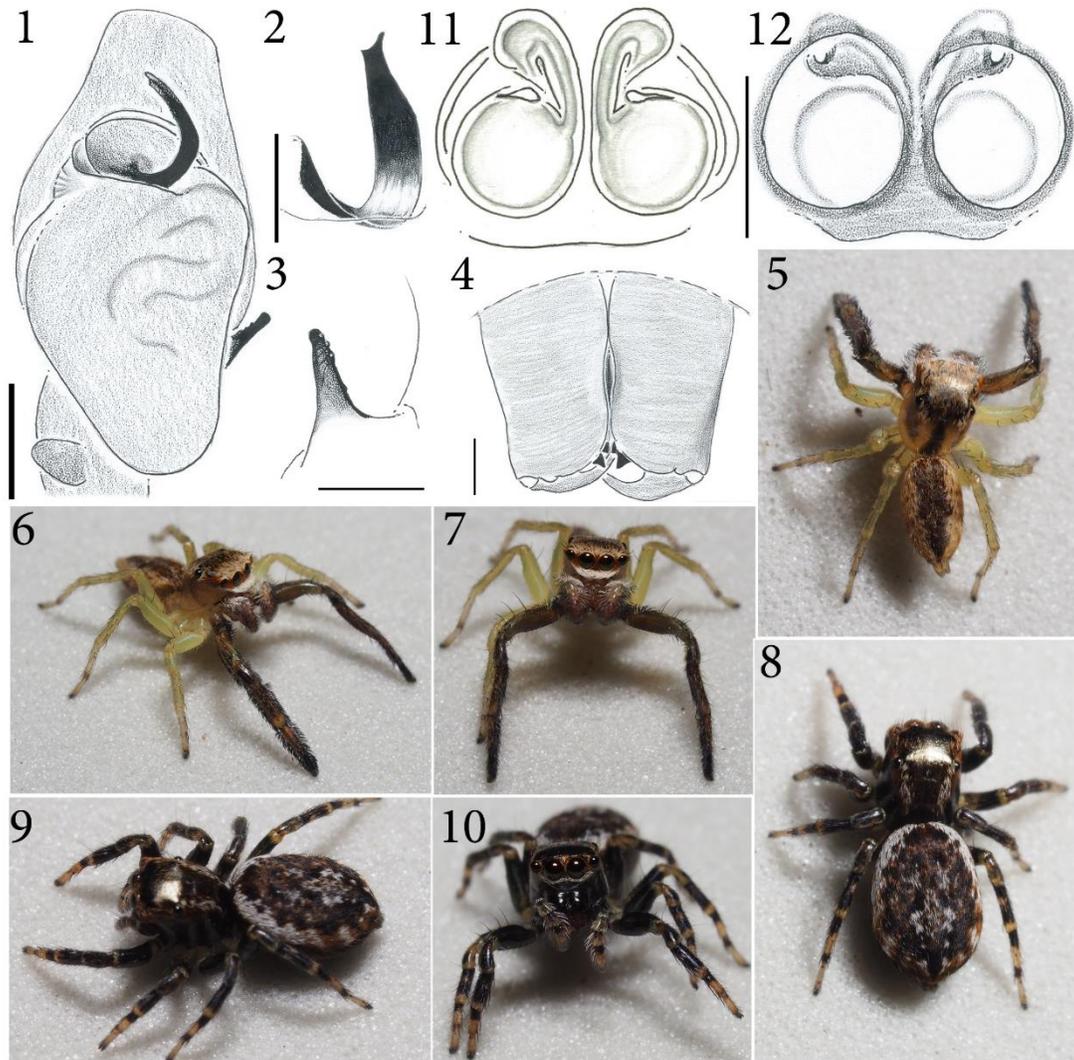
**Description.** *Male* (holotype). Carapace length 2.0. Abdomen length 2.2. **Carapace** amber yellow at the margins merging at the posterior end of the thoracic region with a band that emerges from behind the PLE forming parallel stripes with their counterpart. The bands are covered by pale yellow cream setae and encapsulate a middle black region that extends from the ocular region. Ocular region black and covered by a composite of shiny orange, red and

cream yellow setae. Anterior margin densely covered by a narrow line of peach coloured setae. **Clypeus** densely covered by white setae restricted to the clypeus. AME surrounded by a ring of red setae that extend towards other eyes forming a continuous reddish mask. **Chelicerae** dark brown and covered by scattered long setae. Non excavated. Promargin with two teeth from which the external one (i.e. farthest from the inner margin of chelicerae) is the biggest. Retromargin with one simple tooth bigger than those in the promargin. **Palp** mostly transparent peach yellow and covered with long peach whitish setae from the distal part of the femur to patella, and slightly extending into the retrolateral margin of the tibia. Cymbium dark brown. **Embolus** arising from its disk ca. 6:00 forming a short spiral of almost the same size as the disk. The laminar side of the embolus reduces its size at the distal end ending into a rectangular tip with sharp vertices, from which the dorsal one is the biggest. RTA fingerlike and dorsally serrated. **Legs** 1>4>3>2. Legs I entirely black, glabrous at the dorsal surface of the femur (except for scattered orange setae) and patella and heavily hirsute otherwise, with lateral bristles of black setae that make the legs appear bigger when seen from above. Legs II-IV lime green gradually turning peach pink at the metatarsus and tarsus. Joint at metatarsus-tarsus dark spotted. **Abdomen** mostly pale yellow caused by setae over a pink integument. Dorsal dark medial band uniform and covered by scattered red brown setae, gradually reducing its size ending into a dark triangle over the anal tubercle.

*Female* (paratype; MX17-1728). Carapace length 2.2. Abdomen length 3.1. **Carapace** black and glabrous with a small patch of scattered pale setae behind the PLE. Specimen in alcohol shows there's unpigmented cuticle that outlines parallel stripes, that are hard to see in alive specimens. **Clypeus** glabrous with a lateral pair of long white setae below the AME. AME encircled by a composite colouration of setae: white in the inferior half and shiny reddish brown at the dorsal half. **Chelicerae** smooth and dark. **Epigyne** with copulatory openings originating at the anterior medial margin of the plate. Atria follow the openings from below. Ducts inverting direction right

after the openings and descending parallel to their counterpart before entering the big spherical spermatheca from above. **Legs** entirely black except for patches of amber transparent yellow at the distal part of each segment except for the entirely amber tarsus, creating a ringed leg pattern. **Abdomen** with black integument dorsally and dark pink otherwise. Dark dorsal medial band merged with the black colouration of the integument ending into a dark triangle over the anal tubercle. A small transversal margin of pale yellow setae covers the anterior side of the abdomen.

**Additional material examined.** 2 males from MÉXICO: OAXACA: San José del Pacifico: 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-029 (2♂m).



**Figure 46.** *Mexigonus \$SJP\_long*. Figures 1-7 male holotype MX17-1714. 8-10 female paratype MX17-1728. 11-12 female paratype MX17-1414. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$SJP\_orange\_black* sp. nov.**

(fig. 47; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: San José del Pacifico, 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, R. Paredes, WPM#17-028, (\$m = MX17-1636).

**Paratypes.** 4 males, 3 females from MÉXICO: OAXACA: San José del Pacifico: 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, R. Paredes, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-028 WPM#17-029 (4\$m, 3\$f: \$f = MX17-1665, \$m = MX17-1654, \$f = MX17-1772, \$f = MX17-1660, \$m = MX17-1646, \$m = MX17-1671, \$m = MX17-1647).

**Diagnosis.** A small sized species with marked sexual dimorphism. Male is orange with somewhat transparent legs and carapace and very dark and tufted first legs (fig. 47; 5-7). Females are dark and cryptic with mottled dark brown dots over the abdomen (fig. 47; 8-10). The species is distinctive by the hirsute lateral fringes of black setae over a black integument and yellow tarsus, legs yellow and ringed, carapace with a horizontal narrow white patch of white setae complemented by the palps, (fig. 47; 5-7) the wide tips of the bipartite embolus (fig. 47; 1-2) with the dorsal being the longest, and the short triangular RTA (fig. 47; 3). Other species morphologically similar are *M. \$matlizaha*, *M. \$SJP\_litter* and *M. \$chicachica*. The fringes in *M. \$SJP\_litter* and *M. \$matlizaha* cover the dorsal part of the segments including the tarsus and are absent in *M. \$chicachica*. The bipartite embolus has the dorsal tip as the longest unlike any other species (fig. 47; 1-2), and the anterior margin of setae above the anterior eyes is missing.

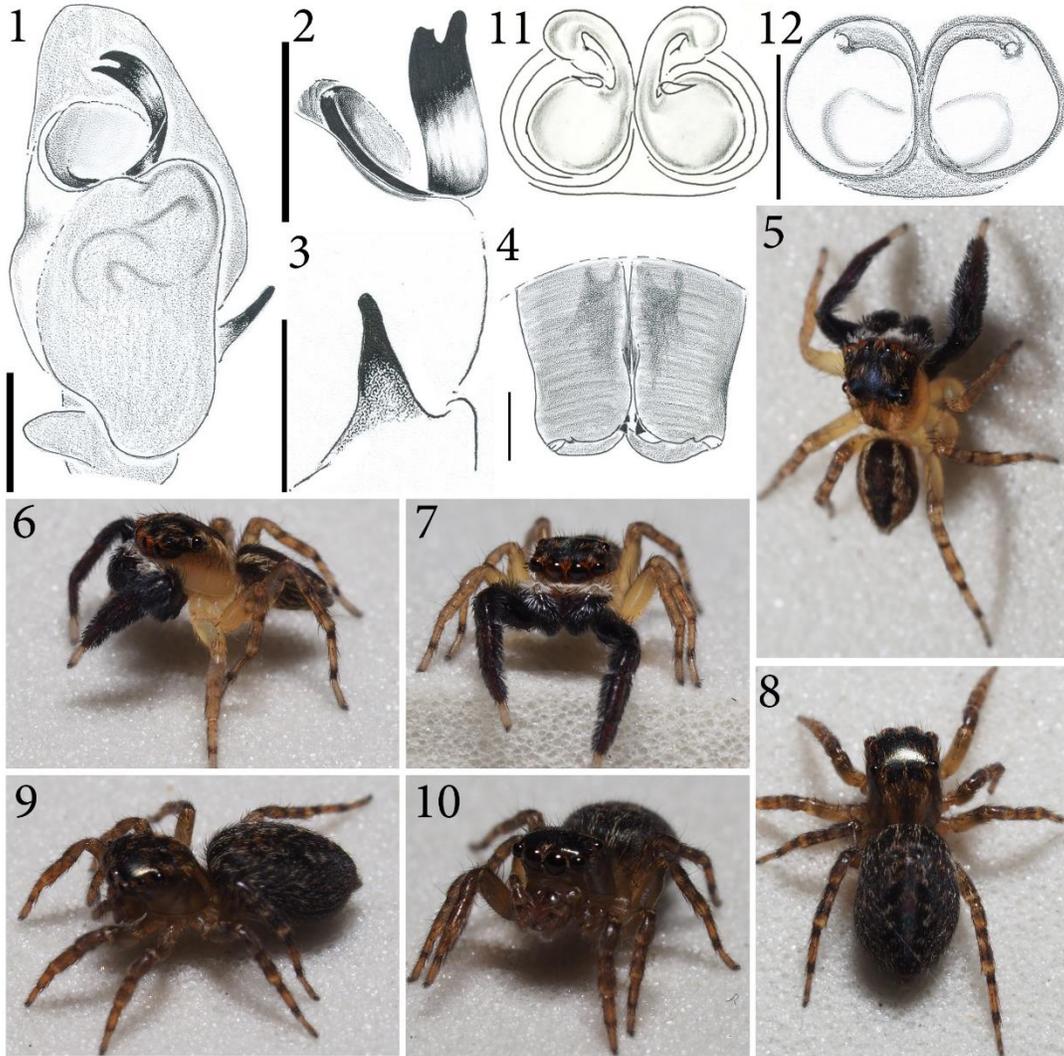
**Description.** *Male* (holotype). Carapace length 1.8. Abdomen length 1.7. **Carapace** orange with ocular region black. Small pale orange patches cover the ocular region. PLE posteriorly covered by a line of cream yellow setae running parallel to their counterpart towards the pedicel forming

stripes. Area surrounding the fovea black. **Clypeus** orange yellow covered by a horizontal line of white setae. AME outlined by a thin layer of red setae over a black integument creating a bicolored contrast. **Chelicerae** black and partially hirsute. Non-excavated. Promargin with two teeth. Retromargin with one simple tooth bigger than those in promargin. **Palp** with yellow femora covered in white setae, and black otherwise covered by black setae. **Embolus** arising from its disk ca. 7:00 projecting a circular spiral that rotates ventrally exposing the laminar face before ending into a bipartite tip. Tegulum oval. Tibial bump horizontal. RTA short and triangular. Legs I completely black covered by a lateral dense fringe of black setae gradually receding its length towards the distal segments disappearing at the metatarsus and completely absent in the yellow glabrous tarsus. **Legs** II-IV orange yellow with base of joints black creating a ringed pattern. **Abdomen** with a dark dorsal medial band uniform in colour and edges gradually receding its width before ending in a dark triangle over the anal tubercle, outlined by a cream yellow margin of setae especially pale at the anterior edge of the abdomen.

*Female* (paratype; MX17-1660). Carapace length 1.9. Abdomen length 2.5. **Carapace** dark brown almost as black as the black ocular region, with two parallel stripes of pale integument descending towards the pedicel. Hirsute by an outline of pale yellow setae passing between the eyes and barely extending into the pale parallel stripes. **Clypeus** dark brown and glabrous. AME outlined by a thin layer of pale yellow setae. **Epigyne** with openings located at the antero medial edge of the genital plate, right below the atria. Copulatory ducts slightly widening right after the openings, arching anteriorly before descending diagonally towards their counterpart before anteriorly entering the circular spermatheca. **Legs** dark brown fading into orange at the distal segments, darker at the joints especially with some patches of yellow setae at the middle part of the tibia forming a ringed pattern. **Abdomen** entirely black making the medial band inconspicuous. The specimen in alcohol shows the band as a discontinuous pattern of chevrons forming from the second half ending in a dark triangle over the anal tubercle. Rest of the

abdomen mottled by small patches of pale cream setae scattered along shiny reddish setae over a black integument.

**Additional material examined.** 7 males, 5 females, 9 juveniles from MÉXICO: OAXACA: San José del Pacifico: 16.173 to 16.177 °N, 96.5 to 96.503 °W, 2600-2800 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-027 (1\$m, 1\$f, 1\$j); 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, R. Paredes, WPM#17-028 (6\$m, 2\$f, 5\$j); OAXACA: 4.5 km from Manzanal along road to San Agustín Loxicha: 16.1143 °N, 96.5158 °W, 2770 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-030 (2\$f, 3\$j).



**Figure 47.** *Mexigonus orange\_black*. Figures 1-7 male holotype MX17-1636. 8-12 female paratype MX17-1660. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$diamond* sp. nov.**

(fig. 48; 1-18)

**Holotype.** Male from MÉXICO: OAXACA: Santiago Comaltepec, Humo Chico comedor, 17.5779 °N, 96.507 °W, 2940 m, 3 Jul 2017, W. Maddison & U. Garcilazo Cruz, WPM#17-017, (\$m = MX17-0890).

**Paratypes.** 9 males, 4 females from MÉXICO: OAXACA: Sendero Interpretivo el Relámpago, km 88 of HWY 175: 17.592 °N, 96.398 °W, 2000 m, 4 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, A. Casasola, R. Paredes, WPM#17-018 (\$m = MX17-0976); OAXACA: Santiago Comaltepec, Humo Chico comedor: 17.5779 °N, 96.507 °W, 2940 m, 3 Jul 2017, W. Maddison & U. Garcilazo Cruz, WPM#17-017 (8\$m, 4\$f: \$m = MX17-0917, \$f = MX17-0965, \$m = MX17-0866, \$m = MX17-0883, \$f = MX17-0942, \$m = MX17-0911, \$m = MX17-0895, \$f = MX17-0963, \$m = MX17-0921, \$f = MX17-0957, \$m = MX17-0935, \$m = MX17-0904).

**Notes.** There are two very distinctive male morphs of this species. The holotype refers to the male type that has only the first pair of anterior pairs of legs black (see below).

**Diagnosis.** Medium-small sized species with a diamond shaped decolouring at the fovea (fig. 48; 5, 14), marked sexual dimorphism and two male morphs, one with dark first legs covered in neon setae and yellow legs (fig. 48; 5-7), the second one with legs I and II entirely black and yellow legs (fig. 48; 8-10). The two morphospecies share a laminar embolus medially constricted forming a fin with a rectangular tip (fig. 48; 1-2), the diamond shaped pale integument over the fovea covered in setae, the clypeus covered by a horizontal dense patch of white setae, and the colour of the setae outlining the anterior eyes and the lime coloured of the third and fourth legs (fig. 48; 5-7). The species is distinctive in the holotype morph by the neon blue fringes of setae covering the prolateral margin of the first legs up to the metatarsus, the dark brown integument

of the first legs and yellow lime second legs. The morph is morphologically similar to *M. \$SJP\_long* by the colour of the legs II-IV and the rectangular shape of the embolus, but *M. \$SJP\_long* lacks the medial constriction and the carapace is darker with an anterior margin of pink ivory setae. The second morph is unique by the black second legs lacking any fringes of setae but covered in reddish setae, a black carapace with the clypeus covered by a horizontal line of white setae and a margin of red setae over the anterior eyes with a pale stripe in the middle.

**Description.** *Male* (holotype). Carapace length 2.0. Abdomen length 1.9. **Carapace** bicolored. Light brown on the lower margins and over the fovea, where it forms a rhomboid shape covered in white setae over a dark cuticle. Ocular region black and hirsute by orange and brown setae, especially between the eyes. **Clypeus** densely covered by white setae. AME surrounded by orange setae that extend between the eyes forming a semicontinuous mask. **Chelicerae** smooth and slightly excavated. Promargin with two teeth. Retromargin with one simple tooth. **Embolus** arising from its disk ca. 6:00 forming a spiral and increasing in size before constricting around the middle forming a fin, then maintaining its width ending into a blunt rectangular tip. **Palp** dark chocolate brown except for distal dorsal side of femur, which has paler cuticle and is covered in long white setae. **Legs** 1>4>2>3. Legs I entirely dark brown and laterally hirsute by fringes of neon blue iridescent setae, especially visible at the promargin of the femur. Rest of legs yellow amber with joint metatarsus-tarsus dark spotted. **Abdomen** mostly dark brown. Dark dorsal medial band inverted, with an outline of white setae surrounding a pale dark integument. Sides of the band covered by dark brown setae.

**Description.** *Male* (paratype; MX17-0866). Carapace length 1.7. Abdomen length 1.6.

**Carapace** black and glabrous with ocular area covered by red brown setae, especially between the eyes forming a horizontal anterior margin. Fovea covered by a long white stripe that descends towards the thoracic region without touching the posterior margin of the carapace.

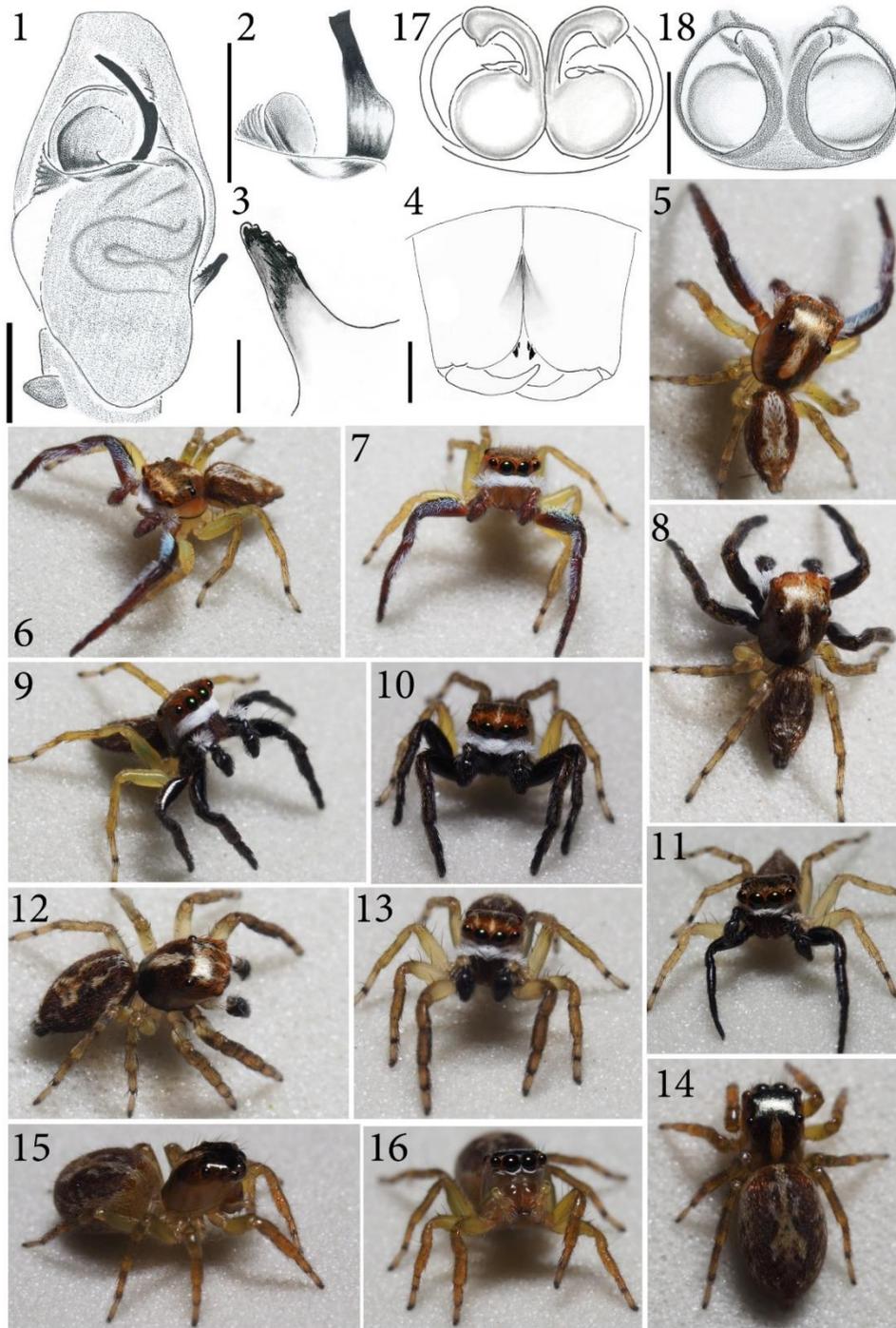
**Clypeus** bicolored and densely covered by white setae. AME surrounded by a margin of red setae, scattered between the AME and ALE region creating a mask. Area above AME with a vertical stripe of white setae that extends into the ocular region. **Chelicerae** dark brown and slightly excavated. Promargin with two teeth. Retromargin with one simple tooth. **Palp** entirely black except for distal portion of femur, which has paler integument and is covered by long white setae. **Legs** 1>4>2>3. Legs I and II black and glabrous centrally and hirsute dorsally from distal part of femora to tarsus, produced by scattered copper coloured setae. Legs II-IV amber yellow with joints from patella-tibia to tarsus dark spotted.

*Female* (paratype; MX17-0963). Carapace length 1.9. Abdomen length 2.7. **Carapace** dark brown and bicolored. Ocular area black and glabrous with a margin of brown red setae between the eyes. A rhomboid shape of pale cuticle over the fovea extends back into the thoracic region and is covered in pale setae. Lower margins of carapace pale as in fovea. **Clypeus** glabrous and transparent amber yellow. AME encircled by a compound margin of setae: pale yellow below and red brown otherwise. Chelicerae smooth and pale amber yellow. **Epigyne** with openings originating at the anterior medial margin of the plate. Atria connects to the openings from below helping delimiting the windows. Copulatory ducts after slightly widened after the openings arching anteriorly towards the center of the epigynum and descending parallel to their counterpart before entering the big spherical spermatheca anteriorly. **Legs** amber yellow with some transparency. Base of metatarsus=tarsus dark spotted. **Abdomen** with a dorsal dark medial band inverted, paler than the rest of the abdomen, covered anteriorly by white setae, irregular and pectinated (especially at the second half of the abdomen). Band surrounded by brown integument.

**Additional material examined.** 52 males, 50 females, 5 juveniles from MÉXICO: OAXACA: Santiago Comaltepec, Humo Chico comedor: 17.5779 °N, 96.507 °W, 2940 m, 3 Jul 2017, W. Maddison & U. Garcilazo Cruz, WPM#17-017 (25\$m, 19\$f, 1\$j; \$f = MX17-0949); OAXACA:

Santiago Comaltepec, Humo Chico: 17.576 °N, 96.503 °W, 3030 m, 3 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, A. Casasola, WPM#17-015 (1\$f); OAXACA: 13.2 km NNW Ixtlan de Juarez: 17.44378 °N, 96.51258 °W, 2940 m (2\$f); OAXACA: 48 km SW of Valle Nacional on HWY 175: 17.53 °N, 96.48 °W, 1676 m, 3 Aug 1983, W. Maddison, WPM#83-135 (3\$m, 3\$f); 17.5 °N, 96.5 °W, 2791 m, 25 Jun 1983, W. Maddison, WPM#83-086 (2\$m, 1\$f); OAXACA: 58 km SW of Valle Nacional on HWY 175: 17.5 °N, 96.5 °W, 2590 m, 3 Aug 1983, W. Maddison (2\$f); OAXACA: 60 km SW of Valle Nacional on HWY 175: 17.52 °N, 96.52 °W, 2791 m, 3 Aug 1983, W. Maddison, WPM#83-137 (2\$m, 7\$f); 17.5 °N, 96.5 °W, 2590 m, 25 Jun 1983, W. Maddison, WPM#83-085 (19\$m, 15\$f, 4\$j); OAXACA: Monte Alban ruins: 17.0333 °N, 96.7833 °W, 1590 m, 5 Aug 1983, W. Maddison (1\$m).

**Notes on variation.** A paratype male (MX17-0976) collected near the type locality lies between the two morphs here described. Specimen MX17-0935 has very pale first legs relative to either morph while showing the vertical stripe between the AME seen in morph I.



**Figure 48.** *Mexigonus diamond*. Figures 1-7 male holotype MX17-0890. 8-10 male paratype MX17-0866. 11 male paratype MX17-0976. 12-13 male paratype MX17-0935. 14-18 female paratype MX17-0963.

***Mexigonus \$dark\_red* sp. nov.**

(fig. 49; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: Santiago Comaltepec, Humo Chico, 17.573 °N, 96.504 to 96.506 °W, 2950-3000 m, 3 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-016, (\$m = MX17-0791).

**Paratypes.** 1 males, 1 females from MÉXICO: OAXACA: Santiago Comaltepec, Humo Chico: 17.573 °N, 96.504 to 96.506 °W, 2950-3000 m, 3 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-016 (1\$m, 1\$f: \$f = MX17-0809, \$m = MX17-0784).

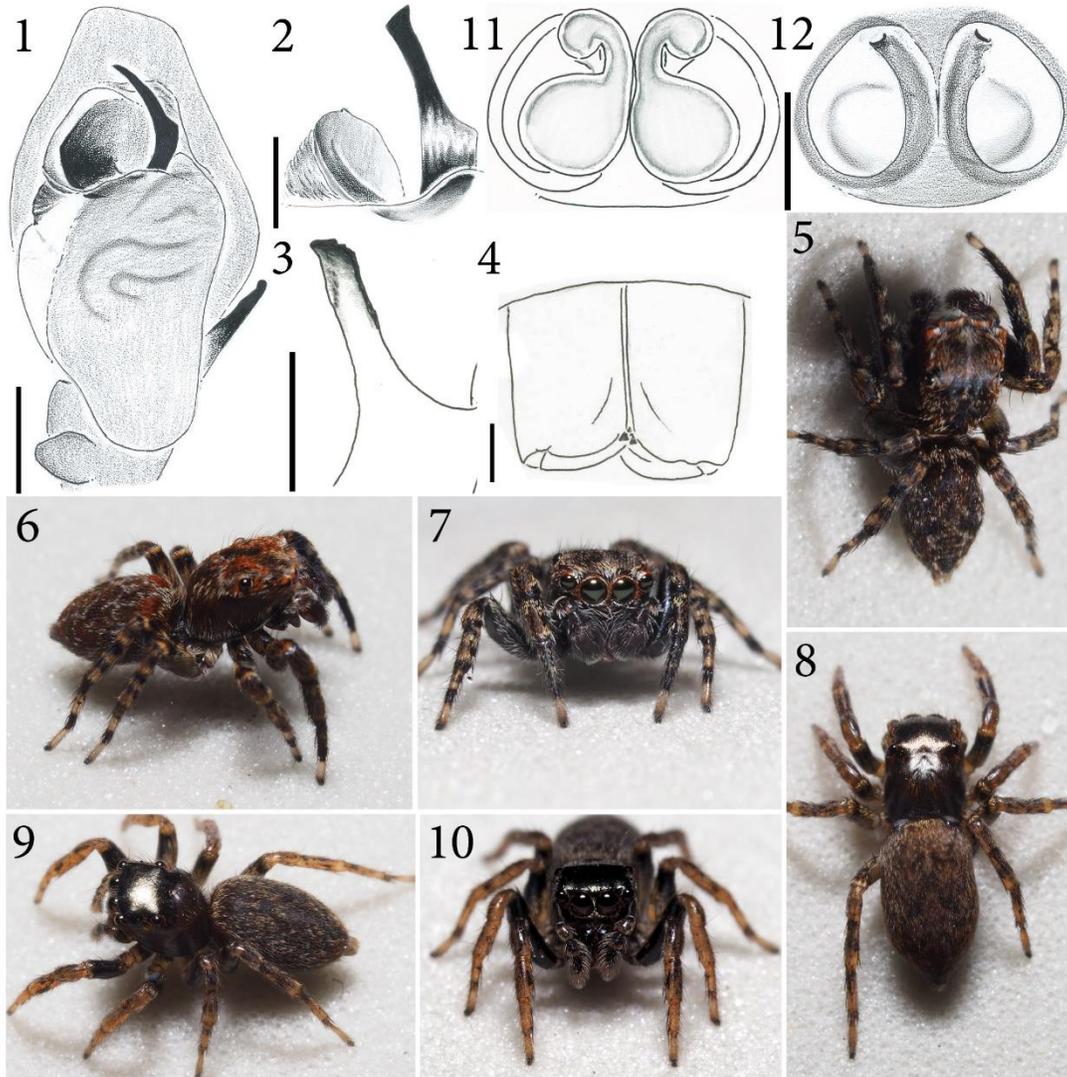
**Diagnosis.** A small cryptic and reddish species distinctive among *Mexigonus* by the combination of a striped red and black habitus produced by iridescent red setae over a black integument mixed with a mottled white and black pattern (fig. 49; 5-10), male face divided into white and black vertical stripes (fig. 49; 7) and the shape of the embolus forming a fin (fig. 49; 1-2). The species is morphologically like *M. \$diamond* in the shape of the embolus.

**Description.** *Male* (holotype). Carapace length 2.1. Abdomen length 2.1. **Carapace** black and covered by scattered white setae around the creating an outline of two parallel stripes that descend towards the back of the carapace. Ocular area hirsute by a composition of red setae and a margin of white setae over the AME and ALE. **Clypeus** covered by brown setae. AME encircled by a compound pattern of setae: white at the lower margin and red orange otherwise. **Chelicerae** chocolate dark brown and smooth. Promargin with two teeth. Retromargin with one simple tooth. **Palp** mostly dark chocolate brown. Dorsal distal side of femur and lateral sides of patella pale and covered by cream yellow setae. **Embolus** arising from its disk ca. 6:00 forming a spiral and increasing its width significantly, suddenly constricting into a rectangle and leaving a fin. Tip is rectangular in shape with a pointy dorsal tip. **Legs** 4>1>3>2. Black and dorsally

hirsute by combination of cream brown setae at the patella and tibia, and scattered red setae at the distal end of femur. Tarsus pale yellow. Legs II-IV as in legs I except metatarsus pale and joint metatarsus-tarsus black. **Abdomen** uniformly black and hirsute, with an anterior margin of red iridescent setae that fade towards the posterior dorsal end of the abdomen. Dark medial band absent and an outline of white setae surrounding the longitudinal center of the abdomen. Two dark spots at the middle of the abdomen and a dark triangle over the anal tubercle.

*Female* (paratype; MX17-0911). Carapace length 2.2. Abdomen length 2.5. **Carapace** black and glabrous. **Clypeus** black and glabrous. AME encircled by a margin of cream pale brown setae. **Chelicerae** smooth and black. **Epigyne** with openings located at the anterior inner margin of the genital plate at the top of the windows. Atria follow the openings from the below forming clear windows. Ducts short and immediately rotated dorsally following the openings forming spheres, then descending into the big spherical spermatheca. **Legs** dark maple syrup coloured with femora and metatarsus-tarsus joint black. Tibiae scatterly pigmented with black cuticle. **Abdomen** hirsute produced by combination of pale brown and black setae creating a uniform velvety pattern.

**Additional material examined.** 6 males, 3 females, 2 juveniles from MÉXICO: OAXACA: Santiago Comaltepec, Humo Chico: 17.573 °N, 96.504 to 96.506 °W, 2950-3000 m, 3 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-016 (4\$m, 1\$f, 1\$j: \$j = MX17-0809); OAXACA: Santiago Comaltepec, Humo Chico comedor: 17.5779 °N, 96.507 °W, 2940 m, 3 Jul 2017, W. Maddison & U. Garcilazo Cruz, WPM#17-017 (2\$m, 2\$f, 1\$j).



**Figure 49.** *Mexigonus dark\_red*. Figures 1-7 male holotype MX17-0791. 8-12 female paratype MX17-0911. 1-3 palp, embolus and RTA. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$chicachica* sp. nov.**

(fig. 50; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: San Andrés Chicahuaxtla, 17.168 °N, 97.842 °W, 2460 m, 21 Jul 2017, W. Maddison, U. Garcilazo, Tello, Fernández, Ł. Trębicki, WPM#17-065, (\$m = MX17-3855).

**Notes on Holotype.** The specimen has the four left legs dissected and are deposited in a microvial next to the palp.

**Paratypes.** 2 females, 7 juveniles from MÉXICO: OAXACA: San Andrés Chicahuaxtla: 17.168 °N, 97.842 °W, 2460 m, 21 Jul 2017, W. Maddison, U. Garcilazo, Tello, Fernández, Ł. Trębicki, WPM#17-065 (2\$f, 7\$j; \$f = MX17-3865).

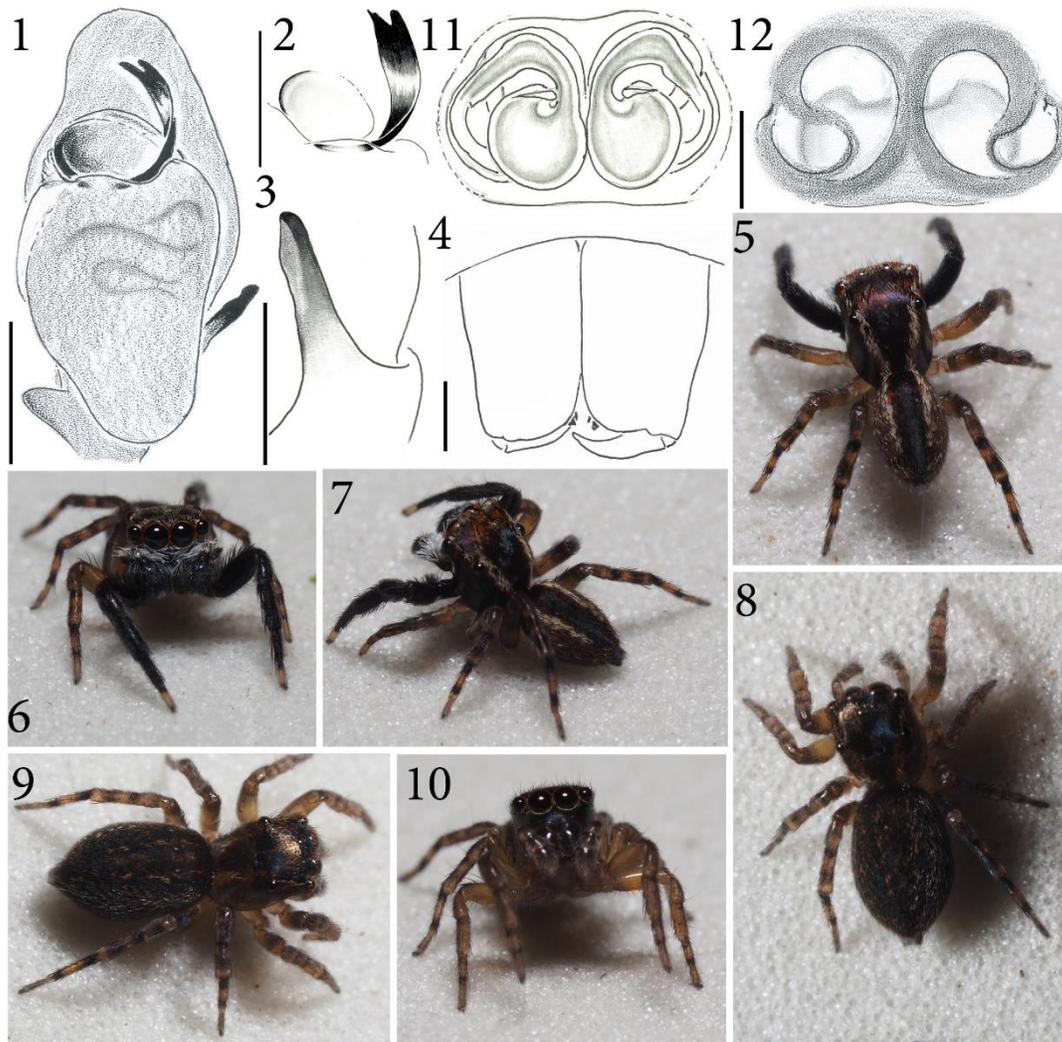
**Diagnosis.** Small sized and very dark species with orange femora and males with dark first legs. The species is hard to diagnose and it's distinctive among *Mexigonus* by a combination of traits: black glabrous male first legs with yellow tarsus (fig. 50; 6), ringed legs (fig. 50; 6), horizontal band of white setae covering the clypeus and complemented by similar setae on the palpal patella (fig. 50; 6), a black carapace covered in reddish iridescent setae and small size (fig. 50; 5). Other species morphologically similar are *M. \$SJP\_orange\_black* and *M. \$pluma*. The chelicerae are uniformly covered by setae as in *M. \$pluma*, but the ocular region is primary black instead of covered by white setae. The first legs are black except for a yellow tarsus as in *M. \$SJP\_orange\_black* but they are glabrous instead of having lateral fringes. The embolus is bipartite but narrow unlike *M. \$SJP\_orange\_black* and *M. \$pluma*.

**Description.** *Male* (holotype). Carapace length 1.9. Abdomen length 1.7. **Carapace** black and hirsute with a compound pattern of setae: pale brown bands between the eyes and beside the fovea running parallel to each other and emerging from behind the PLE, red on ocular area,

iridescent black in the rest of carapace. **Clypeus** covered by scattered long white setae. AME encircled by a compound margin of setae: white at the bottom and red otherwise. **Chelicerae** black and glabrous with the base of the paturon covered in white setae. Smooth without excavation. Promargin with two teeth. Retromargin with one simple tooth. **Palp** black with dorsal distal side of femur and patella covered in long white setae. **Embolus** arising from its disk ca. 5:00 forming a spiral and rotating dorsally exposing the laminar face of the embolus before ending into a bipartite tip from which the ventral is the longest. RTA fingerlike. **Legs** 1>4>3>2. Legs I black except for an amber tarsus. Hirsute by long and scattered black setae, especially visible at the dorsal face of the femora. **Legs** II-IV amber red with darkened joints creating a ringed pattern. **Abdomen** dark with dark dorsal medial band uniform in edges and width before ending into a triangle over the anal tubercle. Band is outlined by a margin of pale brown setae that complement the stripes from the carapace. Rest of carapace almost as black as the medial band.

*Female* (paratype; MX17-3865). Carapace length 1.6. Abdomen length 1.9. **Carapace** as in male except parallel bands beside the fovea are thinner and almost uncovered by any setae. **Clypeus** black and glabrous. AME encircled by a compound margin of setae: yellow at the bottom and reddish brown otherwise. **Chelicerae** smooth and black. **Epigyne** with openings located at the external medial side of the plate. Atria follow the openings from the side dividing the windows into two tear-drop shapes, from which the one closer to the inner margin is the biggest. Ducts after the openings bending anteriorly forming arcs before descending into the tear-drop shaped spermatheca. **Legs** dark amber orange with joints less darkened than in male, forming a semi-ringed pattern. All legs are the same colour. Abdomen dark and uniformly covered by long grey setae giving a velvety pattern. Some areas of the abdomen are less pigmented creating a spotted pattern.

**Additional material examined.** 1 juveniles from MÉXICO: OAXACA: San Andrés Chicahuaxtla: 17.168 °N, 97.842 °W, 2460 m, 21 Jul 2017, W. Maddison, U. Garcilazo, Tello, Fernández, Ł. Trębicki, WPM#17-065 (1\$: \$j = MX17-4524).



**Figure 50.** *Mexigonus schicachica*. Figures 1-7 male holotype MX17-3855. 8-12 female paratype MX17-3865. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$copper* sp. nov.**

(fig. 51; 1-10)

**Holotype.** Male from MÉXICO: OAXACA: 13.2 km NNW Ixtlan de Juarez, 17.44378 °N, 96.51258 °W, 2940 m, M. G. Branstetter.

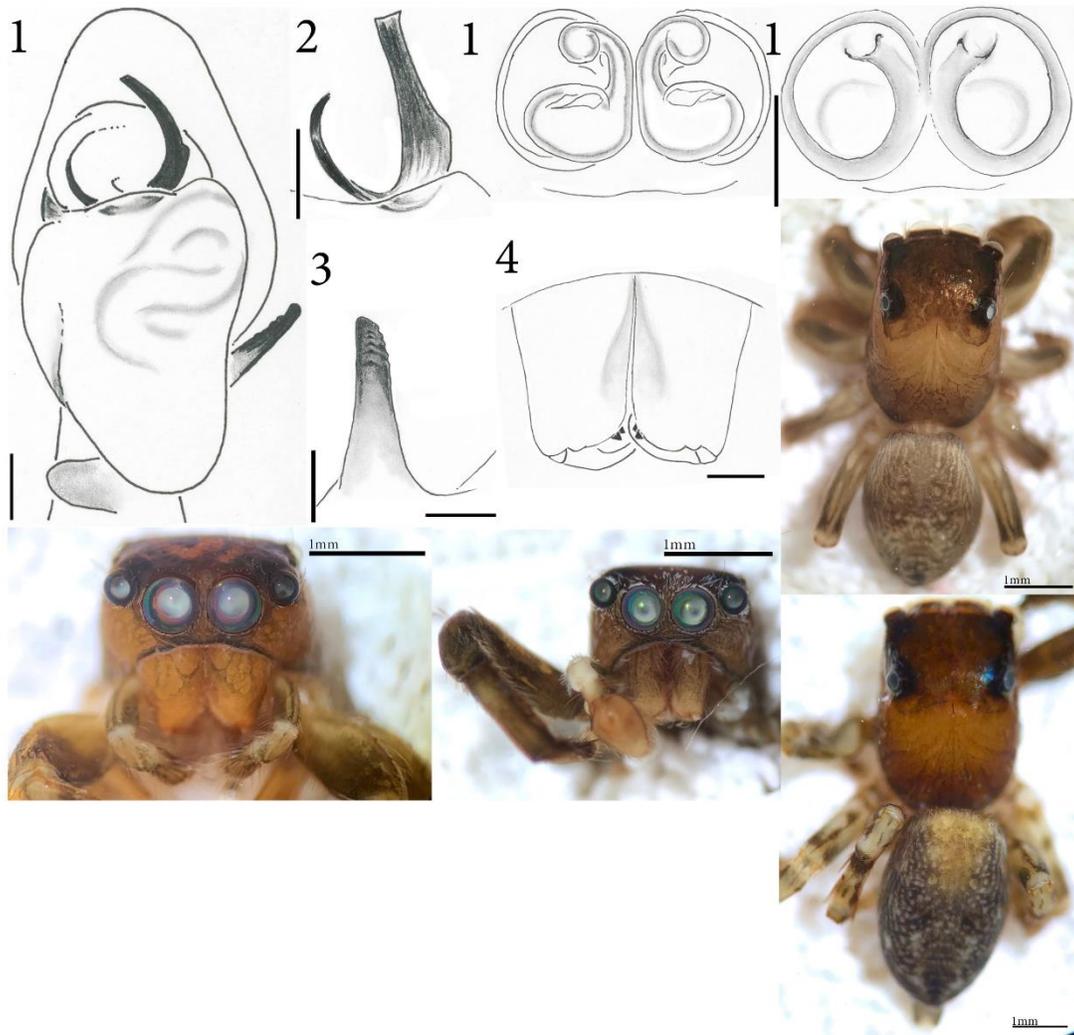
**Paratypes.** 2 males, 1 females, 2 juveniles from MÉXICO: OAXACA: 13.2 km NNW Ixtlan de Juarez: 17.44378 °N, 96.51258 °W, 2940 m, M. G. Branstetter (2♂, 1♀, 2♂).

**Diagnosis.** A medium-small sized cryptic dark species covered by shiny copper coloured setae (fig. 51; 5, 8). The species is distinctive among *Mexigonus* by a combination of a laminar embolus smoothly constricted leaving a rectangular tip (fig. 51; 1-2), a dark but glabrous habitus with a semi continuous band of pale orange setae passing over the anterior and secondary eyes and shiny and short copper coloured setae covering the entire body. The species is morphologically similar to *M. \$diamond*, *M. \$comma* and *M. \$dark\_red* in the shape of the embolus, differing in the thickness and orientation of the fin constricting in the middle of the embolus, the length and shape of the RTA (fig. 51; 3) and the lack of excavation in the chelicerae (fig. 51; 4).

**Description.** *Male* (holotype in alcohol). Carapace length 2.0. Abdomen length 2.4. **Carapace** dark brown and glabrous. Lower margins of thoracic area covered by a line of pale setae. Ocular area darker with area between the eyes covered in orange setae. **Clypeus** dark and glabrous with a horizontal line of long pale setae covering the base of chelicerae. AME encircled by a margin of orange setae and surrounded by scattered white setae. **Chelicerae** dark brown and slightly excavated. Promargin with two teeth. Retromargin with one simple tooth. **Palp** pale yellow with some reminiscences of white setae in fixed specimen that probably covered the entire palp except for a dark brown cymbium. **Embolus** arising from its disk ca. 6:00 forming a spiral and increasing the width of the laminar face before constricting at the middle forming a fin

and ending in a rectangular shape with pointy vertices from which the dorsal is the biggest. RTA finger-like shaped and dorsally serrated. **Legs** 4>1>3>2. Legs I dark brown and glabrous except for pale tarsus. Legs II-IV pale with joints dark giving a ringed pattern. **Abdomen** with black integument and mottled with small pale spots that correspond to the roots of hairs. Dark dorsal medial band faded against general abdomen colouration and outlined at the second half by pale integument surrounding a dark triangle over the anal tubercle.

*Female* (paratype in alcohol). Carapace length 2.3. Abdomen length 2.4. **Carapace** as in male but less hirsute and more glabrous. **Chelicerae** light brown and smooth. **Epigyne** with openings located at the anterior medial margin of the plate. Atria follow the openings from below entering the windows while increasing its width forming a sclerotized band next to the inner margins of the atria. Copulatory ducts bent dorsally forming small pockets and descending again dorsally while arching towards their counterpart before merging with the ovoid spermatheca from above. **Legs** mostly dark with middle dorsal area of segments decolored forming a semi-continuous pale stripe from basal to proximal sides of legs.



**Figure 51.** *Mexigonus Scopper*. Figures 1-7 male holotype. 8-12 female paratype. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$niquel sp. nov.***

(fig. 52; 1-12)

**Holotype.** Male from MÉXICO: MORELOS: near Huitzilac, 19.027 °N, 99.285 °W, 2750 m, 2 Aug 2014, W. Maddison, Ruiz et al., WPM#14-069, (\$m = NA14-1993).

**Paratypes.** 10 males, 8 females, 3 juveniles from MÉXICO: MORELOS: Municipio Huitzilac, Barrio de la Cruz: 19.004 to 19.007 °N, 99.228 to 99.232 °W, 2250 m, 2 Aug 2014, W. Maddison, WPM#14-071 (9\$m, 7\$f, 3\$j); MORELOS: near Huitzilac: 19.027 °N, 99.285 °W, 2750 m, 2 Aug 2014, W. Maddison, Ruiz et al., WPM#14-069 (\$f = NA14-1997); MEXICO CITY: UNAM, Pedregal de San Angel, REPSA: 19.317 to 19.318 °N, 99.192 to 99.195 °W, 2322-2327 m, 4 Aug 2014, W. Maddison, Ruiz et al., WPM#14-072 (\$m = NA14-2241).

**Diagnosis.** Medium sized cryptic, dark and hirsute species with males having a wide dark band outlined by brown setae over the abdomen (fig. 52; 5-7), and females are almost entirely black (fig. 52; 8-10). The species is distinctive by the colouration on the male habitus covered in red brown setae outlining a black uniform dark medial band, a clypeus covered by a horizontal patch of white setae (fig. 52; 7), a semi bipartite embolus with a blunt distal tip transitioning into the ventral tip with an angle bigger than 90° (fig. 1-2) and a serrated RTA (fig. 52; 3). The species is morphologically similar to *M. \$SJP\_bronze* in the shape of the embolus and female genitalia, but the dark medial band is well delimited instead of discontinuous, the RTA is serrated rather than smooth and the embolus is wider, with the dorsal tip blunt instead of straight as in *M. \$SJP\_bronze*.

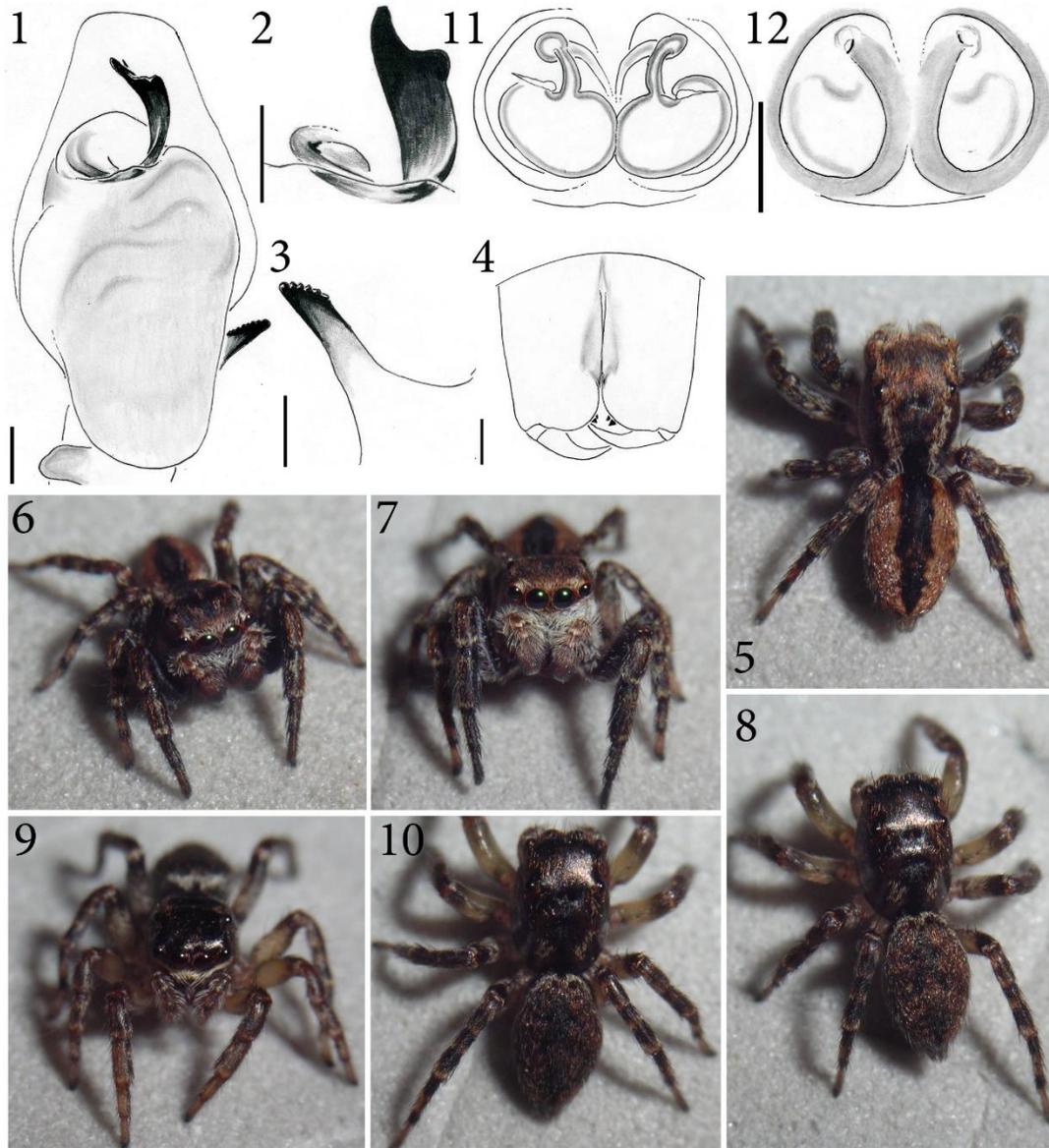
**Description.** *Male* (holotype). Carapace length 2.5. Abdomen length 2.5. **Carapace** dark brown and hirsute on the lower margins of the thoracic region by cream pale brown setae turning into white setae towards the cheeks. Ocular region covered in reddish brown setae and outlined by a

margin of pale brown setae connecting between the eyes and projecting behind the PLE turning into parallel stripes descending towards the pedicel. **Clypeus** hirsute covered in white setae from the cheeks. AME encircled by reddish brown setae and surrounded by a mixed pattern of white and brown setae. **Chelicerae** dark brown, excavated forming a groove of a lanceolated shape. Promargin with two teeth. Retromargin with one simple tooth. **Palp** reddish brown and hirsute by long white setae at the dorsal surface of femur, and scattered short yellowish brown setae on patella and tibia. Cymbium brown. **Embolus** arising from its disk ca. 6:00 forming a vertical spiral coiling anteriorly and noticeably increasing the width of the laminar face, ending into a bipartite shape with a blunt dorsal tip that leaves a dorsal notch and a longer ventral tip shaped as a can-opener. RTA finger shaped longer than wide and dorsally serrated. **Legs** 1>4>3>2. Dark brown slightly paler at the distal portion of metatarsus and the entire tarsus and joints black. Hirsute by scattered short pale yellow-brown setae that condense at the distal edge of patella and tibia, and the base of the tibia, forming rings. **Abdomen** with a dark dorsal medial band uniformly black except for two spots at the middle of the abdomen, and ending into a dark triangle over the anal tubercle. Band is outlined by brown setae produced by densely packed setae. Anterior margin of abdomen covered by a semicontinuous line of pale yellow-brown setae.

*Female* (paratype; NA14-1997). Carapace length 2.6. Abdomen length 2.5. **Carapace** black covered by small patches of pale yellowish setae at the thoracic region. Ocular area outlined between the eyes by reddish brown setae. **Clypeus** covered by a horizontal line of pale yellow-brown setae. **Chelicerae** smooth and dark brown. **Epigyne** with openings located at the anterior medial margin of the plate with atria connecting them from the posterior region delimiting earlobe shaped windows. Ducts right after the openings bend dorsally and towards the inner side of the plate while maintaining a distance to their counterpart of half the size of the spermatheca. Ducts anteriorly connecting to the ovoid spermatheca. **Legs** as in male but less

hirsute and femora somewhat transparent. **Abdomen** uniformly covered by a mixture of short pale yellow-brown and reddish brown setae over a dark integument. Medial side of dorsal abdomen darker resembling a discontinuous line of irregular borders and ending into a dark triangle over the anal tubercle.

**Additional material examined.** 1 males, 1 females, 2 juveniles from MÉXICO: MORELOS: Municipio Huitzilac, Barrio de la Cruz: 19.004 to 19.007 °N, 99.228 to 99.232 °W, 2250 m, 2 Aug 2014, W. Maddison, WPM#14-071 (1\$m, 1\$f); STATE OF MEXICO: Coatepec Harinas. Meyuca de Morelos, Cerro de las Huacas: 18.8525 °N, 99.7584 °W, 1929 m, 15 Aug 2019, CNAN-Ar0011306 (2\$j).



**Figure 52.** *Mexigonus \$niquel*. Figures 1-7 male holotype NA14-1993. 8-12 female paratype NA14-1997. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$stripe\_clean* sp. nov.**

(fig. 53; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: 14.6 km from Manzanal along road to San Agustín Loxicha, 16.0784 °N, 96.5668 °W, 2470 m, 8 Jul 2017, U. Garcilazo, W. Maddison, Ł. Trębicki, R. Paredes, WPM#17-031, (\$m = MX17-1796).

**Paratypes.** 3 males, 3 females from MÉXICO: OAXACA: 14.6 km from Manzanal along road to San Agustín Loxicha: 16.0784 °N, 96.5668 °W, 2470 m, 8 Jul 2017, U. Garcilazo, W. Maddison, Ł. Trębicki, R. Paredes, WPM#17-031 (3\$m, 3\$f: \$m = MX17-1784, \$f = MX17-1826, \$f = MX17-1801, \$m = MX17-1806, \$m = MX17-1791, \$f = MX17-1821).

**Diagnosis.** A medium sized species with marked sexual dimorphism. Males have carapace and proximal segments of legs dark and covered by shiny reddish setae (fig. 53; 5-7). Females are cryptic pale brown with ringed legs and a dark carapace (fig. 53; 8-10). The species is distinctive by the bipartite embolus with the tips separated by a shallow depression with the ventral tip the longest (fig. 53; 1-2) and copulatory ducts forming pockets right after the openings (fig. 53; 11-12). Other species morphologically similar are *M. \$SJP\_litter*, and *M. \$small\_litter*. The bipartite, narrow embolus has the ventral tip the longest like in *M. \$small\_litter* and unlike *M. \$SJP\_litter* but lacks the lateral fringes of setae on the first legs, the shapes of the tips are different and the copulatory ducts in the epigynum form pockets unlike any of these species. The carapace is very dark as in *M. \$small\_litter* but lacks the anterior white band covering the anterior eyes.

**Description.** *Male* (holotype). Carapace length 2.1. Abdomen length 2.0. **Carapace** dark brown and glabrous with ocular region outlined by a margin of reddish brown setae between ALE-AME and pale brown setae between the PME-PLE, extending towards the thoracic region parallel to their counterpart and descending towards the pedicel. **Clypeus** glabrous and covered by

scattered long white setae. AME encircled by reddish brown setae that extend between the AME-ALE forming a semicontinuous reddish mask. **Chelicerae** black covered at the base of paturon with light brown setae. Excavated forming a rhomboid groove. Promargin with two teeth. Retromargin with one simple tooth. **Palp** brown and dorsally covered by long white setae and complemented by yellow setae at the dorsal side of patella and tibia. Cymbium black. **Embolus** arising from its disk ca. 6:00 forming a spiral that slightly rotates ventrally exposing the laminar face of the embolus, and maintaining its width ending into a bipartite shape from which the ventral tip is the longest. RTA fingerlike ending into a blunt wide tip. **Legs** 1>4>3>2. Legs I almost entirely black except for an amber yellow tarsus. Slightly hirsute covered at the distal portion of the segments with cream yellow setae. Legs II-IV paler than legs I especially on the metatarsus and more hirsute, with more condensed patches of pale setae producing a ringed pattern. **Abdomen** with dark dorsal medial band uniform in colour and borders, and mostly uniform in width being wider at the first half of the abdomen and ending into a dark triangle over the anal tubercle. Band complemented by a pale brown abdomen produced by the combination of reddish brown and white setae, from which the latter are more condensed at the anterior margin of the abdomen.

*Female* (paratype; MX17-1801). Carapace length 1.9. Abdomen length 2.3. **Clypeus** with a narrow horizontal line of cream pale brown setae, some of which extend beyond the lower margin of the carapace covering the base of the chelicerae. **Chelicerae** as in male but non-excavated. **Epigyne** with copulatory openings located at the anterior medial margin of the plate with atria following from the posterior margin forming two thin sclerotized lines. Ducts after the openings bent dorsally and accompanied by an extension of cuticle forming "bunny ears", then descending diagonally getting in proximity to their counterpart at the inner margin of the epigyne before entering the big and spherical spermatheca. **Legs** dark brown fading into slightly transparent except for the black joints, creating a ringed pattern. Slightly hirsute covered by

scattered yellow setae, especially condensed at the distal edge of femur, patella and tibia.

**Abdomen** with dark dorsal medial band discontinuous at the anterior half of the abdomen, and irregular at its margins before ending in a dark triangle over the anal tubercle. Band is complemented by a pale outline of naked integument. Rest of the abdomen with a mottled integument produced by black and pale spots and slightly covered by scattered yellow brown pale setae.

**Additional material examined.** 8 males, 7 females, 5 juveniles from MÉXICO: OAXACA: 14.6 km from Manzanal along road to San Agustín Loxicha: 16.0784 °N, 96.5668 °W, 2470 m, 8 Jul 2017, U. Garcilazo, W. Maddison, Ł. Trębicki, R. Paredes, WPM#17-031 (8\$m, 7\$f, 5\$j).



**Figure 53.** *Mexigonus stripe\_clean*. Figures 1-7 male holotype MX17-1796. 8-10 female paratype MX17-1801. 11-12 female paratype MX17-1826. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$small\_litter* sp. nov.**

(fig. 54; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: Santa Catarina Lachatao, 17.25 °N, 96.464 to 96.466 °W, 2570 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, R. Paredes, A. Casasola, Hernandez, WPM#17-009, (\$m = MX17-0560).

**Paratypes.** 5 males, 5 females from MÉXICO: OAXACA: Santa Catarina Lachatao: 17.25 °N, 96.464 to 96.466 °W, 2570 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, R. Paredes, A. Casasola, Hernandez, WPM#17-009 (2\$m, 3\$f: \$m = MX17-0586, \$f = MX17-0577, \$f = MX17-0570, \$m = MX17-0552, \$f = MX17-0574); 17.265 °N, 96.479 °W, 2220 m, 1 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-008 (\$m = MX17-0103); OAXACA: Ixtlán de Juárez, Universidad de la Sierra Juárez: 17.314 to 17.316 °N, 96.48 to 96.482 °W, 1950-2070 m, 2 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-013 (2\$m, 1\$f: \$m = MX17-0236, \$f = MX17-0243, \$m = MX17-0225); OAXACA: San Miguel Amatlán: 17.2751 °N, 96.48 °W, 1920 m, 1 Jul 2017, W. Maddison, WPM#17-007 (\$f = MX17-0092).

**Diagnosis.** A small dark species with ringed legs and marked sexual dimorphism. Males have a broad dark dorsal medial band outlined by pale brown setae and a white band covering the anterior margin of the ocular region (fig. 54; 5-7), whereas the female is pale brown and hirsute (fig. 54; 8-10). The species is distinctive among *Mexigonus* by the face covered by a mask of brown setae darkened in the center of the clypeus (fig. 54; 7), a bipartite and very narrow embolus with a long ventral tip curved dorsally (fig. 54; 1-2), a long finger like RTA (fig. 54; 3) with a bent tip and big spermatheca with short copulatory ducts (fig. 54; 11-12). Other species morphologically similar are *M. \$SJP\_litter*, *M. \$pluma* and *M. \$nique!*. The anterior eyes are anteriorly covered by white setae as in *M. \$pluma* unlike *M. \$SJP\_litter* where the band is more brown, the legs are black like in *M. \$pluma* but thicker, covered in red brown setae on the dorsal

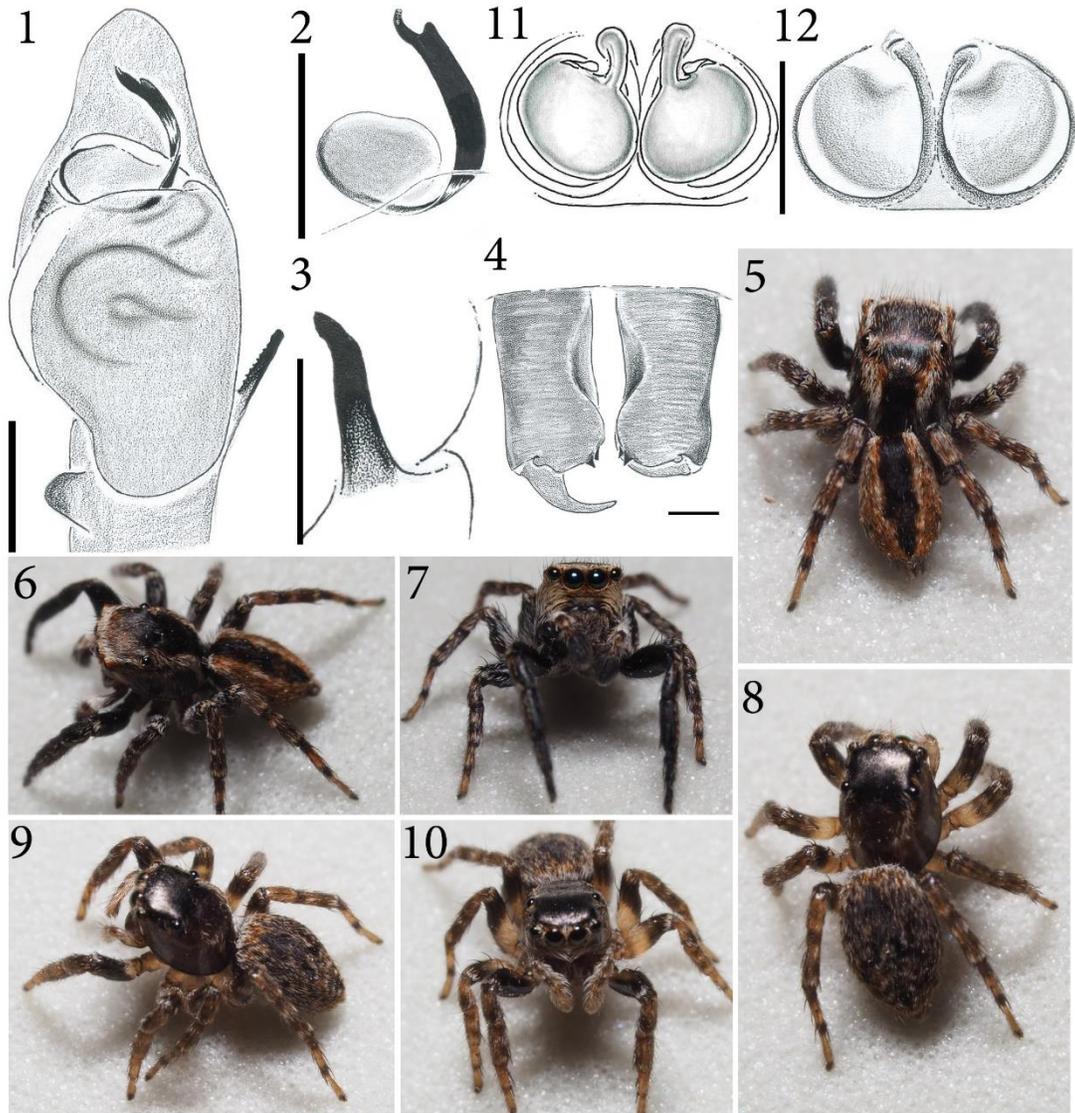
surface of the segments, and lacking the lateral fringes seen in *M. \$SJP\_litter*. The highly contrasted reddish brown and black habitus is shared with *M. \$niquel*, and the main difference is in the dark clypeus and presence of the anterior white band.

**Description.** *Male* (holotype). Carapace length 1.9. Abdomen length 1.6. **Carapace** black with ocular region anteriorly covered by a mixture of white and red setae and a dense margin of white setae forming a "single eyebrow" that extends between the ALE-PME-PLE and towards the thoracic region, descending along with their counterpart forming parallel stripes. Cheeks and margins of carapace covered in scattered pale brown setae. **Clypeus** densely covered by brown setae. AME encircled by a compound pattern of setae: white at the top and bottom and red-orange otherwise. Reddish setae extend beyond their margins forming a semi-continuous mask. **Chelicerae** brown with the base of paturon covered in scattered long brown setae. Excavated medially leaving a vase-shaped groove. **Palp** brown and slightly transparent at the patella and covered by white long scattered setae. Cymbium black. **Embolus** arising from its disk ca. 6:00 forming a spiral and slightly rotating ventrally exposing the laminar face of the embolus before ending into a bipartite shape. Ventral tip of the embolus the longest and is slightly bent anteriorly. RTA fingerlike, long and slightly bent ventrally at the tip. **Legs** 4>1>3>2. Legs I entirely black, glabrous and slightly hirsute with scattered short pale brown setae. Legs II-IV brown from femur to tibia and amber brown at metatarsus and tarsus, with black spotted joints. Femur-tibia hirsute by a combination of short white and orange setae, creating a ringed pattern in combination with the black parts of the legs. **Abdomen** with dorsal medial dark band uniform in width, edges and colouration, ending into a dark triangle over the anal tubercle. Band is slightly outlined by narrow patches of white setae. The rest of the dorsal abdomen is orange by combination of white and reddish brown setae.

*Female* (paratype; MX17-0574). Carapace length 2.0. Abdomen length 1.9. **Carapace** black with ocular region outlined between the eyes by a margin of orange setae and extending beyond

the PLE along with their counterpart forming parallel stripes descending towards the pedicel while turning white. **Clypeus** glabrous and covered by scattered long white setae, some of which condense at the margin of the carapace slightly covering the base of the chelicerae. AME encircled by a margin of setae of compound colour: orange at the top and bottom and white otherwise. Some white setae extend between the AME into the ocular region forming a triangle. **Chelicerae** brown, slightly transparent and smooth, with some long setae over the inner margin. **Epigyne** with openings located at the inner anterior side of the plate behind the sclerotized margin of the windows. Ducts following openings rotating 180° and descending parallel to their counterpart, separated from each other by half the width of the spermatheca. **Legs** transparent orange and hirsute by scattered white setae. Joint metatarsus-tarsus black. **Abdomen** mottled by the combination of a black integument and compound patches of brown, reddish and white setae. Dorsal medial dark band present only as a fragmented line cut by four white patches, ending into a dark triangle over the anal tubercle.

**Additional material examined.** 10 males, 6 females, 1 juveniles from MÉXICO: OAXACA: Santa Catarina Lachatao: 17.25 °N, 96.464 to 96.466 °W, 2570 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, R. Paredes, A. Casasola, Hernandez, WPM#17-009 (7\$m, 5\$f, 1\$j); OAXACA: Ixtlán de Juárez, Universidad de la Sierra Juárez: 17.313 °N, 96.486 °W, 1950 m, 1-2 Jul 2017, Ł. Trębicki, W. Maddison, A. Casasola, WPM#17-014 (2\$m); OAXACA: 72 km SW of Valle Nacional on HWY 175, 31 mi N of Guelatao de Juarez: 17.47 °N, 96.53 °W, 2590 m, 3 Aug 1983, W. Maddison & R.S. Anderson, WPM#83-138 (1\$m, 1\$f).



**Figure 54.** *Mexigonus \$small\_litter*. Figures 1-7 male holotype MX17-0560. 8-10 female paratype MX17-0574. 11-12 female paratype MX17-0577. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$porkachu* sp. nov.**

(fig. 55; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: San Andres Chicahuaxtla, area II along curve on road facing southeast, 17.162 °N, 97.83416 °W, 2515 m, 2 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@016, (\$m = MXN-9011).

**Paratypes.** 2 males, 6 females, 1 juveniles from MÉXICO: OAXACA: San Andres Chicahuaxtla, area II along curve on road facing southeast: 17.162 °N, 97.83416 °W, 2515 m, 2 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@016 (\$f = MXN-9078); OAXACA: San Andres Chicahuaxtla, area II on pine trees on trail facing south: 17.16228 °N, 97.83434 °W, 2504 m, 2 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@017 (2\$m, 2\$f, 1\$j); OAXACA: San Andres Chicahuaxtla, area I property of Amador Tello Rojas: 17.16772 °N, 97.84242 °W, 2436 m, 1 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@013 (2\$f: \$f = MXN-7325, \$f = MXN-7288); OAXACA: San Andres Chicahuaxtla, area I property of Amador Tello Rojas on crop's edge: 17.16792 °N, 97.84294 °W, 2444 m, 1 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@014 (\$f = MXN-7354).

**Etymology.** Named formed by the combination of the Trique adjective *xachi* = big and the Greek noun *khele* = claw; *xachichelis* = big of the claw. Species named after the bulky chelicerae of both male and females on the species.

**Diagnosis.** Small dark and hirsute species with ringed legs and sexual dimorphism distinctive among *Mexigonus* by the combination of first legs in the male of the same colour than the rest (fig. 55; 5-7), a blade shape of the embolus (fig. 55; 1-2) and the medial constriction forming a fin, a curved RTA (fig. 55; 3) and the brown ringed first legs. Other species morphologically

similar are *M. Spluma* and *M. \$matlizaha*. The species is similar to body form and colour of integument to these species, but the anterior margin of the carapace is black instead of having a white band covering the anterior eyes, the first legs are pale instead of black and glabrous without lateral fringes as seen in *M. Spluma*. The embolus is very different from these two species by the medial fin-like constriction and triangular ventral tip, in contrast to a narrow embolus with two well delimited tips.

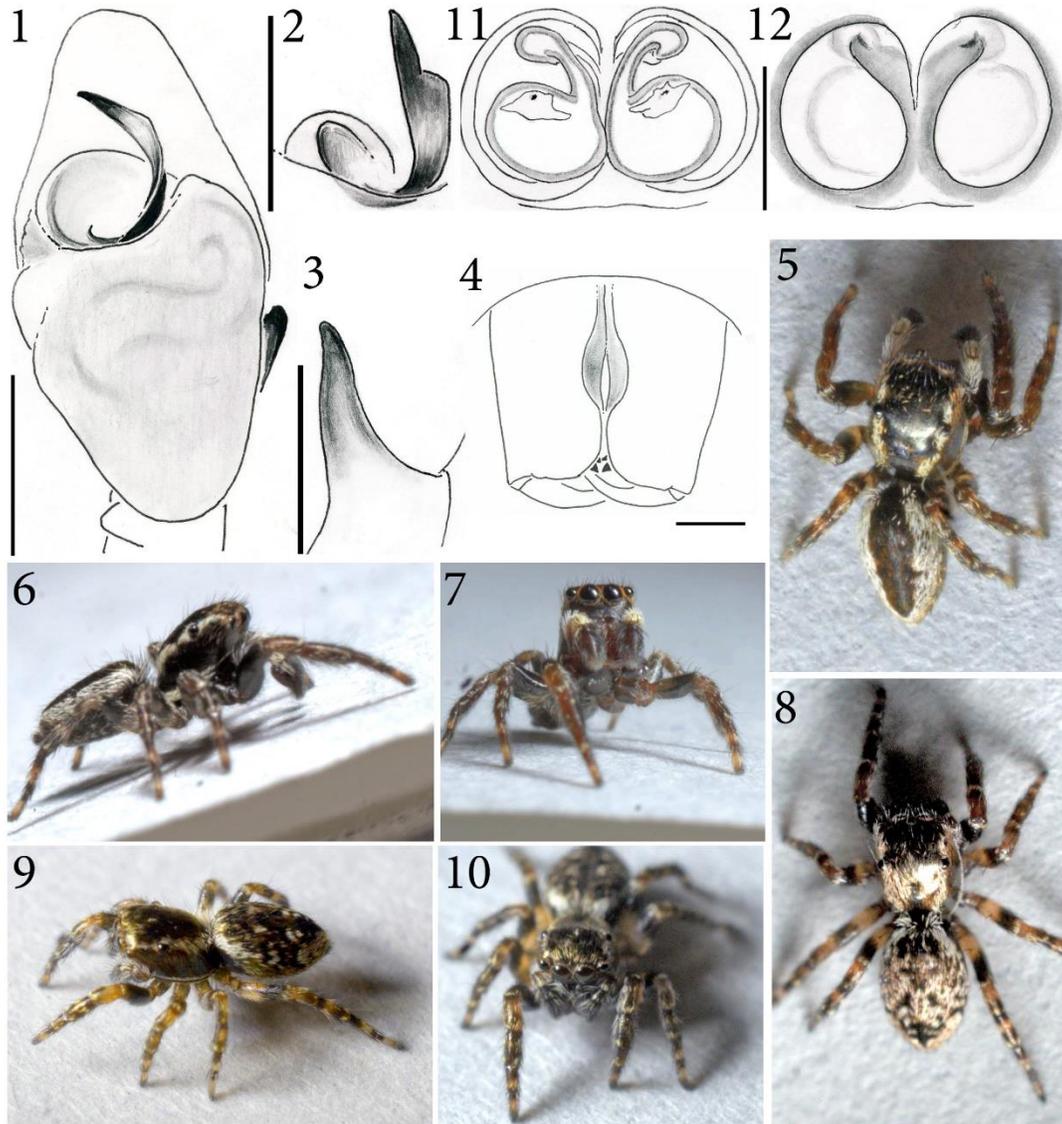
**Description.** *Male* (holotype). Carapace length 1.8. Abdomen length 1.8. **Carapace** dark and hirsute. Ocular region covered in shiny copper setae and outlined by a margin of pale yellow setae between ALE-PME-PLE, which extend behind the PLE parallel to their counterpart and descending towards the pedicel. Margin of carapace in the thoracic region covered by a line of pale setae. **Clypeus** glabrous and black. AME encircled by a margin of red brown setae, which extend between AME-ALE creating a semi continuous mask. **Chelicerae** bulky, long and wide with a deep medial excavation. Promargin with two teeth. Retromargin with one simple tooth. **Palp** dark amber red and covered from femora to tibia by yellow setae. Cymbium black. **Embolus** arising from its disk ca. 6:00 forming a spiral and rotating ventrally exposing the laminar face of the embolus, which increases in width until the last third of its length and suddenly constricting leaving a fin before ending into a triangular tip. **Legs** 1>4>3>2. Legs I entirely black except for pale brown patella and slightly hirsute, with distal region of segments covered by a scattered horizontal margin of yellow setae. Legs II-IV as in I except metatarsus-tarsus are dark red amber with black joints, and basal portion of femora pale. **Abdomen** with dorsal dark medial band uniform except for the middle light constriction, and ending into a dark triangle over the anal tubercle. Band outlined by a margin of cream yellow setae turning brown away to the sides of the abdomen.

*Female* (paratype; MXN-7354). Carapace length 1.8. Abdomen length 1.9. **Carapace** dark brown and hirsute. Ocular region covered by three patches of pale setae forming delimiting the

vertices of an inverted triangle. **Chelicerae** smooth, bulky and glabrous without excavation.

**Epigyne** with openings located at the anterior inner margin of the plate, with atria following from behind and arching inwards tracing a heart shape. Ducts following the openings horizontal and bending dorsally while descending diagonally to their counterparts before anteriorly entering the big round spermatheca. **Legs** 4>1>3>2. Hirsute with distal part of segments covered by a horizontal line of yellow pale setae. Legs I mostly black except for amber red patella. Legs II-IV with distal half of femora and joints red amber. **Abdomen** mottled black and pale brown with an anterior margin of pale brown setae. Dorsal dark medial band inconspicuous but outlined by two pairs of intermittent pale spots at the second half of the abdomen, turning into wide margins surrounding a dark triangle over the anal tubercle.

**Additional material examined.** 6 males, 4 females, 2 juveniles from MÉXICO: OAXACA: San Andres Chicahuaxtla, area III on slope facing south: 17.14909 °N, 97.83832 °W, 2249 m, 3 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@019 (3\$m, 1\$f); OAXACA: San Andres Chicahuaxtla, area II along curve on road facing southeast: 17.162 °N, 97.83416 °W, 2515 m, 2 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@016 (1\$m, 2\$f, 1\$j); OAXACA: San Andres Chicahuaxtla, area II heading to Cerro Zarzamora: 17.16093 °N, 97.83034 °W, 2581 m, 3 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@022 (1\$m, 1\$f, 1\$j); OAXACA: San Andres Chicahuaxtla, area II on pine trees on trail facing south: 17.16228 °N, 97.83434 °W, 2504 m, 2 Aug 2019, E. Mikkelsen, H. Fernandez, F. Hernandez, U. Garcilazo, GCU/19@017 (\$m = MXN-8362).



**Figure 55.** *Mexigonus \$porkachu*. Figures 1-7 male holotype MXN-9011. 8-12 female paratype MXN-7354. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$SJP\_bronze* sp. nov.**

(fig. 56; 1-14)

**Holotype.** Male from MÉXICO: OAXACA: San José del Pacifico, 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-029, (\$m = MX17-1765).

**Paratypes.** 3 males, 1 females from MÉXICO: OAXACA: San José del Pacifico: 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, R. Paredes, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-028 WPM#17-029 (2\$m, 1\$f: \$f = MX17-1678, \$m = MX17-1769, \$m = MX17-1767); 16.173 to 16.177 °N, 96.5 to 96.503 °W, 2600-2800 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-027 (\$m = MX17-1579).

**Diagnosis.** Medium-small sized hirsute and black species with dark first legs in both males and females with orange tarsi (fig. 56; 5-12). The species is distinctive among *Mexigonus* by the combination of a dark brown hirsute habitus, black first legs with orange tarsus, orange ringed legs (fig. 56; 5-12), male chelicerae narrowly excavated (fig. 56; 4) and clypeus covered in scattered pale cream yellow setae (fig. 56; 7, 10), embolus with a medial constriction moved retrolaterally looking like a tag in the palp ventral view (fig. 56; 1-2), and a short RTA (fig. 56; 3). Other species morphologically similar are *M. \$SJP\_litter* and *M. \$stripe\_clean*. The hirsuteness of the body and general colouration is like *M. \$SJP\_litter* but the first legs are not covered by lateral fringes of setae. The first legs are similar to *M. \$stripe\_clean* in the colour of the first legs including a yellow tarsus, differing from this species in the lack of reddish setae and a well delimited dark dorsal medial band.

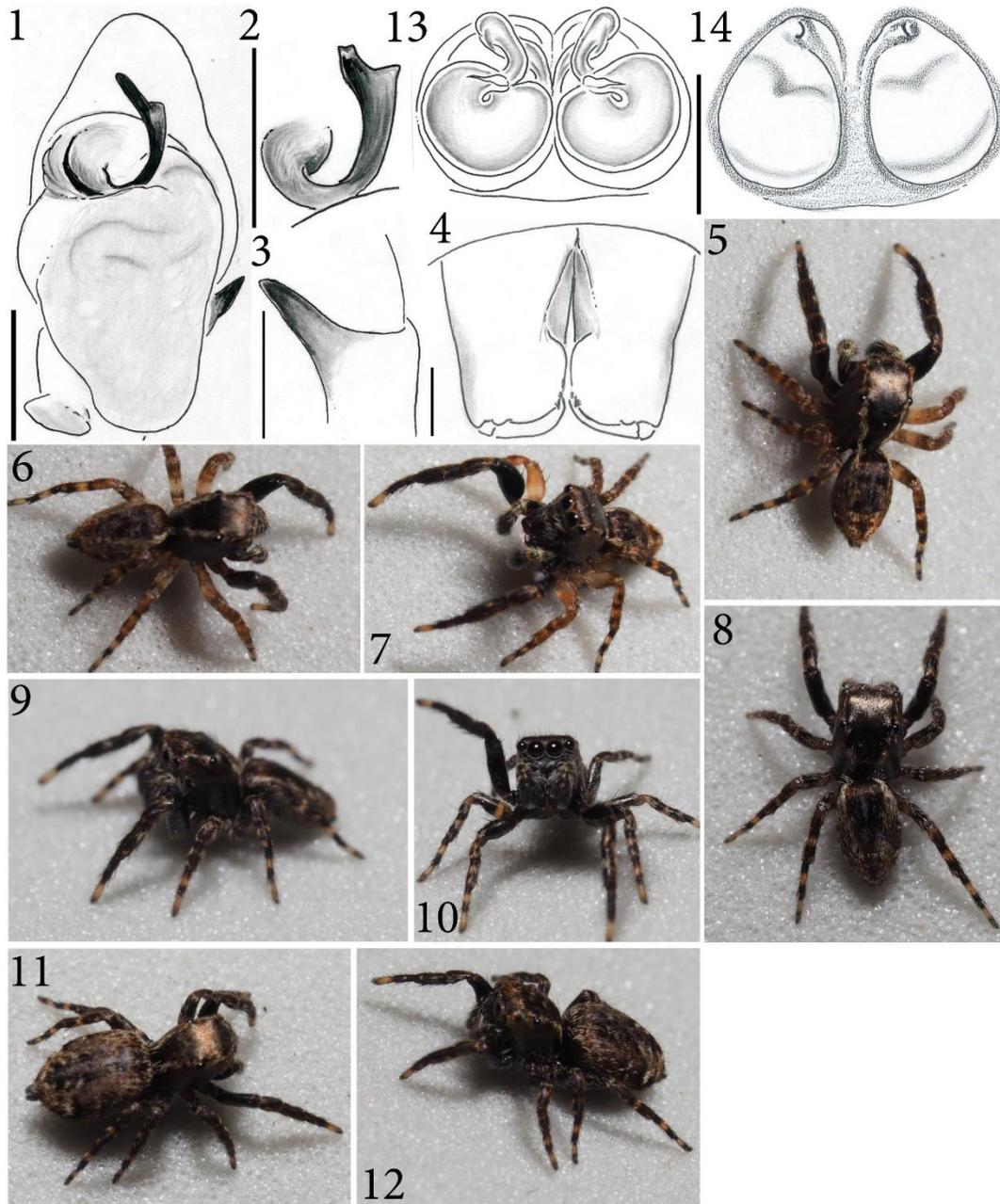
**Description.** *Male* (holotype). Carapace length 1.8. Abdomen length 1.8. Carapace black slightly hirsute with ocular region covered in reddish iridescent setae and two parallel bands descending from behind the PLE towards the pedicel. Clypeus brown covered by scattered pale

yellow setae. AME outlined by a margin of reddish iridescent setae. Chelicerae bulky with the base of paturon covered by scattered yellow cream setae. Excavated leaving an arrow shaped groove. Promargin with two teeth. Retromargin with one simple tooth. bigger than those in the promargin. Palp black with patella and tibia covered in yellow setae. Cymbium black. Embolus arising from its disk ca. 6:00 forming an open spiral. The dorsal half of the prolateral face rotates dorsally forming a 'tag' that stands out in the ventral view of the palp. RTA short and triangular. Legs 1>4>3>2. Hirsute and dark. First legs black except for orange tarsus slightly covered by brown setae, condensed in the middle of the tibia forming patches. Legs II-IV orange and black at the joints forming a ringed pattern. Small patches of orange setae complement the orange integument increasing contrast. Abdomen brown and hirsute. Dark dorsal medial band discontinuous and irregular on its borders. Wide anteriorly and disappearing at the beginning of the second half, reappearing as a dark triangle over the anal tubercle.

*Female* (paratype; MX17-1678). Carapace length 1.9. Abdomen length 2.3. **Carapace** of mostly black integument with two pale parallel stripes behind the PLE of higher transparency. Slightly hirsute with ocular region outlined by scattered reddish setae. Clypeus black and glabrous. AME encircled by a thin margin of reddish brown setae. **Chelicerae** smooth and dark. **Epigyne** with openings located at the anterior medial margin of the plate. Atria follow the openings from the posterior inner margin forming the inner side of the windows. Ducts following openings horizontally bend dorsally and descending diagonally relative to their counterpart before arching and entering the big spermatheca. **Legs** transparent amber yellow from proximal to distal femur, then having the distal half of each segment amber yellow while joints are black except for tarsus, which is entirely amber. **Abdomen** mottled and velvety by a compound pattern of short reddish and cream brown setae. Dark dorsal medial band invisible in alive specimens. in alcohol preserved specimens it is consistent in its width except for ending into a dark triangle over the anal tubercle, and has irregular borders, especially at the second half of the abdomen.

**Notes.** The male specimen MX17-1579 is from the same locality as the holotype but smaller, darker and the palp is less hirsute. This male was left within the species because these traits are similar to those seen in females, and could represent a form of intraspecific variation.

**Additional material examined.** 1 males, 6 females, 1 juveniles from MÉXICO: OAXACA: San José del Pacifico: 16.173 to 16.177 °N, 96.5 to 96.503 °W, 2600-2800 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-027 (1\$m, 3\$f); 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, W. Maddison, U. Garcilazo, R. Paredes, WPM#17-029 WPM#17-028 (3\$f, 1\$j).



**Figure 56.** *Mexigonus* *SJP\_bronze*. Figures 1-7 male holotype MX17-1765. 8-10 male paratype MX17-1579. 11-14 female paratype MX17-1678. 1-3 palp, embolus and RTA. 4 chelicerae. 13-14 epigyna dorsal and ventral view.

## Species of *Mexigonus* with uncertainty in morphological group identity

(Figure 82, map 7)

Some species of *Mexigonus* couldn't be confidently identified as members of a particular species group because they show unique morphologies in their habitus while lacking obvious distinctive features in the genitalia, or complex genitalia with a habitus that is only informative for their exclusion from particular groups. Some of these species have similarities in the genitalia with members in other groups but lack all or most of the somatic resemblance that could justify their placement taking only morphological data. Future examination of these species could help corroborate their identity in the phylogeny of *Mexigonus*.

### *Mexigonus green\_ghost* sp. nov.

(fig. 57; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: Santiago Comaltepec, Humo Chico, 17.573 °N, 96.504 to 96.506 °W, 2950-3000 m, 3 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-016, (\$m = MX17-0749).

**Paratypes.** 2 males, 2 females from MÉXICO: OAXACA: Santiago Comaltepec, Humo Chico: 17.573 °N, 96.504 to 96.506 °W, 2950-3000 m, 3 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-016 (2\$m, 2\$f: \$m = MX17-0753, \$m = MX17-0731, \$f = MX17-0763, \$f = MX17-0771).

**Diagnosis.** A transparent and densely hirsute medium sized species unique by the green colour of the male integument (fig. 57; 5-7), the fringe covering the prolateral-dorsal surface of the femora I made of white setae with black tips (fig. 57; 7), the triangular tufts of these setae

extending beyond the cheeks forming a “carnival mask” shape (fig. 57; 7) and the shape of the embolus (fig. 57; 1-2). This species is morphologically very similar to *M. \$orange\_ghost* in the hirsuteness and general shape of the body, except the ocular region is outlined by reddish setae (fig. 57; 5-6), the embolus has a medial constriction forming a fin (fig. 57; 2) and the legs are green instead of orange. The orientation of setae in the body is also more parallel to the longitudinal axis of the leg segments making the species look smoothly hairy, whereas in *M. \$orange\_ghost* the setae are black and point in many directions producing a ‘messy’ pattern. In addition, the triangular projections on the cheeks are white with black tips instead of orange in *\$orange\_ghost*.

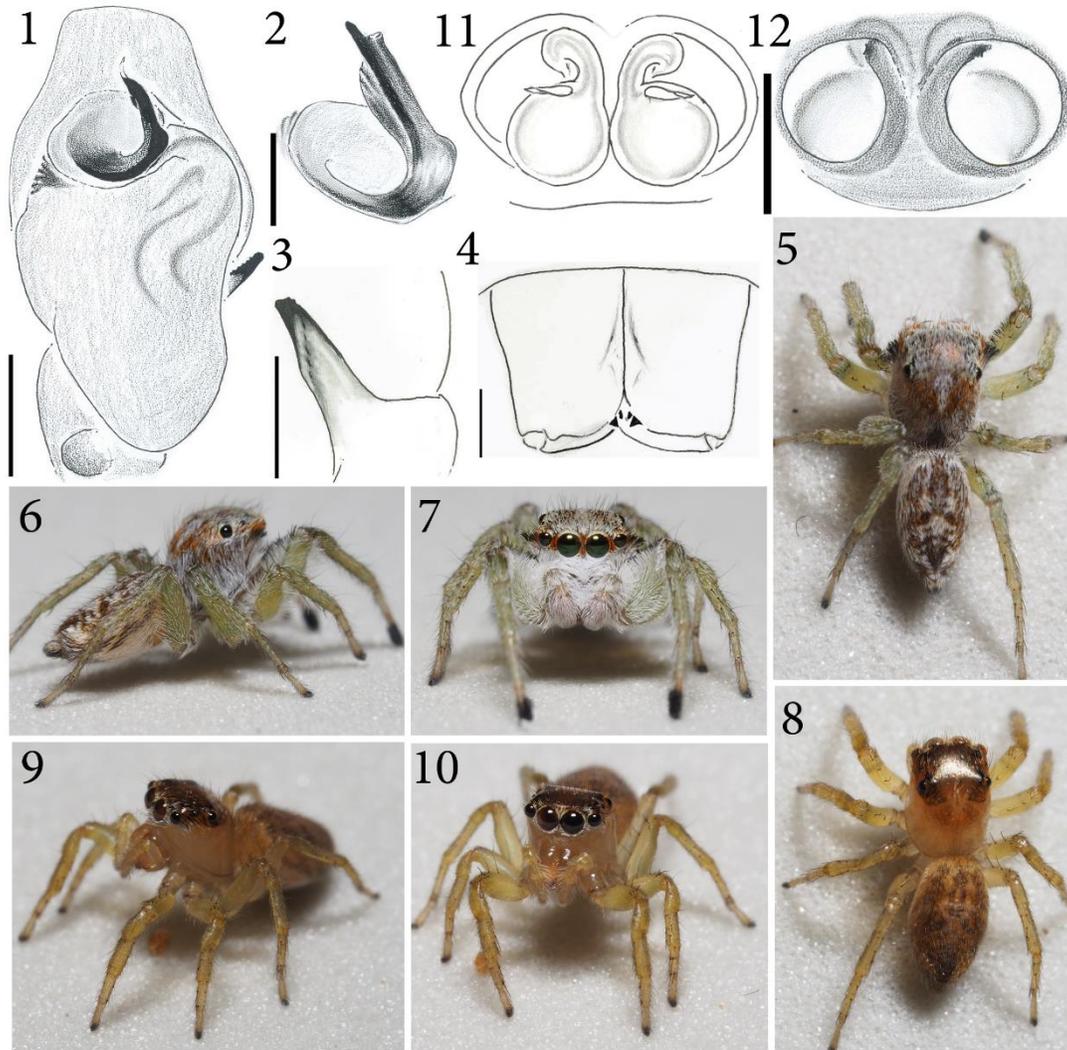
**Description.** *Male* (holotype). Carapace length 2.0. Abdomen length 2.0. **Carapace** transparent black and heavily hirsute by a composition of setae of different colour: lower margins of carapace and ocular region covered in white setae especially dense over the fovea, area between eyes and behind cephalic region covered in reddish brown setae. **Clypeus** densely covered by long white setae. AME encircled by a compound margin of setae: white at the bottom and red otherwise. The red setae extend beyond the margin of the eyes forming a semi continuous mask. Cheeks are covered in long setae extending beyond the boundaries of the face and turning black at the height of the main eyes region. **Chelicerae** slightly excavated and covered in white setae. Promargin with two teeth. Retromargin with one simple tooth. **Palp** transparent green turning into orange from basal to proximal ends and densely covered in white setae. **Embolus** arising from its disk ca. 5:00 and forming a spiral that increases its width until the beginning of the second third of the embolus length, then constricting leaving a fin and maintaining a rectangular shape until reaching an acute, dorsally bent tip. A ventral laminar extension stands out giving the embolus an irregular shape when seeing the cymbium ventrally. RTA fingerlike slightly constricted medially and ending into a rectangular blunt tip, slightly serrated dorsally. **Legs** 1>4>3>2. Green with metatarsus and tarsus slightly orange except for

first legs, where tarsus is almost entirely black. Femora and lateral sides of legs I densely covered by white long setae, forming a crest distally black at the dorsal side of femora.

**Abdomen** hirsute by a compound pattern of setae: mottled pink ivory over a dark integument at the anterior and lateral margins of the abdomen and forming a black chevrons at the second half by combination with the dark medial band, condensing over the anal tubercle forming a dark triangle.

*Female* (paratype; MX17-0771). Carapace length 2.3. Abdomen length 2.2. **Carapace** transparent orange except for black ocular area, which has a margin of scattered red and pale brown setae between the eyes. **Clypeus** transparent orange and glabrous. AME encircled by a compound margin of setae: white at the bottom turning orange at the lateral sides and red at the top. A small patch of yellow setae between the AME forming a small patch. **Chelicerae** orange, glabrous and smooth. **Epigyne** with openings located at the anterior inner margin of the plate. Atria merging with openings from below creating spherical windows. Ducts rotating dorsally forming an arc that descends directly into the spherical spermatheca from above. **Legs** transparent amber yellow and glabrous. **Abdomen** uniformly hirsute by scattered velvety red brown setae. Dorsal dark medial band inverted, with an outline of black integument at the margins of a pale band and forming chevrons at the second half of the abdomen before ending into a dark triangle over the anal tubercle.

**Additional material examined.** 6 males, 3 females from MÉXICO: OAXACA: Santiago Comaltepec, Humo Chico: 17.573 °N, 96.504 to 96.506 °W, 2950-3000 m, 3 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, WPM#17-016 (6\$m, 3\$f: \$m = MX17-0636, \$m = MX17-0737).



**Figure 57.** *Mexigonus \$green\_ghost*. Figures 1-7 male holotype MX17-0749. 8-12 female paratype MX17-0771. 1-3 palp, embolus and RTA. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$orange\_ghost* sp. nov.**

(fig. 58; 1-15)

**Holotype.** Male from MÉXICO: OAXACA: San José del Pacifico, 16.173 to 16.177 °N, 96.5 to 96.503 °W, 2600-2800 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-027, (\$m = MX17-1546).

**Paratypes.** 4 males, 3 females from MÉXICO: OAXACA: San José del Pacifico: 16.173 to 16.177 °N, 96.5 to 96.503 °W, 2600-2800 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-027 (4\$m, 3\$f: \$f = MX17-1565, \$m = MX17-1524, \$m = MX17-1540, \$f = MX17-1560, \$m = MX17-1520, \$m = MX17-1536, \$f = MX17-1557).

**Diagnosis.** A transparent and very hirsute medium sized species with orange grey integument (fig. 58; 5-6) with male clypeus covered by a horizontal line of white setae (fig. 58; 7). The species is unique among *Mexigonus* by the small triangular orange tufts sticking out from the ALE (fig. 58; 7), the messy looking hirsuteness of the first legs and the laminar uniform shape of the embolus (fig. 58; 1-2). The species is very similar in habitus and hirsuteness to *M. \$green\_ghost*, but the integument is orange-yellow, the ocular region is covered in grey setae (seen from above) without reddish setae, the triangular projections around the ALE are small patches of orange rather than white bicolored setae and the embolus lacks the medial constriction forming a fin. In addition, the hirsuteness of *M. \$orange\_ghost* looks more irregular than in *M. \$green\_ghost*.

**Description.** *Male* (holotype). Carapace length 2.0. Abdomen length 2.1. **Carapace** transparent dark and densely covered by long white setae. Two parallel unpigmented stripes beside each side of the fovea. **Clypeus** densely covered by white setae. AME encircled by a margin of orange setae. Area between eyes covered in red setae and region between ALE and PME

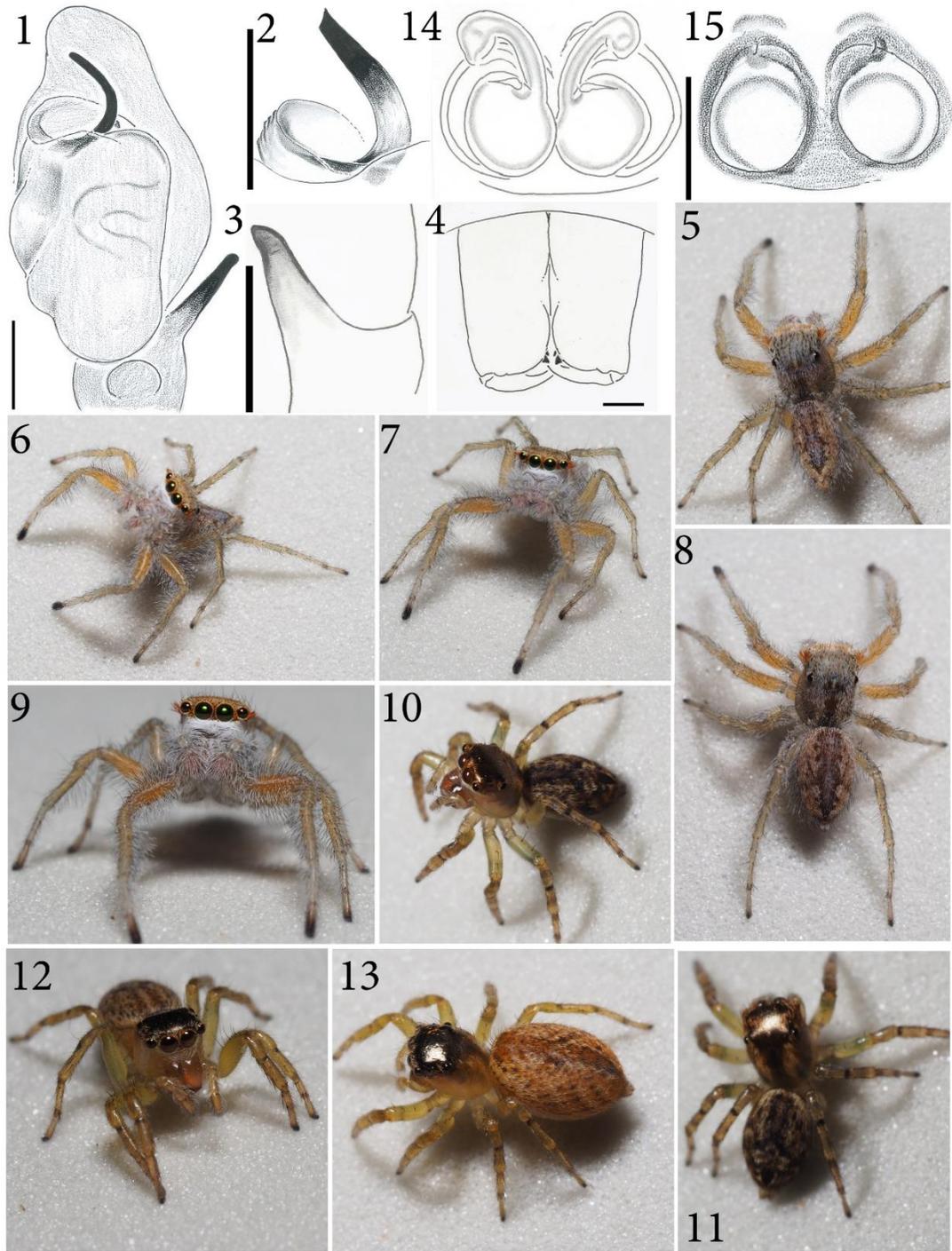
densely covered in long red setae sticking out of the carapace forming a triangle. Area above the AME and ALE covered in orange setae that look white when seen from above. **Chelicerae** dark orange and densely covered in long white and grey setae. Slightly excavated. Promargin with two teeth. Retromargin with one simple tooth. **Palp** transparent grey and densely covered in white and grey setae. Cymbium is dark orange. **Embolus** arising from its dis ca. 6:00 forming a spiral that gradually reduces its width before ending into a rectangular shape pointing dorsally. RTA fingerlike with its tip slightly bent ventrally. **Legs** 1>4>3>2. Orange fading into grey from basal to proximal end. Tarsi (especially tarsus I) black. Hirsute uniformly covered in long scattered white and grey setae. **Abdomen** with dark dorsal medial band irregular and pectinated, gradually reducing its size from anterior to posterior sides of abdomen ending into a dark triangle over the anal tubercle. Band surrounded by pink ivory integument with few dark spots. The whole abdomen is covered in long grey setae, especially visible on the sides making the abdomen look bigger.

*Female* (paratype; MX17-1557). Carapace length 2.3. Abdomen length 2.4. **Carapace** bicolored: black at the upper margins of the carapace and ocular region, and amber red on the lower margins and beside the fovea, where a pair of pale parallel bands covered in pale brown setae descend towards the pedicel. Ocular region slightly hirsute, with eyes connected by a margin of red brown setae. **Clypeus** glabrous, orange and slightly transparent. AME encircled by a compound margin of setae: pale brown at the bottom and orange otherwise. Area between AME connected by a vertical small patch of pale brown setae that slightly extends into the ocular region. **Chelicerae** transparent orange and smooth. **Epigyne** with openings located at the anterior middle margin of the plate, almost beneath the sclerotized ring that delimits the windows at that region. Atria following the openings from below completing the margins of the windows. Ducts bending dorsally and slightly arching anteriorly before descending parallel to their counterpart into the big ovoid spermatheca. **Legs** transparent yellow at the femora getting dark

orange from basal to distal segments. Joints black spotted giving the legs a ringed appearance.

**Abdomen** with burnt orange integument covered anteriorly and at the beginning of the last third of the abdomen by white setae. Dark dorsal medial band discontinuous and hollow anteriorly, irregular at its borders and ending into a dark triangle over the anal tubercle.

**Additional material examined.** 32 males, 32 females, 4 juveniles from MÉXICO: OAXACA: San José del Pacifico: 16.173 to 16.177 °N, 96.5 to 96.503 °W, 2600-2800 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, R. Paredes, WPM#17-027 (22\$m, 7\$f, 2\$j; \$f = MX17-1549, \$f = MX17-1552); 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-029 (7\$m, 23\$f, 2\$j); OAXACA: 4.5 km from Manzanal along road to San Agustín Loxicha: 16.1143 °N, 96.5158 °W, 2770 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-030 (3\$m, 2\$f).



**Figure 58.** *Mexigonus \$orange\_ghost*. Figures 1-7 male holotype MX17-1546. 8-9 male paratype MX17-1536. 10-11 female paratype MX17-1557. 12-15 female paratype paratype MX17-1552. 1-3 palp, embolus and RTA. 4 chelicerae. 14-15 epigyna dorsal and ventral view.

***Mexigonus \$comma* sp. nov.**

(fig. 59; 1-12)

**Holotype.** Male from MÉXICO: JALISCO: Estación de Biología Chamela, Arroyo Zarco, 19.496 °N, 105.039 °W, 56 m, 10 Feb 2014, W. Maddison & H. Proctor, WPM#14-016, (\$m = JAL14-8964).

**Paratypes.** 2 males, 5 females from MÉXICO: JALISCO: Estación de Biología Chamela, jcn. Buho & Chachalaca Trails: 19.4993 °N, 105.0383 °W, 71 m, 50 m, 17 Feb 2014, W. Maddison & H. Proctor, WPM#14-029 (5\$f: \$f = JAL14:9617, \$f = JAL14-9622, \$f = JAL14-9539); JALISCO: Estación de Biología Chamela, Chachalaca Trail: 19.4966 °N, 105.0426 °W, 102 m, 10 Feb 2014, W. Maddison, WPM#14-014 (1\$m); JALISCO: Estación de Biología Chamela, Arroyo Zarco: 19.496 °N, 105.039 °W, 56 m, 10 Feb 2014, W. Maddison & H. Proctor, WPM#14-016 (1\$m).

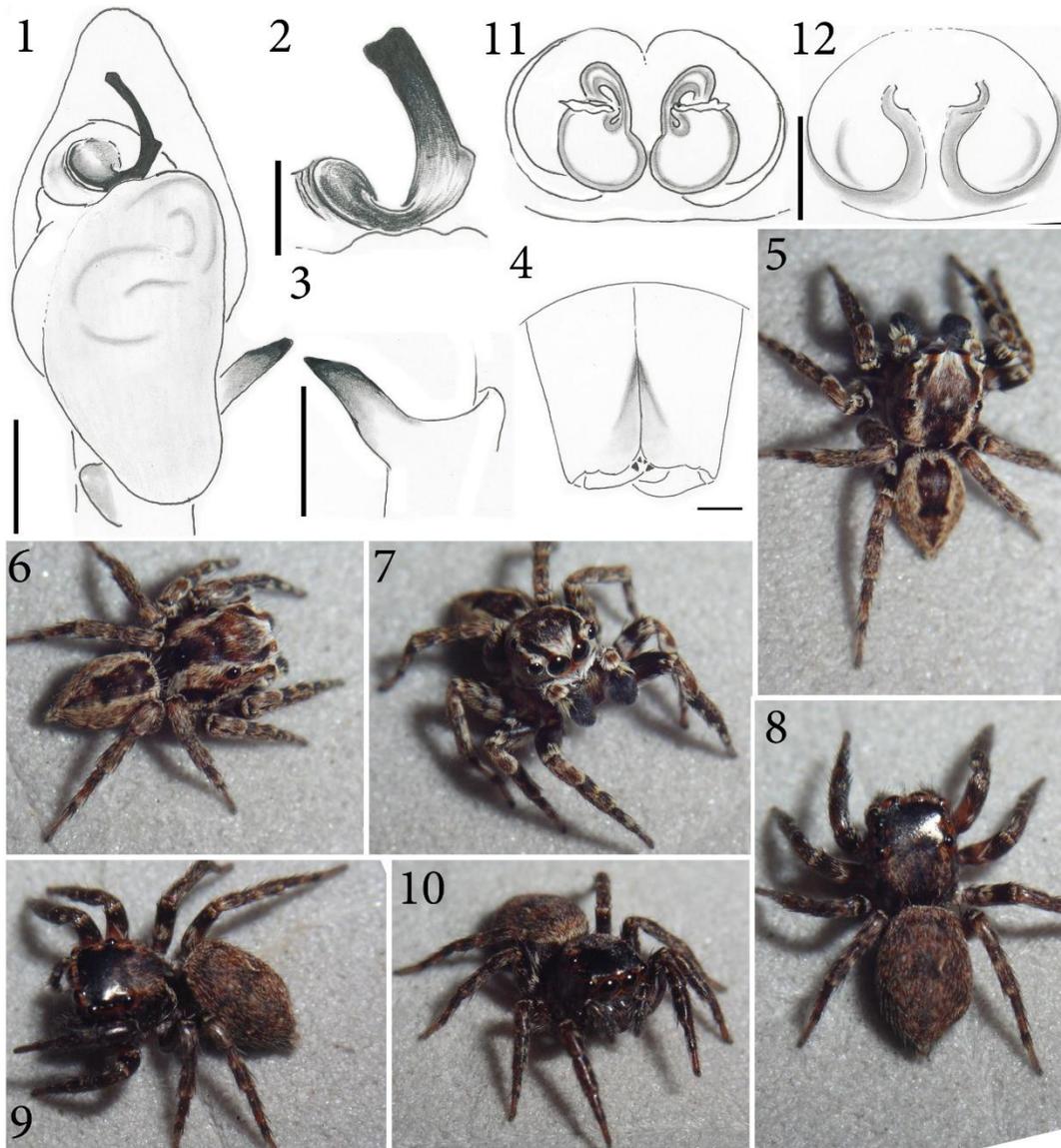
**Diagnosis.** A small sized cryptic species where males are pale brown with a pair of diagonal bands entering the AME from the ocular region (fig. 59; 5-7) and females dark red with velvety looking abdomens (fig. 59; 8-10). The species is distinctive among *Mexigonus* by the shape of the copulatory openings located at the center of the genital plate (fig. 59; 11-12), the diagonal dark markings entering the AME from the ocular region of males and outlined by white setae (fig. 59; 7), and the cream-white setae covering the palpal tibia with a brown spot at the center. Other species morphologically similar are *M. albidus* and *M. \$stripe\_wall*. It differs from these species in the diagonal black stripes connecting the AME. The embolus is constricted around the middle of its length (fig. 59; 1-2) like in *M. \$stripe\_wall* but the length of the embolus is longer and not as coiled, and the laminar face is not rotated as in *M. albidus*.

**Description.** *Male* (holotype). Carapace length 2.1. Abdomen length 1.9. **Carapace** with black integument and hirsute by a compound pattern: area between the eyes covered by cream pale setae extending behind the PLE turning into parallel stripes descending towards the pedicel and increasing its width, reddish brown at the cephalic area, white at the anterior edge of the ocular area delimited on the sides by a margin of dark integument forming diagonal stripes, pale yellow at the thoracic margin of the carapace. **Clypeus** bicolored with a lower horizontal margin of white setae and an upper horizontal margin of reddish brown setae. AME encircled by a compound pattern of setae, reddish brown at the lower and upper margin and white otherwise. Area between AME and ALE covered in white setae divided diagonally by a dark stripe of bared integument. **Chelicerae** reddish brown slightly covered at the base of the paturon by scattered yellow setae. Smooth and slightly excavated. Promargin with two teeth. Retromargin with one simple tooth. **Palp** dark and covered by white setae. Patella covered in white setae at the prolateral margins with a brown spot at the middle of its dorsal side and yellow otherwise. Tibia covered in long yellow setae retrolaterally and cymbium black. **Embolus** arising from its disk ca. 6:00 forming a spiral and increasing the width of the laminar face suddenly constricting medially forming a fin, and ending into a rectangular shape with a pointy ventral corner. RTA fingerlike ending into a conical tip. **Legs** 1>4>3>2. Hirsute by a combination of cream yellow setae at the dorsal and ventral faces of femora and small patches at the medial prolateral and distal side of tibia and medial side of metatarsus, and dark otherwise. **Abdomen** hirsute with dorsal dark medial band continuous, uniform at the anterior side and slightly irregular at the second half ending into a dark triangle over the anal tubercle. Band outlined by a margin of pale brown setae and brown otherwise.

*Female* (paratype; JAL14-9539). Carapace length 2.5. Abdomen length 2.7. **Carapace** black covered at the thoracic region by scattered cream brown setae and between the eyes by reddish brown setae. **Clypeus** dark and glabrous. AME encircled by a margin of reddish brown setae

and small patches of yellow setae on the upper side of the ALE. **Chelicerae** smooth and dark brown. **Epigyne** with openings located at the medial inner margin of the plate. Atria emerge from below forming a notch outlining the openings forming comma-like shapes. Ducts slender, bending dorsally right after the openings and descending parallel to their counterpart before merging with the kidney-shaped spermatheca. **Legs** dark and glabrous except for small patches of yellow setae at the prolateral side of patella, tibia and metatarsus. **Abdomen** hirsute by the combination of cream brown and reddish brown setae over a mottled black and dark pink integument. Anterior margin of abdomen densely outlined by the line of cream brown setae. Two spots at the middle of the abdomen and a dark triangle over the anal tubercle.

**Additional material examined.** 2 males, 1 females, 3 juveniles from MÉXICO: JALISCO: Estación de Biología Chamela, jcn. Buho & Chachalaca Trails: 19.4993 °N, 105.0383 °W, 50 m, 17 Feb 2014, W. Maddison & H. Proctor, WPM#14-029 (1\$f); JALISCO: Estación de Biología Chamela, Arroyo Zarco: 19.496 °N, 105.039 °W, 56 m, 10 Feb 2014, W. Maddison & H. Proctor, WPM#14-016 (2\$m, 3\$j).



**Figure 59.** *Mexigonus \$comma*. Figures 1-7 male holotype JAL14-8964. 8-12 female paratype JAL14-9539. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$acultzinapa* sp. nov.**

(fig. 60; 1-12)

**Holotype.** Male from MÉXICO: VERACRUZ: Nueva Vaqueria, 19.09123 °N, 97.22417 °W, 3095 m, 18 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@045, (\$m = MXN: 4134).

**Paratypes.** 3 males, 1 females from MÉXICO: VERACRUZ: Acultzinapa, Mara chihuato: 18.67685 °N, 97.19939 °W, 2801 m, 14 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@035 (2\$m, 1\$f: \$m = MXN: 4279, \$m = MXN: 4267, \$f = MXN: 4257); VERACRUZ: Acultzinapa, Cerro el Teoxistle: 18.66979 °N, 97.22539 °W, 3094 m, 14 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@036 (\$m = MXN: 3811).

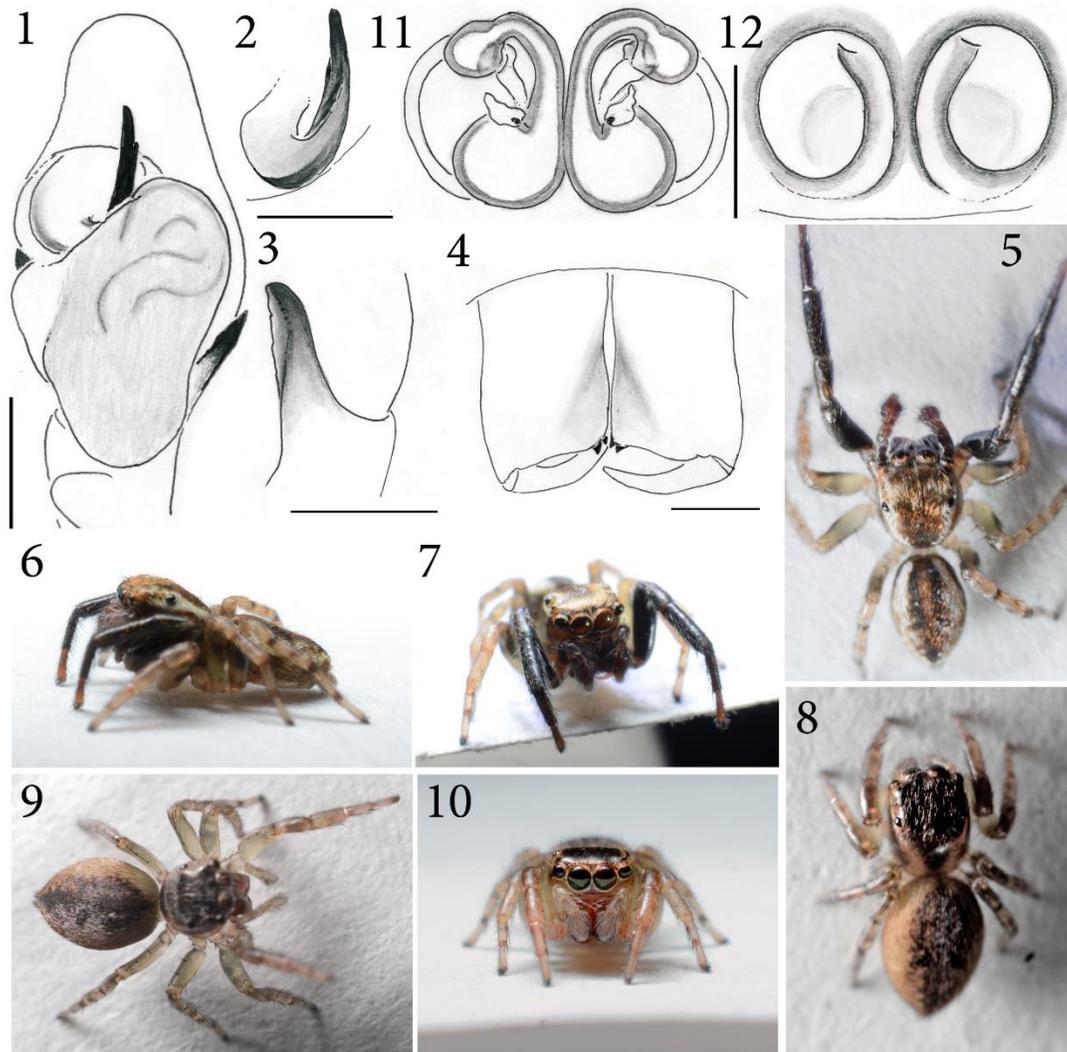
**Diagnosis.** A medium sized hirsute species with marked sexual dimorphism. Males are brown with first legs entirely black except for the tarsus and a body covered by short reddish setae (fig. 60; 5-7). Females are orange somewhat transparent with a velvety looking hirsute abdomen (fig. 60; 8-10). The species is distinctive by the short and slightly corrugated embolus and smooth groove of the chelicerae. The species is morphologically like *M. \$cana\_negra* and *M. \$cana\_blanca*. The first legs are black, glabrous and long with a pale tarsus, but the patella and tibia as black as the femora unlike *M. \$cana\_negra*, and not as hirsute as in *M. \$cana\_blanca*. The embolus is short and more less straight unlike *M. \$cana\_negra*, and slightly corrugated unlike *M. \$cana\_blanca*.

**Description.** Male (holotype). Carapace length 2.1. Abdomen length 2.1. **Carapace** dark brown. Ocular region outlined by a margin of white setae between ALE-PME-PLE that extends towards the fovea and descends into the thoracic region parallel to its counterpart. Anterior margin

covered in yellow setae. **Clypeus** dark and glabrous. AME encircled by a thin margin of orange reddish setae. Anterior inner side of the margin is pale yellow and slightly extends towards the ocular region. **Chelicerae** dark brown with a distal inner smooth depression rather than excavation and covered at the base of the paturon by long white setae. Promargin with two teeth. Retromargin with one simple tooth. **Palp** black covered in long white setae from femur to patella. Cymbium reddish. **Embolus** arising straight from its disk ca. 6:00 and slightly rotating ventrally exposing a small irregular edge. RTA fingerlike. **Legs** 1>4>3>2. Legs I black except for a slightly paler tip of the tarsus. Legs II-IV yellow with a medial dark band in tibiae and joint of metatarsus-tarsus, giving a ringed pattern. **Abdomen** with dark dorsal band covered in reddish setae, mostly regular edges and reducing its size from anterior to posterior side ending into a dark triangle over the anal tubercle. Band outlined by a velvety looking pale yellow setae.

Female (paratype; MXN: 4257). Carapace length 2.2. Abdomen length 2.9. **Carapace** black with two stripes of pale integument beside the fovea descending parallel to each other and merging at the posterior margin of the carapace. Ocular region covered into scattered short orange setae outlined by a margin of reddish and white setae between ALE-PME-PLE. **Clypeus** dark yellow and glabrous. AME encircled by a compound margin of setae: white at the bottom half and reddish-orange otherwise. **Chelicerae** dark brown, glabrous and smooth. **Epigyne** with openings located at the anterior inner side of the plate, followed from the posterior margin by the atria, which is slightly intruding into the windows forming teardrop shapes. Ducts after openings slightly widened and bending dorsally before horizontally getting in proximity to their counterpart and descending diagonally parallel into the main spermatheca. Legs all yellow and ringed as described for the male. **Abdomen** yellow with dark medial band scattered and with irregular borders, reducing its size from anterior to posterior sides ending into a dark triangle over the anal tubercle.

**Additional material examined.** 6 males, 16 females, 5 juveniles from MÉXICO: VERACRUZ: Acultzinapa, Cerro el Teoxistle: 18.66979 °N, 97.22539 °W, 3094 m, 14 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@036 (3\$m, 3\$f, 4\$j); VERACRUZ: Nueva Vaqueria: 19.09123 °N, 97.22417 °W, 3095 m, 18 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@045 (2\$m, 5\$f, 1\$j); VERACRUZ: Acultzinapa, Mara chihuahato: 18.67685 °N, 97.19939 °W, 2801 m, 14 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@035 (1\$m, 8\$f).



**Figure 60.** *Mexigonus Sacultzinapa*. Figures 1-7 male holotype MXN: 4134. 8-12 female paratype MXN: 4257. 1-3 palp, embolus and RTA. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$hairy\_SJP* sp. nov.**

(fig. 61; 1-11)

**Holotype.** Male from MÉXICO: OAXACA: San José del Pacifico, 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-029, (\$m = MX17-1501).

**Paratypes.** 3 males, 2 females from MÉXICO: OAXACA: San José del Pacifico: 16.1721 °N, 96.502 °W, 2590 m, 7-8 Jul 2017, Ł. Trębicki & W. Maddison, WPM#17-025 (\$f = MX17-1416); 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-029 (2\$m, 1\$f: \$m = MX17-1755, \$f = MX17-1762, \$m = MX17-1750); 16.172 °N, 96.502 °W, 2600 m, 7-8 Jul 2017, W. Maddison, Ł. Trębicki, R. Paredes, WPM#17-026 (\$m = MX17-1756).

**Diagnosis.** Medium sized cryptic brown and black species unique among *Mexigonus* by the combination of a laminar and slender embolus that gradually reduces its width forming a spine (fig. 61; 1-2) and the yellow patch of setae covering the male clypeus (fig. 61; 6). Other species morphologically similar are *M. albidus*, *M. \$river\_rock*, *M. \$SJP\_bronze* and *M. \$V-pale*. The habitus is hirsute unlike *M. \$V-pale* and *M. \$SJP\_bronze*, but the anterior margin of the ocular region is black unlike *M. albidus*, where a diagonal margin enters the AME from the ocular region. The clypeus is covered by a horizontal band of yellowish setae unlike *M. \$SJP\_bronze* and *M. \$river\_rock* and paler than *M. \$V-pale*, the embolus is slender unlike *M. albidus*, not as straight as in *M. \$V-pale* and there are no modifications to the laminar face as in *M. \$SJP\_bronze*. The RTA (fig. 61; 2) is wider than *M. \$river\_rock* and reducing its width ending into a spine shape.

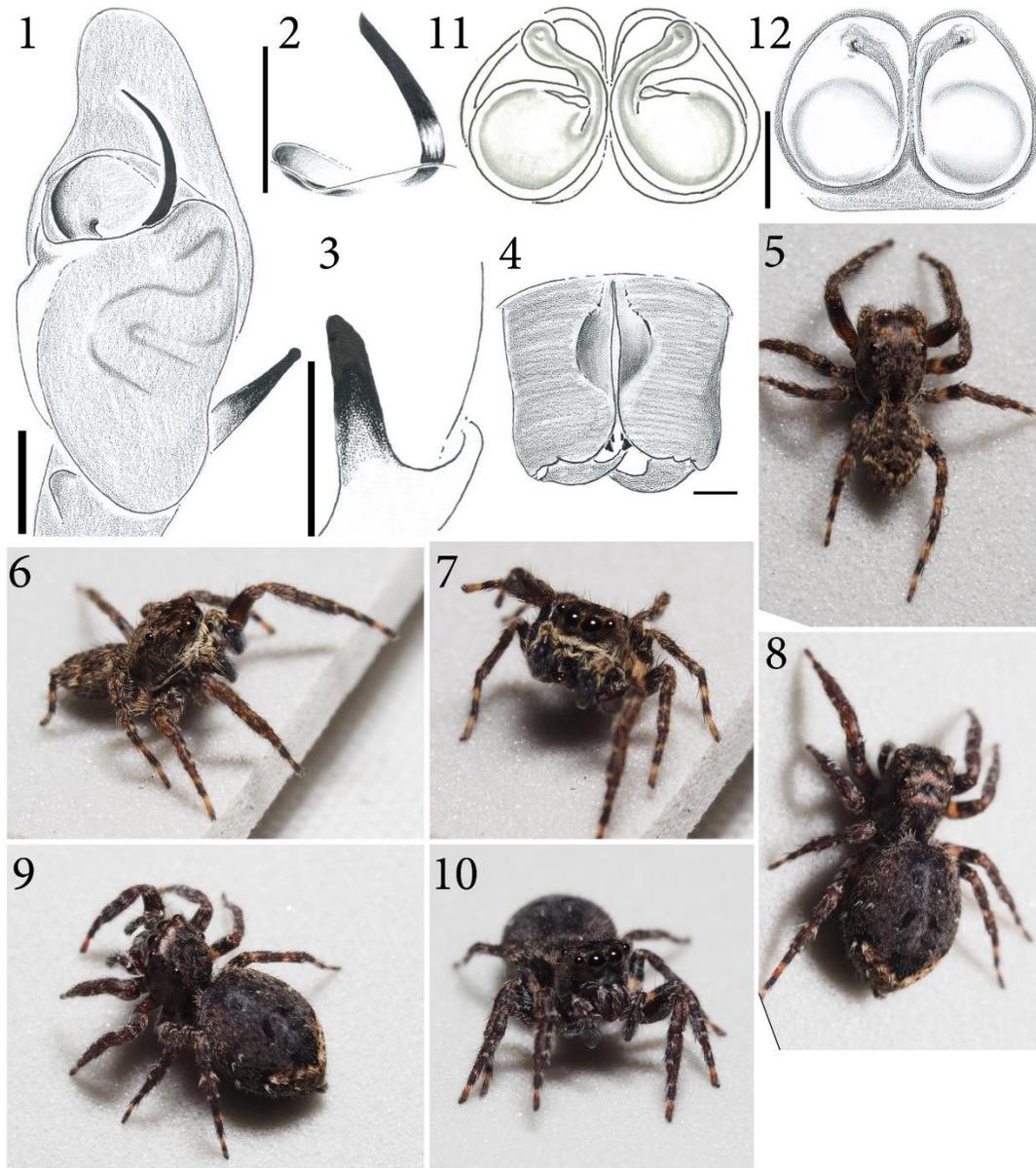
**Description.** *Male* (holotype). Carapace length 2.4. Abdomen length 2.2. **Carapace** dark brown very hirsute by scattered pale brown messy looking setae. Area between ALE-PME-PLE covered in reddish setae, extending behind PLE forming thin lines that descend the thoracic

region. **Clypeus** dark brown densely covered by a horizontal patch of cream pale brown setae. AME encircled by a very thin layer of reddish brown setae. **Chelicerae** very dark brown with basal portion of paturon covered by long messy looking yellow setae. Deeply excavated leaving a concave circular groove. Promargin with two teeth. Retromargin with one simple tooth. **Palp** dark red except for black cymbium and covered by scattered yellow setae at the distal margin of the femur, patella and tibia. **Embolus** arising from its disk ca. 7:00 forming a smooth slender spiral that gradually reduces its width ending into an acute spine-looking tip. RTA fingerlike. **Legs** 1>4>3>2. chocolate brown except at the base of the femora, metatarsus and tarsus. A horizontal patch of mustard coloured setae are located at the distal region of each segment and the middle of tibiae, creating a ringed pattern. Legs I darker. **Abdomen** with dark dorsal medial band hirsute by black and small spots of pale brown setae, consistent in length before ending into a dark triangle over the anal tubercle and slightly merging with the colour of the integument at other parts of the abdomen. Band surrounded by messy looking and scattered pale brown setae.

*Female* (paratype; MX17-1416). Carapace length 3.1. Abdomen length 4.4. **Carapace** black covered by scattered low dense short white and orange setae. **Clypeus** black and glabrous. **Chelicerae** smooth and dark brown slightly covered by long vertically oriented yellow setae scattered over the paturon. **Epigyne** with openings located at the anterior side of the plate within the windows. Atria following the ducts from the posterior inner margin creating lines that enter the windows. Ducts after openings bent dorsally and descending diagonally towards their counterpart, then arching towards the outer margin of the plate before entering the spermatheca from the side. **Legs** dark chocolate brown except for tarsus in legs I, tarsus, base of metatarsus and basal half of femur II-IV, which have a pink or dark orange integument. Hirsute with horizontal short patches of pale brown setae at the distal margin of the segments and middle part of tibiae. **Abdomen** with black integument and mottled by small spots covered in long white

setae. Dark dorsal medial band faded against the rest of the abdomen in alive specimen and forming a dark triangle over the anal tubercle in combination with an outline of pale integument.

**Additional material examined.** 3 females, 3 juveniles from MÉXICO: OAXACA: San José del Pacifico: 16.1721 °N, 96.502 °W, 2590 m, 7-8 Jul 2017, Ł. Trębicki & W. Maddison, WPM#17-025 (2\$f, 2\$j); 16.177 °N, 96.5 °W, 2850 m, 8 Jul 2017, W. Maddison, U. Garcilazo, Ł. Trębicki, WPM#17-029 (1\$f, 1\$j).



**Figure 61.** *Mexigonus \$hairy\_SJP*. Figures 1-7 male holotype MX17-1501. 8-12 female paratype MX17-1416. 1-3 palp, embolus and RTA. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$guajillo* sp. nov.**

(fig. 62; 1-10)

**Holotype.** Male from MÉXICO: NUEVO LEON: Chipinique Mesa, just S of Monterrey, 25.6 °N, 100.4 °W, 1371.6 m, 2 Jun 1983, W. Maddison & R.S. Anderson, WPM#83-034.

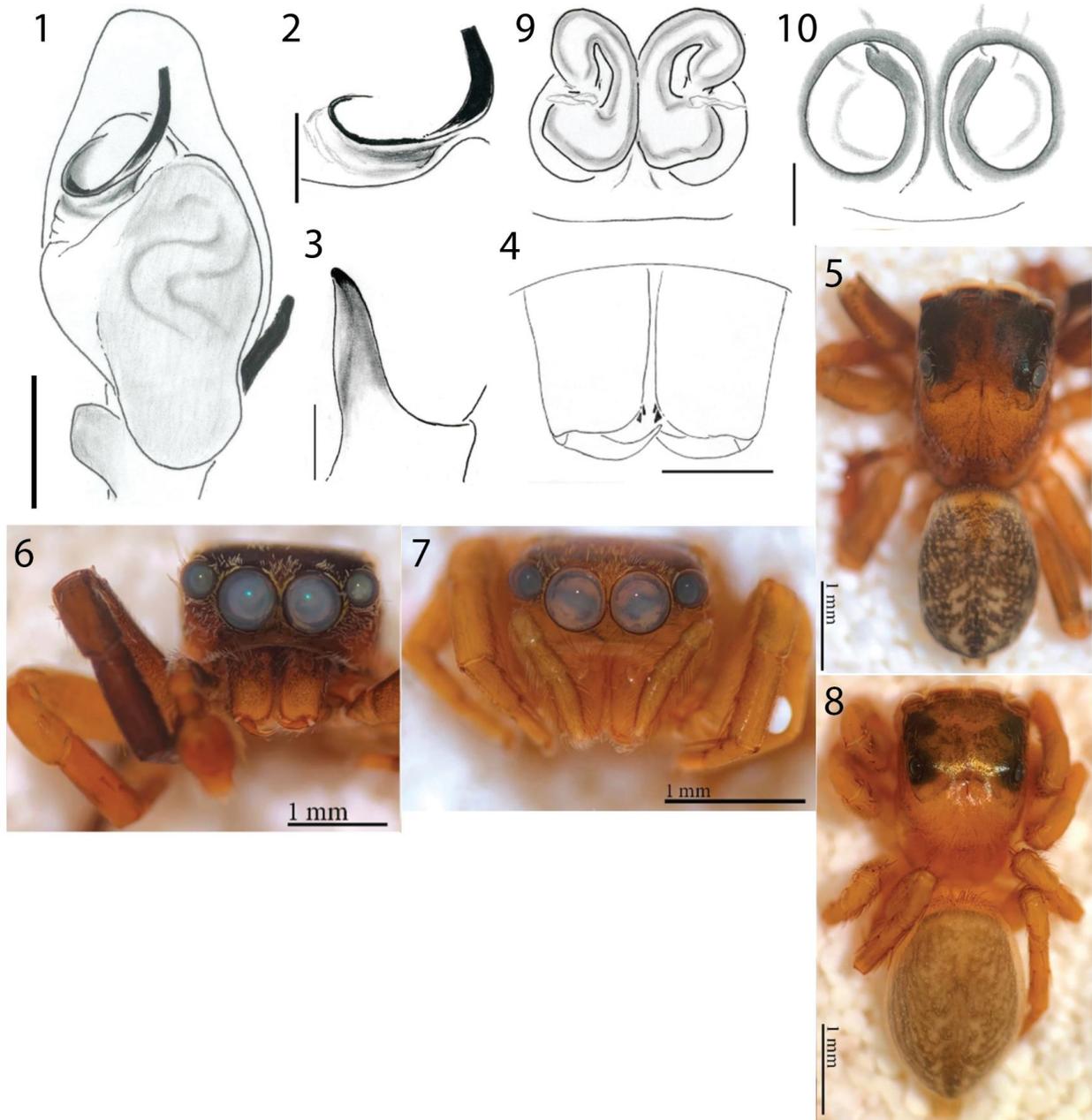
**Paratypes.** 4 males, 4 females, 4 juveniles from MÉXICO: NUEVO LEON: Chipinique Mesa, just S of Monterrey: 25.6 °N, 100.4 °W, 1371.6 m, 2 Jun 1983, W. Maddison & R.S. Anderson, WPM#83-034 (4\$m, 4\$f, 4\$j).

**Diagnosis.** The species is unique by the asymmetrical rotation of the edges of the embolus while projecting an elevated disk (fig. 62; 1-2), the finger like shape of the RTA (fig. 62; 2) and the wide copulatory ducts relative to the size of the spermatheca (fig. 62; 11-12). Other species morphologically similar are *M. \$habanero* and *M. \$chipotle*. The body shape, reddish colour of the integument, dark segments of the first legs starting at the patella, and horizontal patch of white setae (fig. 62; 5-8) are shared in the three species, differing in the genitalia. The embolus is shorter than *M. \$habanero* with uniform edges instead of a prolateral flap as in *M. \$chipotle*.

**Description.** Male in alcohol (holotype). Carapace length 2.1. Abdomen length 1.8. **Carapace** reddish brown with ocular region hirsute by white and shiny golden setae slightly more dense at the anterior margin and between the ALE-PME-PLE, slightly extending behind the PLE towards the fovea. Margins of the thoracic region covered by a line of white setae. **Clypeus** dark brown slightly covered by white setae, which form a dense patch in the cheeks. AME encircled by a thin line of golden orange setae. **Chelicerae** brown fading to yellow from basal to distal, and covered in white setae at the basal half of paturon. Non excavated. Promargin with two teeth from which the inner tooth is the smallest. Retromargin with one simple tooth almost twice as big as those in the promargin. **Palp** reddish brown with the distal part of the femur covered by white

setae. **Embolus** arising from its disk ca. 6:00, with the outer margin of the disk elevated from the hematodocha and the inner margin hidden in a depression from which the embolus arises vertically, producing a strong ventral rotation. RTA fingerlike and slightly bent ventrally. Tibial bump rectangular. **Legs** 4>1>3>2. Legs I dark except for tarsus. Legs II-IV pale brown-yellow with the joints and middle of tibia darkened forming a ringed pattern. The alive specimen probably had distal patches of pale setae complementing the joints. **Abdomen** entirely black dorsally except for a chevron triangle at the distal part of the abdomen over the anal tubercle, surrounded by a margin of pale integument.

Female in alcohol (paratype). Carapace length 2.0. Abdomen length 2.2. **Carapace** as in male except less hirsute. **Clypeus** orange and glabrous. AME encircled by a margin of setae of compound colouration: white at the bottom half and orange otherwise. Some of the white setae extend between the ALE and AME creating a semicontinuous mask. **Chelicerae** smooth and orange-brown. **Epigyne** with openings located at the anterior medial margin of the plate. The atria follows the openings from the posterior inner margin of the plate entering the windows. Ducts after the openings arching anteriorly and descending parallel to their counterpart before entering the spermatheca at their inner side. **Legs** range brown and covered by velvety yellow shiny and dark setae. **Abdomen** white and velvety covered in short clear setae.



**Figure 62.** *Mexigonus \$guajillo*. Figures 1-6 male. 1-3 palp, embolus and RTA. 4 chelicerae. 5 habitus. 6 prosoma. 7-10 female. 7 prosoma. 8 habitus. 9-10 epigynum ventral and dorsal view.

***Mexigonus \$habanero* sp. nov.**

(fig. 63; 1-10)

**Holotype.** Male from MÉXICO: NUEVO LEON: el potosi. Cerro potosi, 13 Jun 1938, Hoogstraal.

**Paratypes.** 4 males, 3 females, 6 juveniles from MÉXICO: NUEVO LEON: road up to microwave tower on Cerro Potosi: 24.87 °N, 100.23 °W, 2895 m, W. Maddison, WPM#83-037 (2\$m); NUEVO LEON: Summit of Cerro Potosi: 24.87 °N, 100.23 °W, 3718 m, 4 Jun 1983, W. Maddison, WPM#83-039 (2\$m, 3\$f, 6\$j).

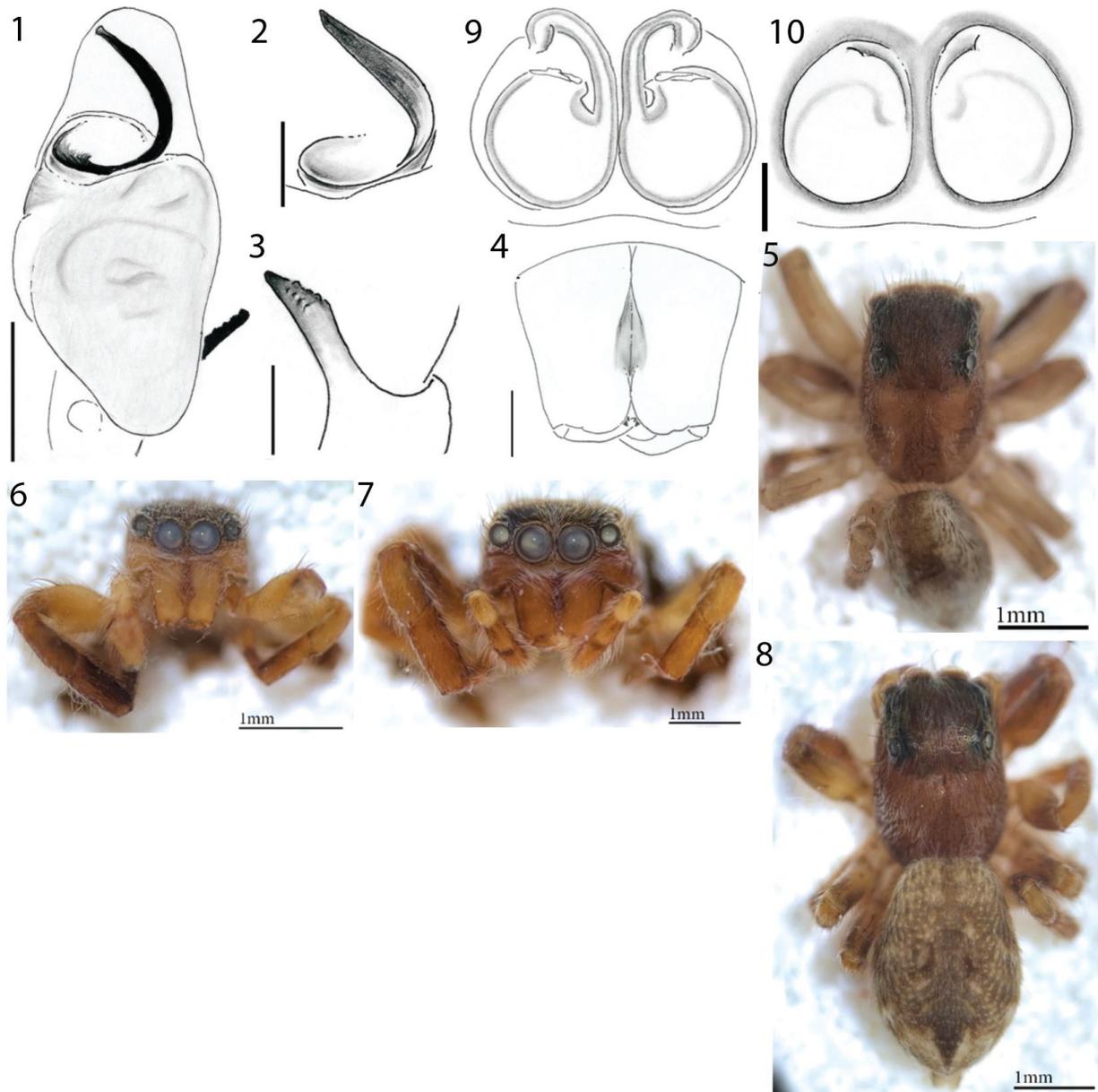
**Diagnosis.** Medium sized reddish species with males having a horizontal patch of white setae covering the clypeus and black tips over on the legs (fig. 63; 7). The species is distinctive by the laminar shape of the embolus (fig. 63; 1-2) which maintains most of its width towards the tip and forming an opening spiral, the finger like shape of the RTA (fig. 63; 3) and the thin copulatory ducts relative to the size of the big spermatheca (fig. 63; 9-10). Other species morphologically similar are *M. \$guajillo* and *M. \$chipotle*. The body shape, reddish colour of the integument, dark segments of the first legs starting at the patella, and horizontal patch of white setae are shared in the three species, differing in the genitalia. The embolus is longer than *M. \$guajillo* with both ventral and dorsal margins of the embolus changing orientation producing a uniform spiral on dorsal and ventral edges. The prolateral edge is smooth instead of forming a prolateral flap as in *M. \$chipotle*. The copulatory ducts are positioned parallel to each other unlike *M. \$chipotle*.

**Description.** *Male* in alcohol (holotype). Carapace length 1.9. Abdomen length 1.7. **Carapace** brown with two parallel stripes of slightly paler integument descending behind the PLE towards the pedicel. Ocular region covered in white setae that extend towards the parallel stripes.

**Clypeus** densely covered by a horizontal line of white setae that extend into the cheeks. AME encircled by a margin of orange setae. **Chelicerae** yellow and glabrous with a narrow

excavation taller than wide. Promargin with two teeth from which the inner is the smallest. Retromargin with one simple tooth as big as the outer tooth in the promargin. **Palp** yellow with dorsal side of femur to tibia covered in white setae. **Embolus** arising from its disk ca. 6:00 forming a spiral while slightly rotating ventrally at the distal half of its length from the disk, making it look as if increasing in size and ending into a rectangular shape with a longer dorsal vertex. RTA fingerlike and dorsally serrated. **Legs** 1>4>3>2. Legs I dark except for femur and tarsus and tibiae are enlarged. Hirsute covered by white setae on the dorsal side of the segments. Legs II-IV yellow with dark spotted joints forming a ringed pattern. **Abdomen** dark and reddish with a dark dorsal medial band continuous ending into a dark triangle over the anal tubercle.

*Female* in alcohol (paratype). Carapace length 2.2. Abdomen length 2.7. **Carapace** brown with a darker ocular region and hirsute uniformly covered by scattered patches of long white setae. **Clypeus** as in male except horizontal line of white setae is not as dense and AME are encircled by a thinner layer of white and orange setae. **Chelicerae** smooth, brown and non excavated. **Epigyne** with openings located at the anterior medial-inner margin of the plate next to the margins of the plate. Ducts thin and folding dorsally after the openings and descending diagonally towards the inner side of the plate and running parallel to their counterpart before merging with the big spermatheca from the sides. **Legs** as in male except legs I have the same pattern than the rest. **Abdomen** dark with small spots of pale cuticle and covered in white and black setae. Dark dorsal medial band visible only as a dark triangle over the anal tubercle outlined by a margin of pale integument.



**Figure 63.** *Mexigonus \$habanero*. Figures 1-6 male. 1-3 palp, embolus and RTA. 4 chelicerae. 5 habitus. 6 prosoma. 7-10 female. 7 prosoma. 8 habitus. 9-10 epigynum ventral and dorsal view.

***Mexigonus \$chipotle* sp. nov.**

(fig. 64; 1-10)

**Holotype.** Male from MÉXICO: VERACRUZ: Nueva Vaqueria, Pine trees, 19.09367 °N, 97.22215 °W, 3119 m, 18 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@046, (\$m = MXN:4372).

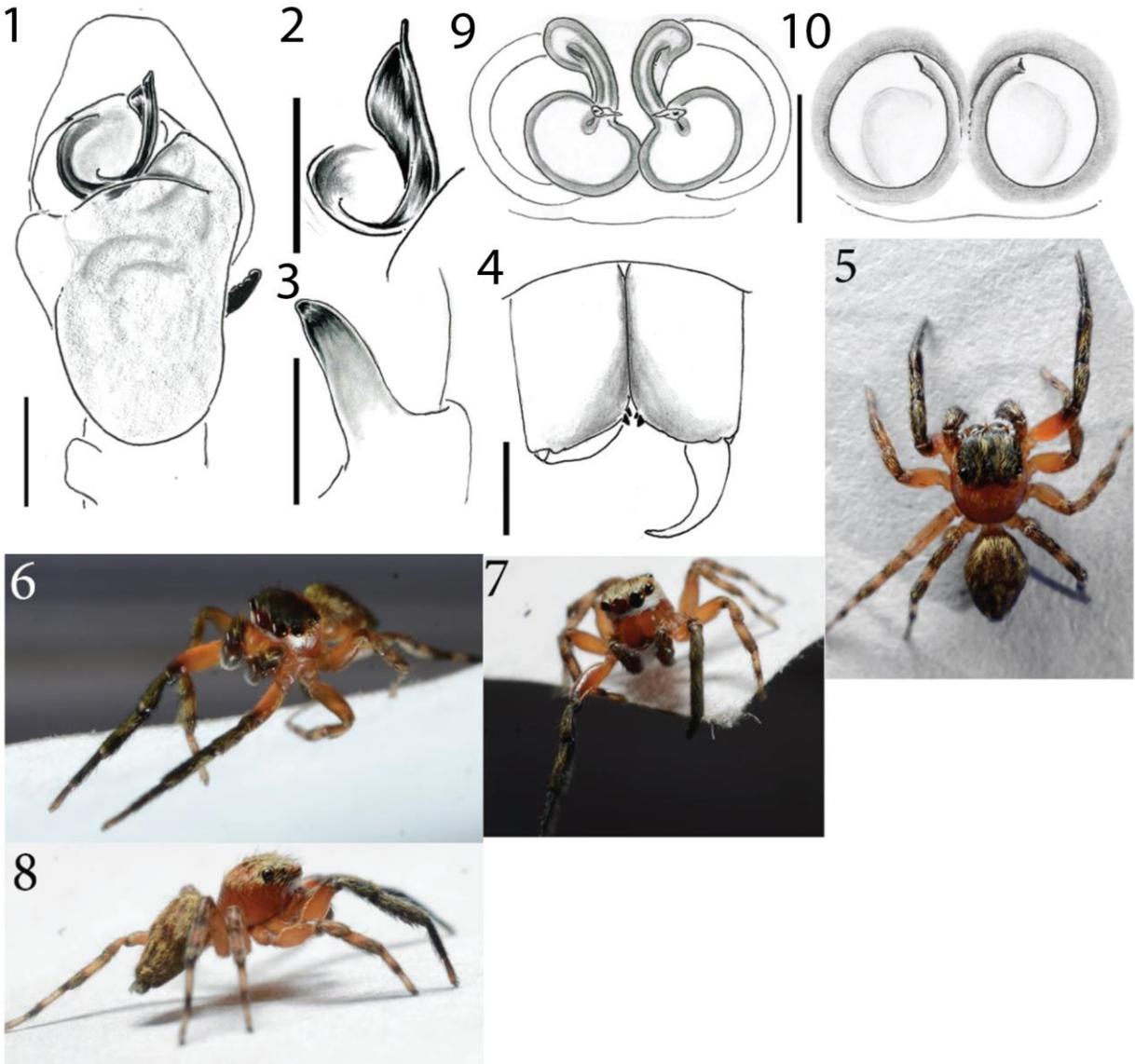
**Paratypes.** 1 females from MÉXICO: VERACRUZ: Nueva Vaqueria, Pine trees: 19.09367 °N, 97.22215 °W, 3119 m, 18 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@046 (1\$f).

**Diagnosis.** Medium sized reddish species with males having a horizontal patch of white setae covering the clypeus and black tips over on the legs (fig. 64; 5-8). The species is unique by the prolateral projection on the spiral embolus (fig. 64; 1-2), the finger like shape of the RTA (fig. 64; 3) and the thin copulatory ducts relative to the size of the big spermatheca and diagonal to their counterpart (fig. 64; 9-10). Other species morphologically similar are *M. \$guajillo* and *M. \$habanero*. The body shape, reddish colour of the integument, dark segments of the first legs starting at the patella, and horizontal patch of white setae are shared in the three species, differing in the genitalia. The embolus is as long as in *M. \$habanero* with a prolateral projection forming a flap instead of a smooth laminar face as in *M. \$habanero* and *M. \$guajillo*. Both dorsal and ventral margins of the embolus change rotation in similar angles unlike *M. \$guajillo*. The copulatory ducts arch towards each other at the middle of its length unlike *M. \$habanero*.

**Description.** Male (holotype). Carapace length 2.2. Abdomen length 2.1. **Carapace** reddish brown except for a black ocular region, which is covered by a combination of white and cream yellow setae that extend besides the fovea. **Clypeus** covered by a horizontal line of setae that extends into the cheeks. AME encircled by a margin of setae of compound colouration: white at

the bottom, red on the sides and yellow on top. Some of the reddish setae extend between the eyes forming a semicontinuous narrow horizontal mask. Chelicerae orange, glabrous and non-excavated. Promargin with two teeth. Retromargin with one simple tooth, triangular and bigger than the rest. **Palp** chocolate dark brown covered in scattered long yellow and white setae on the dorsal surface of femur to tibia. **Cymbium** is chocolate brown. **Embolus** arising from its disk ca. 6:00 forming an open spiral and rotating ventrally exposing a big fin-shaped prolateral projection that suddenly constricts before the tip, which is rectangular. Tegulum with with a posterior margin bulky forming a bump. RTA fingerlike. **Legs** 1>4>3>2. legs I black except for femur and tarsus. Hirsute covered by scattered yellow and orange setae. Legs II-IV black spotted and hirsute like legs I creating a ringed pattern. **Abdomen** with a mottled integument covered by dense patches of golden yellow setae forming an anterior margin and fading towards the posterior side of the abdomen. Dark dorsal medial band missing except for a dark triangle over the anal tubercle.

Female in alcohol (paratype). Carapace length 2.1. Abdomen length 2.0. **Carapace** dark brown almost black. Ocular region covered by reddish brown setae. **Clypeus** with a horizontal line of white setae that don't get into the cheeks. AME encircled by a thin layer of dark orange setae. **Chelicerae** dark, glabrous and smooth. **Epigyne** with openings located at the anterior inner margin of the plate and followed from the posterior inner margin by the atria forming circular windows. **Legs** dark brown and hirsute covered by black setae. **Abdomen** mostly black mottled by spots of pale integument that merge at the anterior inner margin of the abdomen forming a pale stripe. Dark dorsal medial band present only as a chevron triangle over the anal tubercle.



**Figure 64.** *Mexigonus schipotle*. Figures 1-8 male. 1-3 palp, embolus and RTA. 4 chelicerae. 5-8 habitus. 9-10 epigynum dorsal and ventral view.

***Mexigonus \$morusus* (Peckham & Peckham, 1888)**

(fig. 65; 1-8)

*Astia morosa* Peckham & Peckham, 1888: 71, pl. 1, f. 53, pl. 5, f. 53 (Dmf).

*Sidusa morosa* Banks, 1904a: 116.

*Sittacus claremonti* Peckham & Peckham, 1909: 518, pl. 43, f. 4, pl. 44, f. 3 (Df).

*Habrocestum morosum* Peckham & Peckham, 1909: 523, pl. 43, f. 2, pl. 44, f. 2 (mf).

*Sitticus claremonti* Petrunkevitch, 1911: 709.

*Habrocestum inscriptum* Schenkel, 1951: 40, f. 43 (Dmf).

*Habrocestum morosum* Prószyński, 1976: 150, f. 106 (m).

*Sitticus claremonticus* Prószyński, 1976: 152, f. 152 (f).

*Tylogonus morosus* Richman & Cutler, 1978: 101 (Tmf from *Habrocestum*).

*Tylogonus morosus* Edwards, 1980: 12 (S).

*Tylogonus morosus* Richman, 1981: 197 (S).

*Mexigonus morosus* Edwards, 2003a: 70 (Tmf from *Tylogonus*).

*Mexigonus morosus* Prószyński, 2017b: 83, f. 36O (mf).

**Etymology.** Name given by the Latin adjective *morosus* = 'hard to please'. It's not clear why Peckham and Peckham used this adjective when naming their species, except perhaps on the uniqueness of the species when contrasted against the rest of the species they called *Astia*.

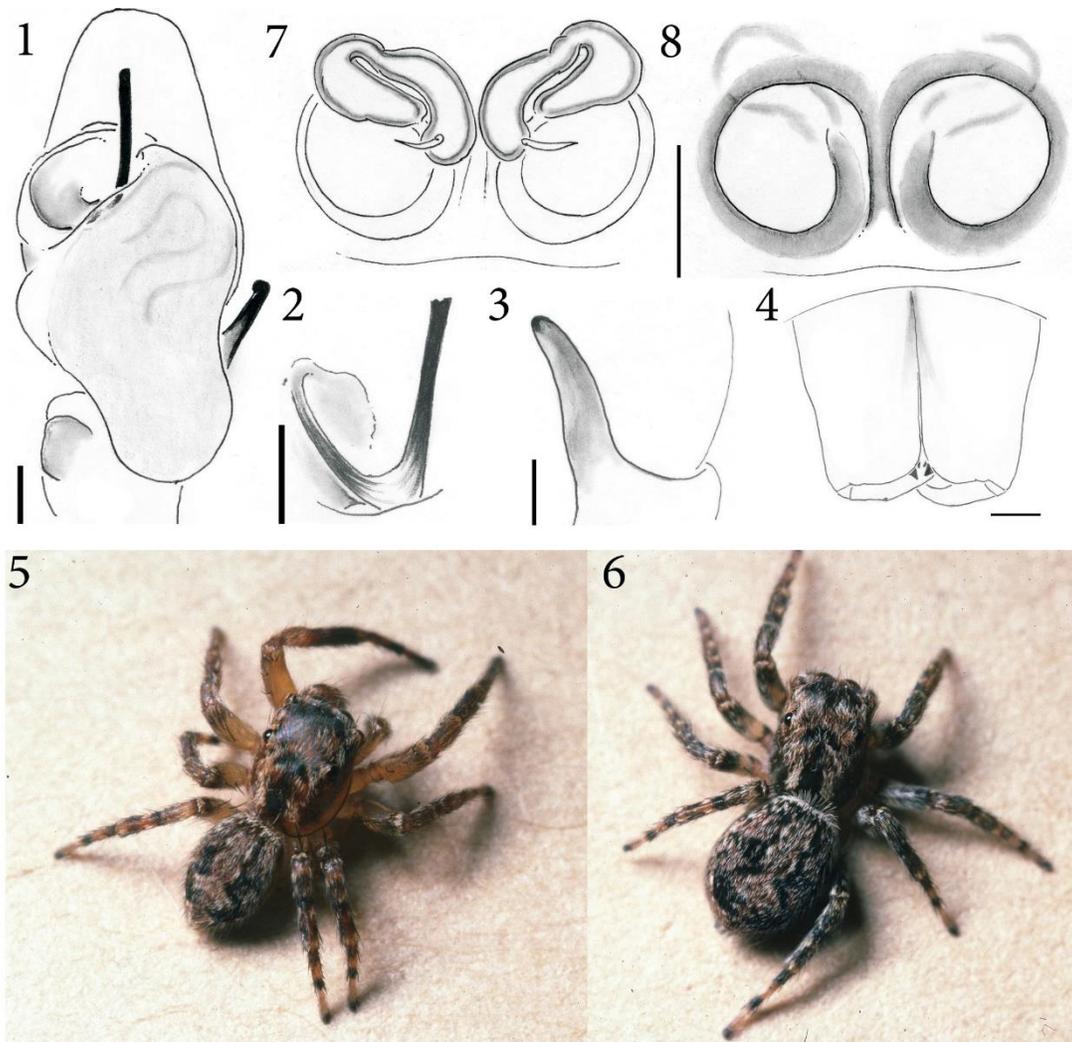
**Diagnosis.** Medium sized cryptic species with tips of the first legs dark in males and ringed orange legs otherwise. The species is unique among *Mexigonus* by the inverted dorsal abdominal band in both males and females, consisting of an irregular patch of pale integument forming wide chevrons forming a triangle over the anal tubercle (fig. 65; 5-6). The embolus is straight and the epigynum is composed by short and irregular teardrop shaped copulatory ducts arching to the anterior margin of the plate and descending into teardrop shaped spermatheca located within the anterior medial part of the plate (fig. 65; 7-8).

**Description.** *Male.* Carapace length 2.2. Abdomen length 2.2. **Carapace** reddish brown with two bands of pale integument parallel to each other surrounding the fovea starting behind PLE, and slightly covered by pale brown setae. **Clypeus** dark brown and hirsute. **Chelicerae** yellow and non excavated. Promargin with two teeth. Retromargin with one simple tooth bigger than those in promargin. **Palp** yellow. **Embolus** arising from its disk ca. 6:00 and folding a straight angle ascending vertically as a line. RTA fingerlike. **Legs** 1>4>3>2. Yellow and hirsute covered in scattered black setae. Integument is reddish dark as follows: from patella to tarsus in legs I, from tibia to tarsus in legs II, from tibia to first half of metatarsus in legs III-IV. Joints metatarsus-tarsus darker. **Abdomen** pale grey with a dark dorsal medial band inverted in colouration: a margin of black integument outlines an irregular pale medial band, semi-uniform and constricted at the end of first and second thirds and increasing in width to create a chevron patch that ends in a dark triangle over the anal tubercle.

*Female* in alcohol. Carapace length 2.9. Abdomen length 3.5. **Carapace** as in male but dark brown reddish. **Clypeus** dark brown and covered by scattered white setae. AME encircled by a margin of white setae, especially dense at the posterior margin. **Chelicerae** dark brown and smooth. Epigyne with openings located at the medial inner margin of the plate. Atria following the openings from the posterior margin complementing the circular windows. Ducts following the openings teardrop shaped and reducing its diameter while arching dorsally towards the conical

spermatheca, which are located at the boundaries of the anterior margin of the windows, and folding back towards the inner side of the epigyne. **Legs** uniformly dark reddish except for basal portion of femora in legs II-IV.

**Material examined.** 16 males, 13 females, 5 juveniles from U.S.A: San Mateo Co., La Honda: 1920, Chamberlin (1\$f); CALIFORNIA: Los Angeles Co., Claremont: Claremont (1\$m); CALIFORNIA: Los Angeles Co., Topanga Canyon, Santa Monica Mts., cottonwood, live oaks, chaparral: 28 Jun 1985, H.L. Levi (1\$f); CALIFORNIA: Los Angeles Co., 34.0320 °N, 118.3016 °W, collector unknown (1\$f); CALIFORNIA: Jasper Ridge: 1920 (2\$m); CALIFORNIA: San Luis Obispo Co., Prefumo Canyon: 35.2619 °N, 120.7539 °W, 200 m, 10 May 2006, D.R. Maddison & K. Will, DRM 06.118 (1\$f); CALIFORNIA: Marin Co., Cataract Creek, Mt. Tamalpais: 37.9215 °N, 122.6268 °W, 500 m, 9 Sep 2013, D.H. Kavanaugh & D.R. Maddison, DRM 13.282 (1\$m).U.S.A.: CALIFORNIA: Los Angeles Co., Topanga Canyon: 28 Jun 1985, W. Maddison, WPM#85-080 (1\$m, 2\$f, 2\$j); CALIFORNIA: Santa Cruz Co., 4.0 mi N Soquel: 60.9 m, 8 Jul 1993, M.C. Hedin, WPM#93-086 (1\$f); CALIFORNIA: Los Angeles Co., Yerba Buena Rd: 28 Jun 1985, W. Maddison, WPM#85-082 (11\$m, 6\$f, 2\$j); CALIFORNIA: Monterey Co., Monterrey, John Hopkins Marine Station: 7-10 Sep 1994, W. Maddison, WPM#94-056 (1\$j).



**Figure 65.** *Mexigonus smorosus*. Figures 1-5 male. 6-8 female. 1-3 palp, embolus and RTA. 4 chelicerae. 7-8 epigyna dorsal and ventral view. !!!What photovouchers are these?

***Mexigonus \$small\_brown* sp. nov.**

(fig. 66; 1-11)

**Holotype.** Male from MÉXICO: QUERÉTARO: Sierra Gorda, W of Pinal de Amoles, km 131 of HWY 120, 21.1247 °N, 99.6654 °W, 2640 m, 28 Jul 2017, W. Maddison, WPM#17-070.

**Paratypes.** 2 males, 1 females, 2 juveniles from MÉXICO: QUERÉTARO: Sierra Gorda, NE of Pinal de Amoles on HWY 120: 21.15 °N, 99.616 °W, 2230 m, 29 Jul 2017, U. Garcilazo, W. Maddison, D. Guerrero, V. Muñoz, E. Humbel, WPM#17-073 (1\$m); QUERÉTARO: Sierra Gorda, W of Pinal de Amoles, km 131 of HWY 120: 21.1247 °N, 99.6654 °W, 2640 m, 28 Jul 2017, W. Maddison, WPM#17-070 (2\$j: \$j = MX17-4312, \$j = MX17-4319); QUERETARO: Las Ranas. 1.4 km N San Joaquin: 20.92642 °N, 99.56193 °W, 2360 m, 16 Aug 2009, N. Vasquez-Bolanos, L. Saaenz (1\$m, 1\$f).

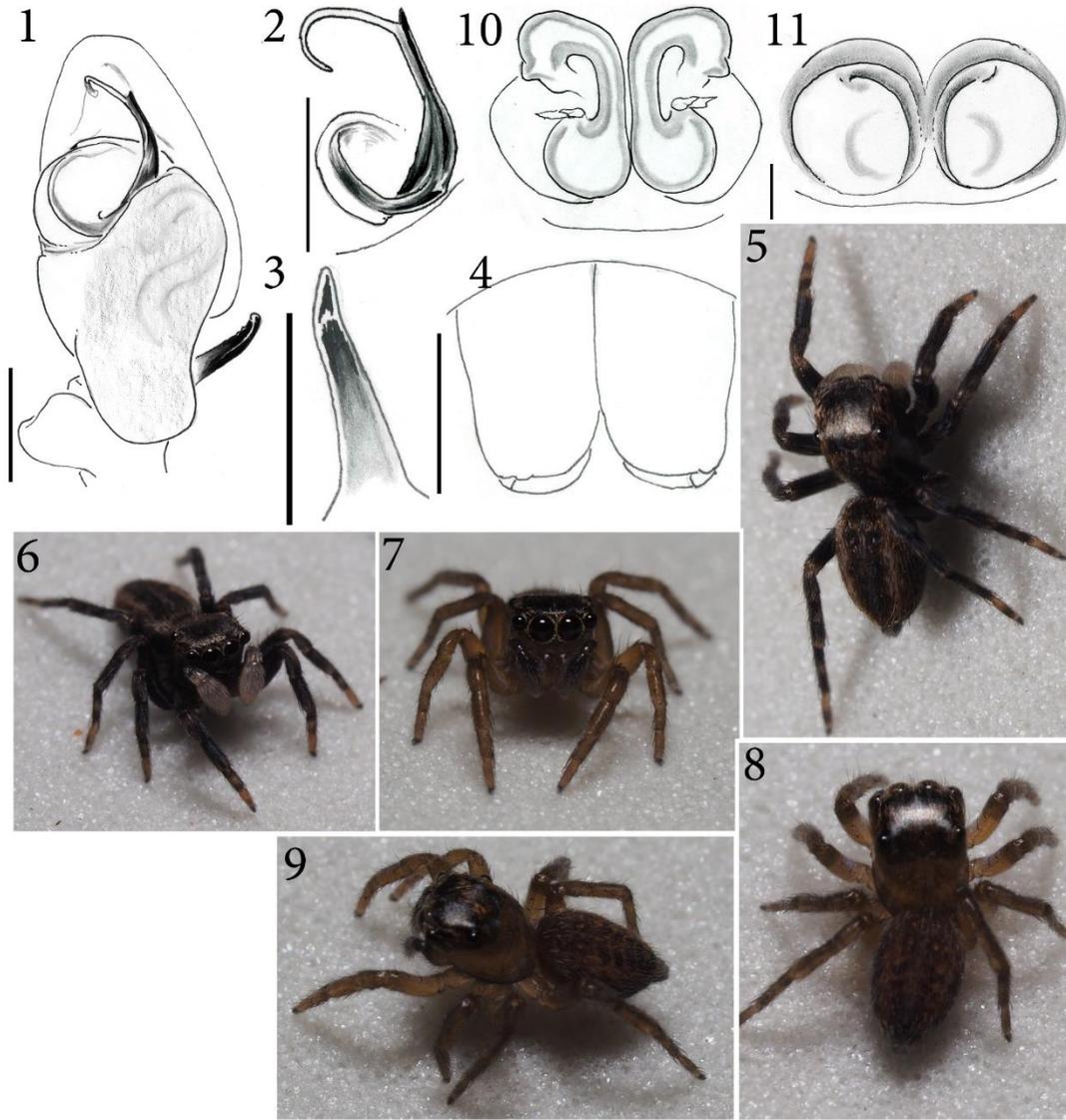
**Diagnosis.** Small dark and glabrous species (fig. 66; 5-8) unique by the ventral projection looping out of the tip of the embolus (fig. 66; 1-2) and epigyna with thick margins at the anterior edge of the windows (fig. 66; 10-11). The species resembles *M. \$small\_pepper* in the general shape of the body. The carapace is entirely dark but covered in brown shiny setae outlining the eyes in the ocular region unlike *M. \$small\_pepper* where there is a vertical stripe over the AME and complemented by short white setae. The parallel stripes appearing from behind the PLE is missing in both species. The embolus is asymmetrical in the rotation of its dorsal and ventral edges when leaving the embolar disk unlike *M. \$small\_pepper*, where the embolus is also spiral but more less cylindrical.

**Description.** *Male* in alcohol (holotype). Carapace length 1.9. Abdomen length 1.5. **Carapace** very dark brown almost black and uniformly covered by golden copper shiny setae, especially dense over the ocular region. Sides of the fovea with a pair of patches of white setae. **Clypeus**

dark brown and covered by long golden setae covering the lower margin of the carapace and base of the paturon. AME encircled by a margin of setae with the same colour as in the clypeus. **Chelicerae** dark brown, glabrous and non excavated. Promargin with two teeth. Retromargin with one simple tooth. **Palp** black except for pink cymbium and densely covered by black setae except for the dorsal distal half of femora. **Embolus** arising from its disk ca. 6:00 forming a spiral. While the ventral margin of the embolus faces retrolaterally, the dorsal face rotates dorsally producing a contortion and medial depression. Embolus ends into a triangular dorsal tip and a ventral thread distally coiled. **Legs** 4>1>3>2. Dark brown, almost black except for a pale tarsus. A consistent pattern of depigmentation is present consisting of two bands of pale integument running parallel at the dorsal face of all legs and especially visible at the femora. **Abdomen** entirely black and covered by black setae except for a posterior margin of pale integument bisected by a dark triangle over the anal tubercle. This triangle represents the only visible sign of a dark dorsal medial band.

*Female* (paratype; MX17-4312). Carapace length 2.3. Abdomen length 2.2. **Carapace** orange brown and glabrous. Ocular region black with a faint margin of white setae, reduced to patches around the PME and PLE. **Clypeus** orange brown and covered by long brown setae covering the margin of the carapace and base of paturon. AME encircled by a thin layer of white setae. **Epigyne** with openings located at the anterior middle margin of the windows. The atrium is thick anteriorly and gradually reduces its width disappearing at the ventral margin. A secondary rim accompanies the septum and connects to the openings. Ducts after the openings with a triangular blunt projection, thick and arching anteriorly descending parallel to their counterpart before merging with the not much bigger spermatheca from above. **Legs** as in male but orange brown. **Abdomen** black covered by black setae and appearing chevron by corrugation of integument accompanied by lack of pigmentation.

**Additional material examined.** 2 males, 1 juveniles from MÉXICO: HIDALGO: El Locote, 13.6 mi NE of La Mission turnoff on HWY 85: 21.08 °N, 99.02 °W, 1597 m, 10 Jun 1983, W. Maddison, WPM#83-055 (1\$m, 1\$); QUERETARO: Las Ranas. 1.4 km N San Joaquin: 20.92642 °N, 99.56193 °W, 2360 m, 16 Aug 2009, N. Vasquez-Bolanos (1\$m).



**Figure 66.** *Mexigonus* small brown. Figures 1-4 male holotype. 5-6 juvenile male MX17-4319. 7-11 female paratype MX17-4312. 1-3 palp, embolus and RTA. 4 chelicerae. 10-11 epigyna dorsal and ventral view.

***Mexigonus \$small\_pepper* sp. nov.**

(fig. 67; 1-12)

**Holotype.** Male from MÉXICO: OAXACA: Santa Catarina Lachatao, 17.25 °N, 96.464 to 96.466 °W, 2570 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, R. Paredes, A. Casasola, Hernandez, WPM#17-009, (\$m = MX17-0595).

**Paratypes.** 4 females from MÉXICO: OAXACA: Santa Catarina Lachatao: 17.25 °N, 96.464 to 96.466 °W, 2570 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, R. Paredes, A. Casasola, Hernandez, WPM#17-009 (4\$f: \$f = MX17-0603).

**Diagnosis.** Small dark species sprinkled with patches of white and black setae, a vertical stripe in the middle of the AME and ringed legs (fig. 67; 5-10). The species is unique by the small body, vertical stripe in the middle of the AME extending into the ocular region in both males and females (fig. 67; 7, 10), body hirsute mottled by pale brown and white patches over the abdomen, embolus spiraled with blunt edges, irregular and cylindrical (fig. 67; 1-2). The species is morphologically like *M. \$small\_brown*. The parallel band behind the PLE are missing in both species but the vertical stripe between the AME and the small patches of white and pale brown setae in the abdomen are missing in *M. \$small\_brown*.

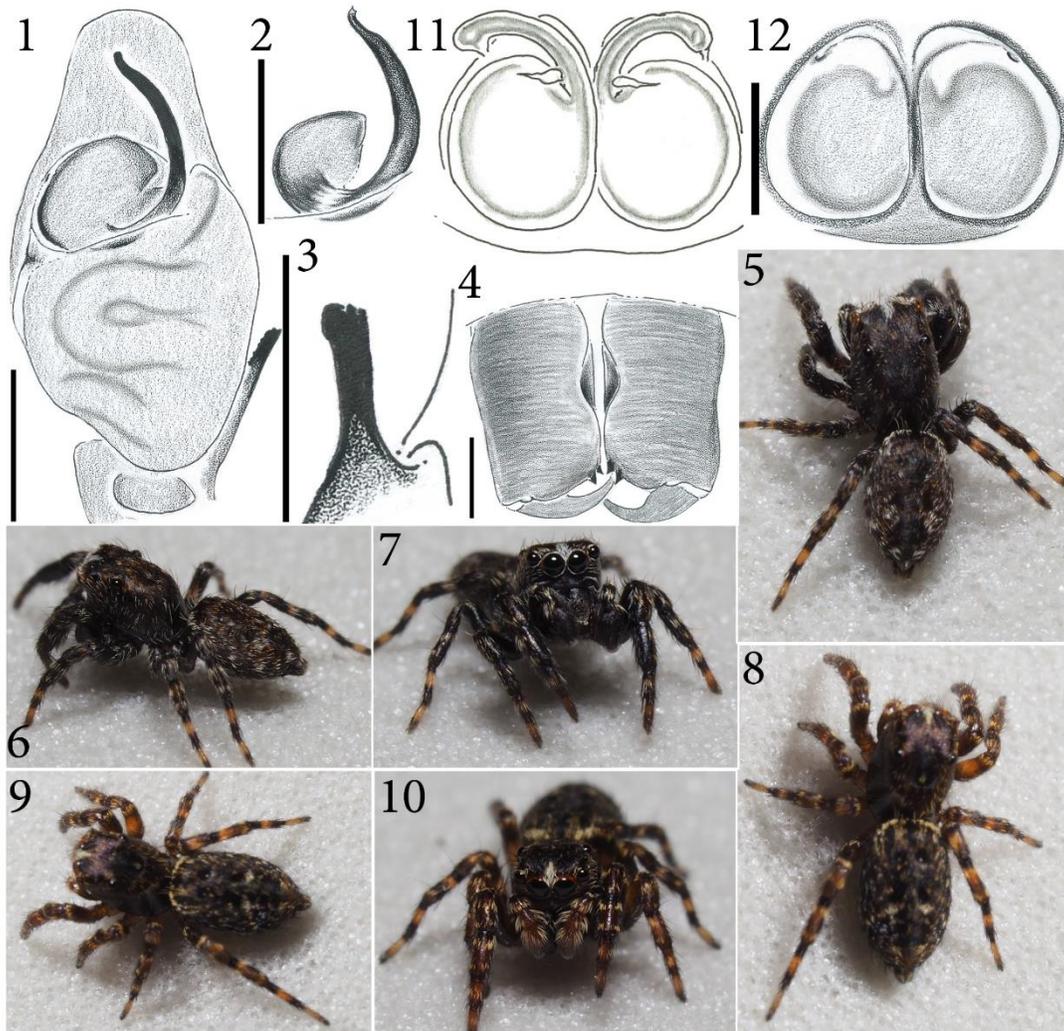
**Description.** *Male* (holotype). Carapace length 1.5. Abdomen length 1.3. **Carapace** black covered by golden brown setae scattered uniformly over the carapace except for ocular region.

**Clypeus** black and glabrous. AME encircled by a ring of white setae, which become denser at the dorsal side between the AME entering the ocular region as a vertical stripe. **Chelicerae** black and slightly excavated. Promargin with two teeth. Retromargin with one simple tooth. **Palp** black covered at the dorsal surface of femur to tibia by scattered yellow setae. **Embolus** arising from its disk ca. 7:00 and forming a slender open spiral directed towards the prolateral side of

the tegulum and bent at the tip. Tegulum oval. **RTA** fingerlike ending in a rectangular tip and a bumpy ventral vertex. **Legs** 4>1>3>2. Legs I entirely black and tibia noticeable wider than the rest of the legs. Tarsus amber orange. Hirsute on the lateral sides and covered by scattered yellow setae condensed at the middle part of the dorsal tibia and the distal margins of femur to tibia. Legs II-IV hirsute as in legs I and second half of metatarsus and first half of tarsus amber orange. **Abdomen** black dorsally covered by a compound pattern of setae: mottled white and black at the sides and shiny reddish orange moving towards the middle outlining a dark medial band otherwise inconspicuous by the colour of the integument. Dark medial band uniform in alcohol preserved specimen and narrow, ending in a wide chevron ovoid triangle over the anal tubercle.

*Female* (paratype; MX17-0603). Carapace length 1.7. Abdomen length 1.8. **Carapace** black and glabrous with a small patch of setae over the fovea. **Clypeus** black and glabrous with a small patch of setae at the margin covering the basal part of the paturon. AME encircled by a thin layer of white setae. **Chelicerae** smooth, black and glabrous. **Epigyne** with openings located at the anterior external margins of the atrium. Atrium thin and extended forming circles. Openings followed from the posterior inner margin by a line running next to the atria. Ducts after the openings thin arching anteriorly and descending diagonally to merge with the big ovoid spermatheca while touching their counterpart. **Legs** completely black except for amber yellow tarsi and glabrous with lateral side of segments without setae. **Abdomen** entirely black and iridescent, covered at the dorsal surface flanks by an inverted triangular patch of iridescent setae and an anterior medial patch of white setae. Dark dorsal medial band visible only in alcohol preserved specimen, faded against black integument ending into an ovoid triangular chevron spot over the anal tubercle.

**Additional material examined.** 1 juveniles from MÉXICO: OAXACA: Santa Catarina Lachatao: 17.25 °N, 96.464 to 96.466 °W, 2570 m, 1 Jul 2017, W. Maddison, Ł. Trębicki, U. Garcilazo, R. Paredes, A. Casasola, Hernandez, WPM#17-009 (1\$; \$j = MX17-0609).



**Figure 67.** *Mexigonus small\_pepper*. Figures 1-7 male holotype MX17-0595. 8-12 female paratype MX17-0603. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$tuxedo sp. nov.***

(fig. 68; 1-12)

**Holotype.** Male from MÉXICO: QUERÉTARO: Sierra Gorda, HWY 120 near Maguey Verde, 21.105 °N, 99.696 °W, 2220 m, 28 Jul 2017, D. Guerrero, V. Muñoz, W. Maddison, E. Humbel, U. Garcilazo, WPM#17-068, (\$m = MX17-4221).

**Paratypes.** 6 males, 4 females, 2 juveniles from MÉXICO: QUERÉTARO: Sierra Gorda, HWY 120 near Maguey Verde: 21.105 °N, 99.696 °W, 2220 m, 28 Jul 2017, D. Guerrero, V. Muñoz, W. Maddison, E. Humbel, U. Garcilazo, WPM#17-068 (2\$m, 2\$f: \$f = MX17-4235, \$m = MX17-4207(m) & 4249(f)); SAN LUIS POTOSI: Xilitla, Cueva de Salitre: 21.38 °N, 98.98 °W, 609 m, 13 Jun 1983, W. Maddison, WPM#83-062 (4\$m, 2\$f, 2\$j).

**Diagnosis.** A medium sized species with males having a black and white species with two parallel continuous pale longitudinal bands (fig. 68; 5-7), whereas females have a glabrous carapace and velvety black abdomens (fig. 68; 8-10). The species is unique by the highly modified palp with an embolar disk highly elevated and modified with a complex secondary sclerite at its base (fig. 68; 2), a very long embolus (fig. 68; 1), the distortion of the tegulum to accommodate the embolus, and in females the convoluted and highly coiled copulatory ducts and the placement of the openings on the posterior margin of the genital plate close to the epigastric furrow (fig. 68; 11-12).

**Description.** *Male* (holotype). Carapace length 2.5. Abdomen length 2.3. **Carapace** black. Ocular region covered in reflective black setae and outlined by a margin of white setae between passing above all the eyes and extending next to the fovea, parallel to their counterpart. Margins of the carapace outlined by a margin of white setae. **Clypeus** black and glabrous covered by scattered white setae that extend below the margin of the carapace covering the base of the

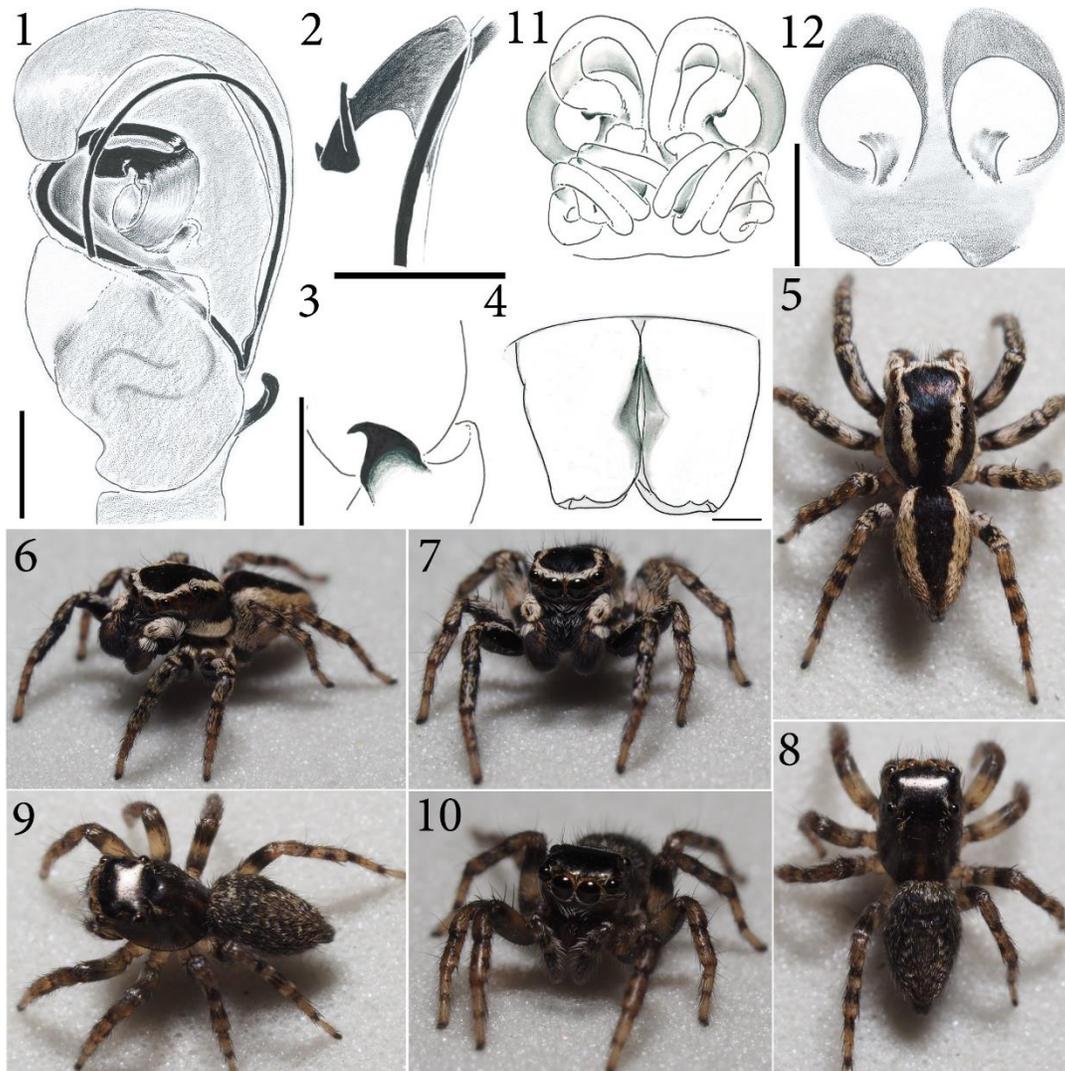
paturon. AME encircled by a margin of setae of compound colouration: Red on the sides and white otherwise. **Chelicerae** black with a horizontal patch of white setae at the base of the paturon. Slightly excavated. Promargin with two teeth fused at the base. Retromargin with one tooth bigger than those in the Promargin. **Palp** black densely covered at the dorsal side of femur to tibia with white setae. **Embolus** arising from its disk ca. 1:00. Embolar disk elongated and rotated dorsally parallel to the longitudinal axis of the tegulum, then divided in a prolateral projection and a prokateral embolus. Embolus rotates to the prolateral side resting over the haematodocha creating a slide passing behind the tegular ledge to the posterior retromarginal margin of the tegulum, rotating dorsally along the retrolateral margin of the cymbium ending in a slender tip. Tegular lobe shaped as a can opener and short. RTA shaped as a can opened with an acute tip bent ventrally. **Legs** 4>1>3>2. Legs I black from femur to tibia and covered by dense patches of whitish brown setae, and reddish brown otherwise. Legs II from femur to tibia black, dorsally covered by whitish brown setae. Legs III-IV with middle of tibia and joints from tibia to metatarsus black, which combined with a horizontal patch of cream yellow brown setae form a ringed pattern. **Abdomen** black with a dark dorsal medial stripe uniform and regular in its borders, reducing gradually its size and ending into a dark triangle over the anal tubercle. Band outlined by a margin of wide white brown setae running parallel to their counterpart and almost merging at the end of the abdomen.

*Female* (paratype; MX17-4235). Carapace length 2.1. Abdomen length 2.7. **Carapace** black with ocular region outlined by a margin of scattered yellow setae above ALE to PLE and extending into the fovea where they merge with their counterpart. Margins of the thoracic region unpigmented. **Clypeus** black and glabrous slightly covered by long whitish setae that cover the base of the paturon. **Epigyne** with widened atria reducing their width from the anterior to the posterior edges of the rim. Big openings located at the posterior inner margin of the plate and outlined by a trail of chitin. Ducts after the openings arching anteriorly forming a loop that

descends parallel to their counterpart and coiling three and a half times around the spermatheca before merging with them. **Legs** covered by black hairs, amber yellow and grey except for black distal edge of the femur, middle of tibia and joints, creating a ringed pattern. Legs I darker than the rest. **Abdomen** black covered by patches of setae of compound colouration in dorsal view: golden yellow at the anterior margin, black at the flanks and outlining an oval patch of cream brown setae covering the second half of the abdomen and ending into a pale triangle.

**Additional material examined.** 20 males, 14 females, 26 juveniles from MÉXICO:

QUERÉTARO: Sierra Gorda, SW of Jalpan on HWY 120: 21.207 °N, 99.499 °W, 1120 m, 29 Jul 2017, W. Maddison, U. Garcilazo, D. Guerrero, V. Muñoz, E. Humbel, WPM#17-071 (1\$<sub>f</sub>, 2\$<sub>j</sub>: \$<sub>f</sub> = MX17-4328, \$<sub>j</sub> = MX17-4517, \$<sub>j</sub> = MX17-4593); QUERÉTARO: Sierra Gorda, W of Pinal de Amoles, km 131 of HWY 120: 21.125 °N, 99.665 to 99.666 °W, 2600 m, 28 Jul 2017, W. Maddison, V. Muñoz, D. Guerrero, U. Garcilazo, E. Humbel, WPM#17-069 (7\$<sub>m</sub>, 6\$<sub>f</sub>, 3\$<sub>j</sub>); QUERÉTARO: Sierra Gorda, HWY 120 near Maguey Verde: 21.105 °N, 99.696 °W, 2220 m, 28 Jul 2017, D. Guerrero, V. Muñoz, W. Maddison, E. Humbel, U. Garcilazo, WPM#17-068 (3\$<sub>m</sub>, 17\$<sub>j</sub>); HIDALGO: 3.4 km SW of Cuesta Colorada on HWY 85: 21.0167 °N, 99.1333 °W, 1725 m, 10 Jun 1983, W. Maddison & M. Kaulbars (2\$<sub>m</sub>, 2\$<sub>f</sub>); QUERETARO: 11 km W of San Luis Potosi border on HWY 120, ~35 km W of Xilitla: 21.25 °N, 99.22 °W, 1524 m, 12 Jun 1983, W. Maddison, WPM#83-060 (2\$<sub>m</sub>); QUERETARO: Las Ranas. 1.4 km N San Joaquin: 20.92642 °N, 99.56193 °W, 2360 m, 16 Aug 2009, M.G. .Branstetter (1\$<sub>m</sub>, 2\$<sub>j</sub>); SAN LUIS POTOSI: 14 mi. E. of Xilitla: 21 Jul 1954, R. Dreisbach (1\$<sub>m</sub>, 1\$<sub>f</sub>); SAN LUIS POTOSI: near Taman, ~16 km SW of Tamazunchale on HWY 85: 21.18 °N, 98.88 °W, 304 m, 11 Jun 1983, W. Maddison & R.S. Anderson, WPM#83-059 (3\$<sub>m</sub>, 2\$<sub>f</sub>, 2\$<sub>j</sub>); SAN LUIS POTOSI: Xilitla: 609 m, 24 Jul 1954, R. Dreisbach (1\$<sub>m</sub>, 2\$<sub>f</sub>).



**Figure 68.** *Mexigonus \$tuxedo*. Figures 1-7 male holotype MX17-4221. 8-10 female paratype MX17-4235. 11-12 female paratype. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus \$walrus* sp. nov.**

(fig. 69; 1-12)

**Holotype.** Male from MÉXICO: PUEBLA: Nicolas Bravo, 18.62918 °N, 97.29688 °W, 2861 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@031.

**Paratypes.** 10 males, 5 females from MÉXICO: PUEBLA: Nicolas Bravo: 18.62918 °N, 97.29688 °W, 2861 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@031 (10\$m, 5\$f: \$f = MXN\_2340, \$f = MXN\_2430).

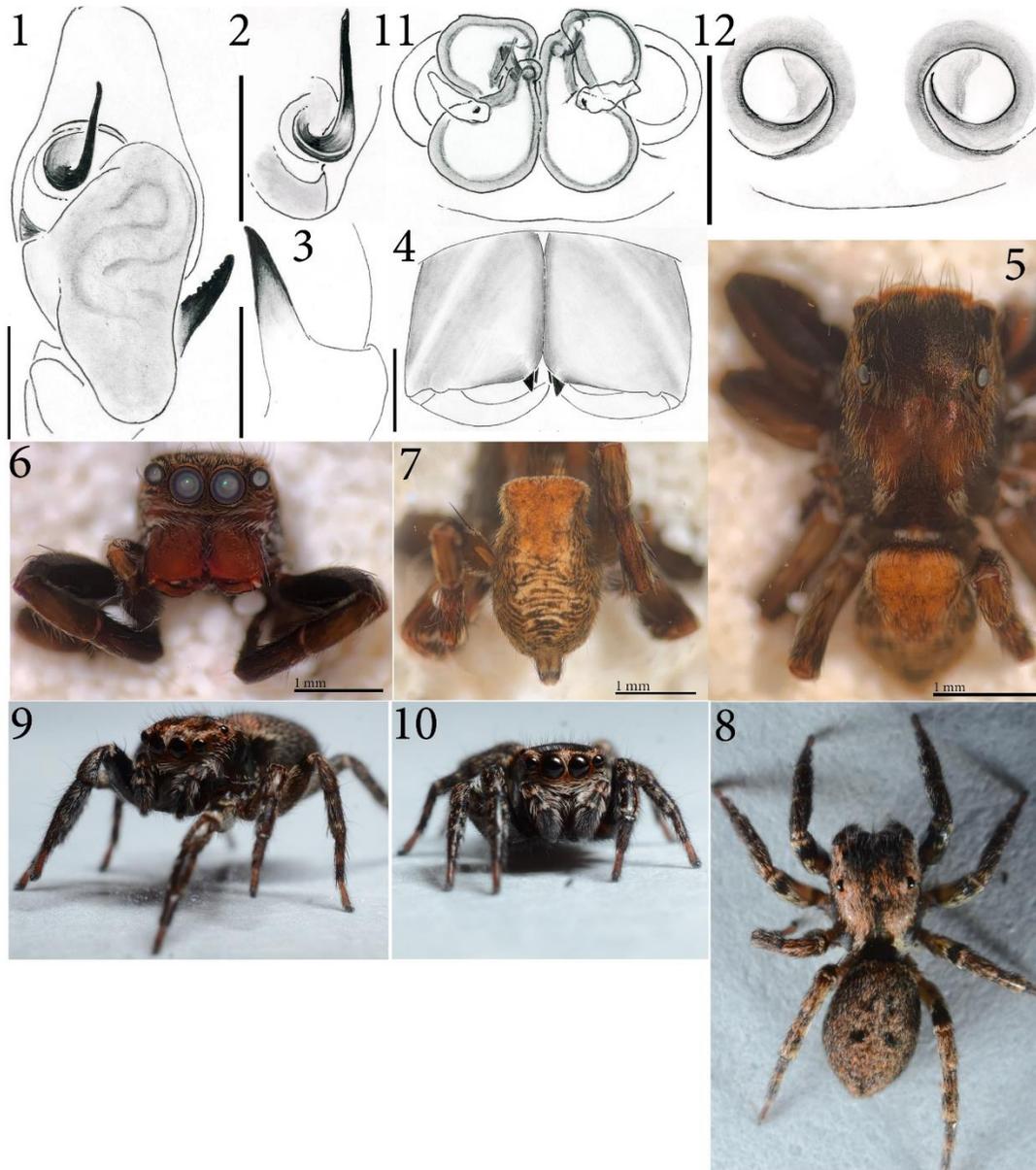
**Diagnosis.** A medium sized velvety hirsute reddish species (fig. 69; 5-8) distinctive among *Mexigonus* by the combination of a short straight and triangular embolus with irregular edges over an elevated embolar disk (fig. 69; 1-2), very wide and bulky chelicerae (fig. 69; 4) and coiled shape of the genital plate (fig. 11).

**Description.** *Male* in alcohol (holotype). Carapace length 2.3. Abdomen length 2.0. **Carapace** brown covered by a combination of reddish brown and white setae except for the ocular region, and especially dense between and below the ALE-PME-PLE outlining a margin that surrounds the ocular region. This pattern transforms into a pair of parallel lines descending from the thoracic region. **Clypeus** densely covered by golden yellow setae and long white setae on the sides and lower margins of the face. AME encircled by a ring of reddish setae. **Chelicerae** almost as wide as high, reddish and bulky. Promargin with two teeth. Retromargin with one simple tooth. All cheliceral teeth are big. **Palp** dark brown except for distal region of femur and patella, which are paler and are covered by white setae. **Embolus** arising from its disk ca. 6:00 forming a straight structure, long relative to the small embolar disk but slender and small relative

to the size of the cymbium. RTA spine shaped ending in an acute tip. **Legs** 1>4>3>2. Legs I entirely dark with the dorsal surface of femur to tibia covered by scattered setae that condense at the distal part of these segments to form rings. **Legs** II-IV as in legs I except tarsus is paler. Abdomen black mottled by reddish and white brown setae uniformly scattered over the dorsal face of the abdomen with two dots at the middle and thicker cuticle at the anterior margin looking reddish. Posterior end of the abdomen ending in a dark triangle over the anal tubercle.

*Female* (paratype; MXN\_2430). Carapace length 2.5. Abdomen length 2.6. **Carapace** black covered by reddish shiny setae except for the ocular region. Sides of the fovea with a pair of parallel yellow cream stripes descending the thoracic region. **Clypeus** black densely covered in reddish brown setae and cream brown setae on at the margin of the carapace covering the base of the paturon. AME encircled by a margin of the same setae seen in the clypeus, extending between the AME forming a vertical stripe that barely enters the ocular region. **Chelicerae** smooth and big but not as bulky as in male. **Epigyne** with openings located at the inner medial edge of the plate. The atria are thick and begin at the posterior margin, then reducing its diameter within themselves forming a loop. Ducts after the openings widened forming secondary spermatheca, arching anteriorly and descending parallel to their counterpart at the inner side of the epigyne before entering the spermatheca. There is considerable asymmetry in the shape of the ducts connecting both pairs of spermathecae. Legs as in male II-IV for all legs.

**Additional material examined.** 1 males, 5 females, 2 juveniles from MÉXICO: PUEBLA: Nicolas Bravo: 18.62918 °N, 97.29688 °W, 2861 m, 13 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@031 (1\$m, 5\$f, 2\$j).



**Figure 69.** *Mexigonus \$walrus*. Figures 1-7 male holotype. 8-12 female paratype MXN\_2430. 1-3 palp, embolus and RTA. 4 chelicerae. 11-12 epigyna dorsal and ventral view.

***Mexigonus peninsulanus* (Banks, 1898)**

(fig. 70; 1-6)

*Attus peninsulanus* Banks, 1898b: 285, pl. 17, f. 16 (Dm).

*Sitticus peninsulanus* Petrunkevitch, 1911: 709.

*Mexigonus peninsulanus* W. Maddison, in Maddison et al., 2020a: 38 (T from *Sitticus*).

**Holotype.** Male from MEXICO; Baja California Sur; Sierra San Lazaro, Sep 1898, N. Banks (Banks. 1898).

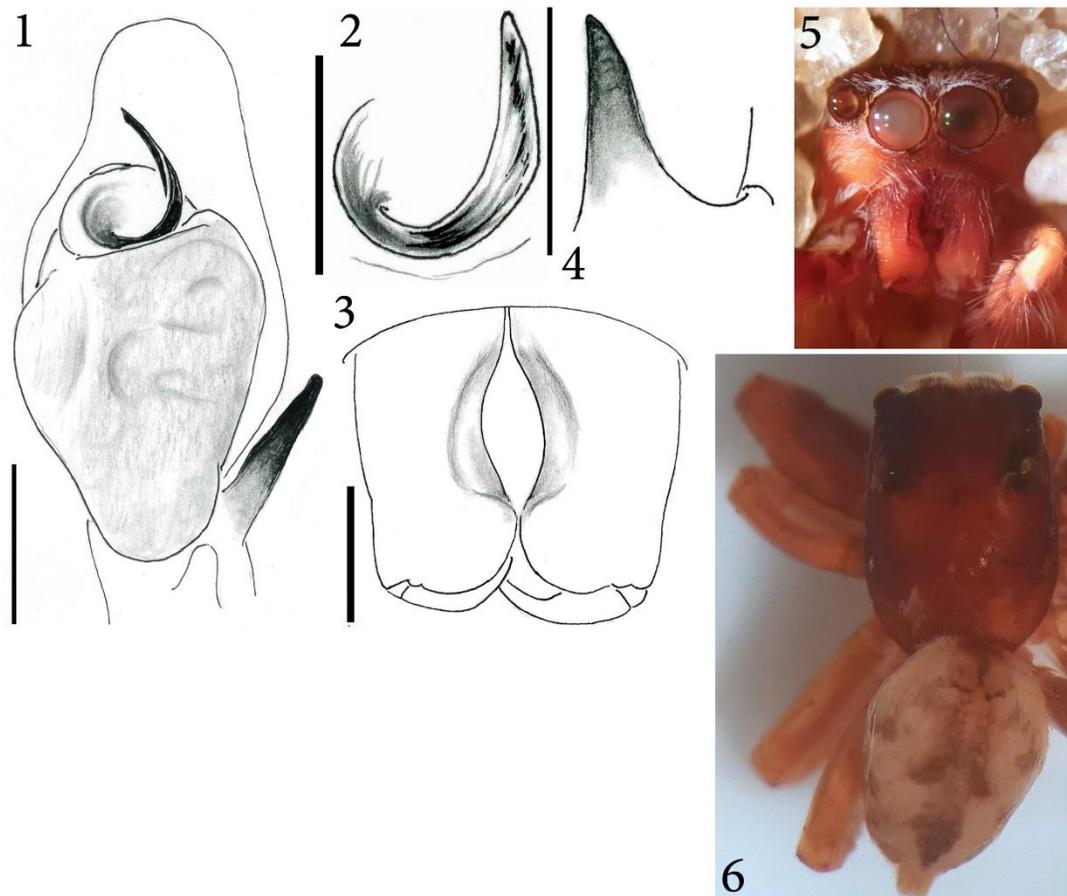
**Paratypes.** 3 males, from MEXICO: Baja California Sur: Sierra San Lazaro, Sep 1898, N. Banks (Banks. 1898).

**Etymology.** The species seems to have been named by Banks (1898) based on the location of the type locality inside the Baja California peninsula.

**Diagnosis.** A medium sized species (fig. 70; 5-6) distinctive among *Mexigonus* by the anterior margin of white setae over the AME in combination with the laminar and spiral embolus with a triangular tip (fig. 70; 1-2) and the short and conical RTA (fig. 70; 4).

**Description.** *Male* in alcohol (holotype). Carapace length XX. Abdomen length XX. **Carapace** reddish brown with the anterior margin of the ocular region outlined by white setae over the AME and the lateral thoracic slopes of the carapace are covered by pale setae (fig. 70; 6). The illustration provided by Banks (1898) suggests that most of the posterior margin was covered by these setae. **Clypeus** is hirsute and covered by scattered white setae. The sides of the AME are surrounded by white setae. **Chelicerae** are deeply excavated with reddish integument. Promargin with two teeth. Retromargin with one simple tooth. **Palp** pale yellow except for the

distal region of femur and slightly covered by white setae. **Embolus** arising from its disk ca. 6:00 forming leaning prolaterally forming a spiral, with a laminar face that is triangular at its tip. RTA is short and conical. **Legs** 1>4>3>2. Legs I slightly darker than the rest with very faint markings of darker integument that resemble rings. **Legs** II-IV as in legs I except more orange. **Abdomen** has an ivory pink integument with lateral black spots, two dark dots at the middle and a semi continuous dark longitudinal dorsal band ending into a dark triangle over the anal



tubercle.

**Figure 70.** *Mexigonus peninsulanus*. Figures 1-6 male holotype. 1 palp, 2 embolus, 3 RTA, 4 chelicerae. 5 prosoma, 6 habitus dorsal.

## Species of *Mexigonus* transferred from other genera

(map 8)

We identified five additional species in the literature of Nearctic euophryines we believe belong to the genus *Mexigonus*. We present and justify their new allocation by providing a short assessment on their taxonomic history and set of morphological characteristics that make them part of the genus. Many of these species were originally described by F.O.P. Cambridge and pertain the diversity of spiders found in Mexico.

### ***Mexigonus cristatus* (F. O. Pickard-Cambridge, 1901) comb. nov.**

*Sidusa cristata* F. O. Pickard-Cambridge, 1901a: 213, pl. 16, f. 10 (Dm).

*Corythalia cristata* Simon, 1903a: 790.

**Holotype.** *male* from Mexico: Tabasco: Teapa.

**Etymology.** Latin adjective *cristatus* = tufted/crested.

**Taxonomic decisions.** F. Cambridge described *M. cristatus* as 'a beautiful species [that] may be recognized at once by the crested fringes of long brown hair tipped with white'. An examination of photographs on the type specimen and the illustrations of F.O.P. Cambridge (1901) shows a dark tufted tibia. The distinctiveness of this pattern with crests seen in some species of *Corythalia*, and the affinities of this species with other members of Cambridge's species were used by Simon to justify the transfer of the species to that genus. The pattern in the tibiae I involve changes in cuticular coloration that affect only that segment, while the rest of the first pair of legs are pale. Whereas this pattern of cuticular coloration seems to be unique of this species and at first impression is quite distinct from any other member of *Mexigonus*, the heavily ornamented tibiae, patella and femora are common in members of the *Stomatoxenus*

group, including the crests restricted to the margins of the prolateral side of the femora. However, the most important diagnostic feature that allows to include *C. cristata* as a member of the *Stomato\_red* group is the palp. The tegulum shows a blunt bump, the embolus is elevated over the embolar disc, and the embolar disc shows a spur at its transition to become the embolus. In addition, there is a triangular patch at the distal side of the abdomen, which is a trait found in many species in *Mexigonus*.

***Mexigonus spirorbis* (F. O. Pickard-Cambridge, 1901) comb. nov.**

*Sidusa spirorbis* F. O. Pickard-Cambridge, 1901a: 214, pl. 16, f. 11 (Dm).

*Corythalia spirorbis* Simon, 1903a: 790.

**Holotype.** *male* from Panama, Bugaba (Champion).

**Etymology.** Name formed by the Latin adjective *spiros* = spiraling and the Latin noun *orbis* = circle. F. Cambridge probably named his species after the long and spiraled embolus of the species.

**Taxonomic decisions.** F. Cambridge described *M. spirorbis* as 'small species' (4-5 mm) and without giving too much detail on the habitus or morphology. Along with *M. cristatus*, the species was later transfer into *Corythalia*. The length and shape of the embolus, the pointy bump in the tegulum leaned prolaterally and what seems to be a green-yellow integument strongly suggests the species belongs to the *Stomato\_red* group.

***Mexigonus nigrinus* (F. O. Pickard-Cambridge, 1901) comb. nov.**

*Sidusa nigrina* F. O. Pickard-Cambridge, 1901a: 213, pl. 16, f. 8 (Df).

**Holotype.** Female from Mexico, Omilteme, Guerrero. The locality for the taxon is currently not recognized as an official municipality. Omilteme was popular as a research locality at the beginning and the middle of the 20th century for groups like birds (Griscom, 1937), mammals (Nelson, 1904) and arthropods (F.O.P. Cambridge). The original locality might be close to 17.5 N, -99.7 W.

**Etymology.** Name given by the Latin adjective *nigrinus* = black. The species was named by F. O. P. Cambridge probably based on the pattern of black chevrons covering the abdomen of the type specimen.

**Taxonomic decisions.** The yellow colour used to represent the integument in the drawing made by F.O.P. Cambridge added to his description on the uniform yellow pattern of the legs, the ocular region completely black, a brown abdomen dark with black chevrons forming a medial band and especially ending in a dark triangle over the anal tubercle strongly resemble the habitus of females of several species of *Mexigonus* (e.g. \$banderas, \$blue\_legs, \$green\_ghost, \$mite\_face, \$purple\_tomato, etc). The copulatory ducts are highly convoluted as in \$tomato\_red and \$blue\_legs. In Cambridge's drawings the spermathecae are as thick as the ducts and seem to be located at the middle rather than the innermost side of the plate, most commonly observed in the \$tomato\_red group.

***Mexigonus nigropictus* (F.O.P. Cambridge 1901) comb. nov.**

*Sidusa nigropicta* F. O. Pickard-Cambridge, 1901a: 212, pl. 15, f. 15 (Dm).

*Sidusa vittata* F. O. Pickard-Cambridge, 1901a: 213, pl. 16, f. 7 (Df).

*Capidava nigropicta* Simon, 1903a: 740.

*Tylogonus vittatus* Simon, 1903a: 790.

*Corythalia nigropicta* Kraus, 1955b: 66, f. 187-189 (Tm from *Capidava*, Sf).

*Tylogonus vittatus* Galiano, 1960: 102 (doubts S, T of Kraus).

**Holotype.** Panama: Bugaba: Champion (\$m) [holotype]

**Etimology.** Latin adjectival phrase in agreement with the genus gender; *nigro* = black and the Latin verb *pictus* = colored.

**Taxonomic decisions.** Originally described as *Sidusa nigropicta* and *Sidusa vittata* by F.O.P. Cambridge (1901), the name *nigropicta* was given to the species after its darker carapace relative to other species described by Cambridge, referring particularly to the darkness of the cephalic area. Transferred and separated again as *Capidava nigropicta* and *Tylogonus vittatus* by Simon (1903), *Capidava nigropicta* was then transferred into *Corythalia* by Kraus (1955), who confirmed the synonymy with *vittatus* and changed the ending of the root in agreement to the genus name as *nigropicta*. The species is clearly a *Mexigonus* based on the parallel pale stripes that run from the fovea towards the pedicel, the brown setae that are common in ground dweller species in the genus, and especially the dark medial band bisecting the abdomen in the male. In contrast, the embolus seems strange to *Mexigonus*; short and almost as long as the embolar disc, coiled to almost half of the embolar disc diameter and laminar, giving it a bulky

appearance, almost hidden behind the tegulum. The female genital plate has two big subwindows; copulatory openings oriented at the anterior margin of the genital plate; copulatory ducts short, extending anteriorly over the genital plate and rapidly descending into the two big spermathecae. The species is small (4 mm) for the genus average.

**Taxonomic notes:** *C. nigropicta* is considered as a senior synonym of *T. vittatus*. Although the identity of the name bearer of *T. vittatus* couldn't be confirmed, three syntypes from the NHM placed under *vittatus* are confirmed to belong to *M. albidus*. We conclude there isn't enough evidence to break the synonymy between *nigropicta* and *vittatus*. However, we exclude the three specimens previously mentioned as *T. vittatus*. If the name bearer of *vittatus* belongs to *M. albidus* then *M. albidus* would be taken as a senior synonym of *vittatus*, breaking the synonymy with *nigropictus*.

***Mexigonus chickeringi* (Kraus, 1955) comb. nov.**

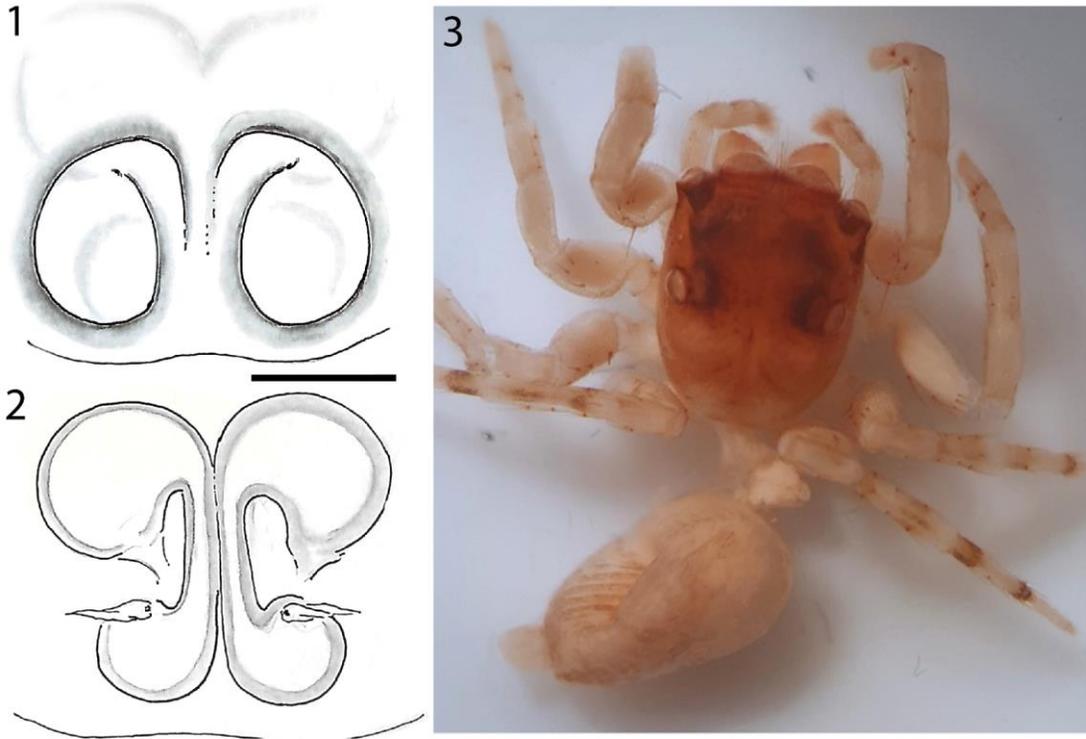
(fig. 71; 1-5)

*Corythalia chickeringi* Kraus, 1955b: 65, f. 196 (Df).

**Holotype.** *Female* from El Salvador; Santa Ana; Metapán; Hacienda Los Planes (SMF 8720).

**Etymology.** Species probably named after Arthur M. Chickering.

**Taxonomic decisions.** The specimen is greatly decoloured as to be able to identify diagnostic characters within *Mexigonus*, but the distal abdominal dorsal side has a small pigmented triangle over the anal tubercle. The copulatory openings are located at the anterior inner margin of the plate and are connected to widened chambers in the ducts similar to *M. salamos\_rocks*.



**Figure 71.** *Mexigonus chickeringi*. Figures 1-3 female. 1-2 epigynum in dorsal and ventral view.3 habitus in dorsal view.

***Mexigonus rugosus* (Kraus, 1955) comb. nov.**

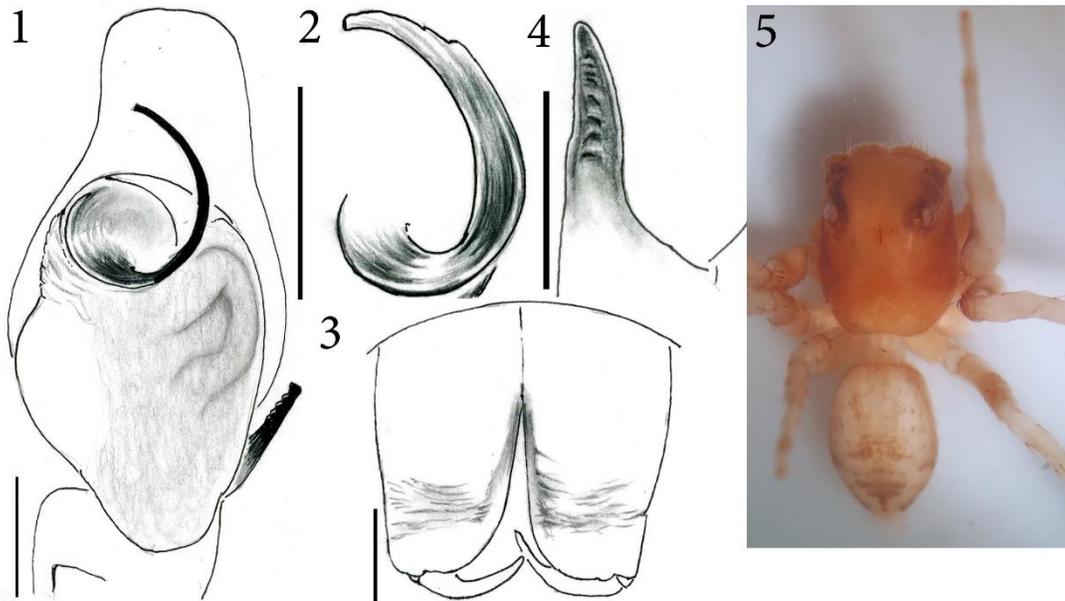
(fig. 72; 1-5)

*Corythalia rugosa* Kraus, 1955b: 65, f. 196 (Df).

**Holotype.** *Male* from El Salvador; Santa Ana; Finca San Jorge (SMF 8452).

**Etymology.** Species probably named after the corrugated texture of male chelicerae (fig. 72, 3).

**Taxonomic decisions.** The specimens show two black dots at the middle dorsal side of the abdomen and a triangular pigmentation over the anal tubercle. The embolus is spiraled and slender but laminar. The habitus and pedipalp of the species are very similar to *M. neglectus* except the chelicerae are not excavated.



**Figure 72.** *Mexigonus rugosus*. Figures 1-5 male. 1 ventral view of pedipalp, 2 embolus, 3 chelicerae, 4 retrotibial apophysis, 5 dorsal habitus.

***Mexigonus roeweri* (Kraus, 1955) comb. nov.**

(fig. 73; 1-6)

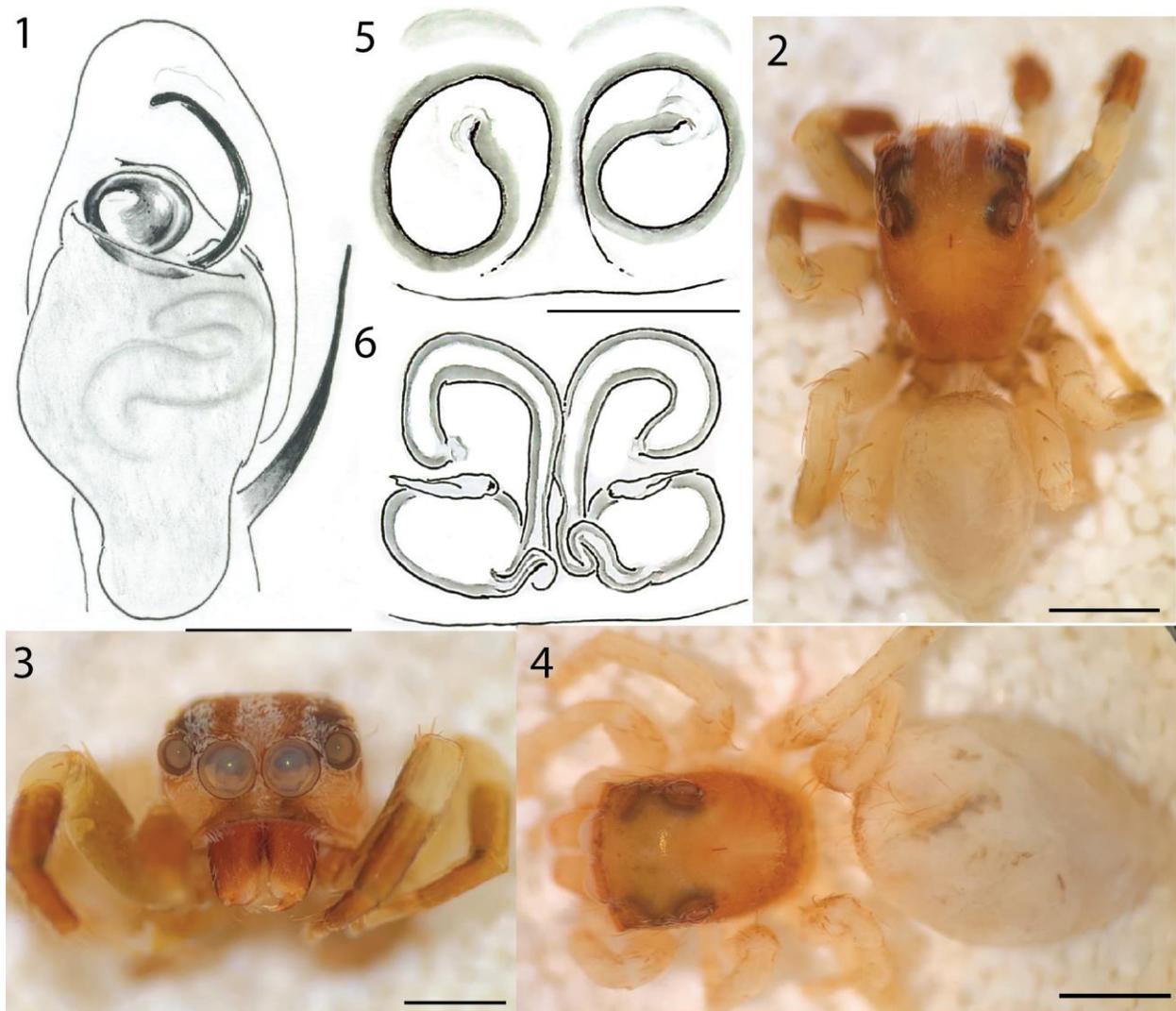
*Corythalia roeweri* Kraus, 1955b: 62, f. 174-176 (Dmf).

**Holotype.** *Male* from El Salvador; Santa Ana; Metapán; Hacienda San José (SMF 8610).

**Paratypes.** 1 male, 1 female, 1 juvenile from El Salvador; San Salvador; San Salvador Institute (1 \$j, SMF 8611); Banana plantation near the San Salvador Institute (1 \$m, 1 \$f, 1\$j, SMF 8609).

**Etymology.** Species probably named after Carl Friedrich Roewer.

**Taxonomic decisions.** The females within *Mexigonus* are hard to diagnose between species for the lack of characters significantly different from one species to another. However, the epigynum in the \$tomato\_red group is quite distinctive not only among *Mexigonus*, but also Nearctic euophryines. The copulatory ducts are very long, but rather than coiling after the openings, they run somewhat parallel to their counterpart and instead loop at the level of the epigastric furrow. The genital plate of *M. roeweri* is very similar to *M. \$tomato\_red*. In addition, the shape of the embolus, although appearing smaller in the drawing made by Roewer, projects an open spiral as in \$tomato\_red.



**Figure 73.** *Mexigonus roeweri*. Figures 1-3 male ventral palp, dorsal habitus and prosoma in anterior view. 4-6 female habitus, epigynum in dorsal and ventral view.

***Mexigonus neglectus* (Kraus, 1955) comb. nov.**

(fig. 74)

*Corythalia neglecta* Kraus, 1955b: 65, f. 186 (Df).

**Holotype.** *Female* from El Salvador; Santa Ana; Metapán; Hacienda Los Planes (SMF 8720).

**Etymology.** Name formed from the Latin adjective *neglectus* = neglected.

**Taxonomic decisions.** The specimen is greatly decoloured as to be able to identify diagnostic characters within *Mexigonus*, but the distal abdominal dorsal side has a small pigmented triangle over the anal tubercle. The copulatory openings are located at the anterior inner margin of the plate. The ducts slightly extend to the external side of the genital plate before descending diagonally towards the longitudinal center of the plate touching their counterpart as they merge with the big ovoid spermathecae. The habitus in the species resembles those in the *albidus* group.

**Taxonomic notes.** The female syntype of *M. penicillatus* (F.O.P. Cambridge 1901) belongs this species.

**Diagnosis.** A big cryptic and hirsute species covered by patches of pale and dark scales and an abdomen covered by very long and messy looking hairs with a somewhat concave shiny carapace (fig. 37; 4-9). The species is distinctive among *Mexigonus* by an embolus coiled while rotating ventrally exposing the laminar side only at the tip making it look wider, and the triangular shape of the RTA dorsally serrated (fig. 37; 3) as seen in *M. dentichelis* but slightly longer. In females the copulatory ducts are located at the anterior margin of genital plate and hidden by the atria with big and circular spermathecae (fig. 37; 10-11).

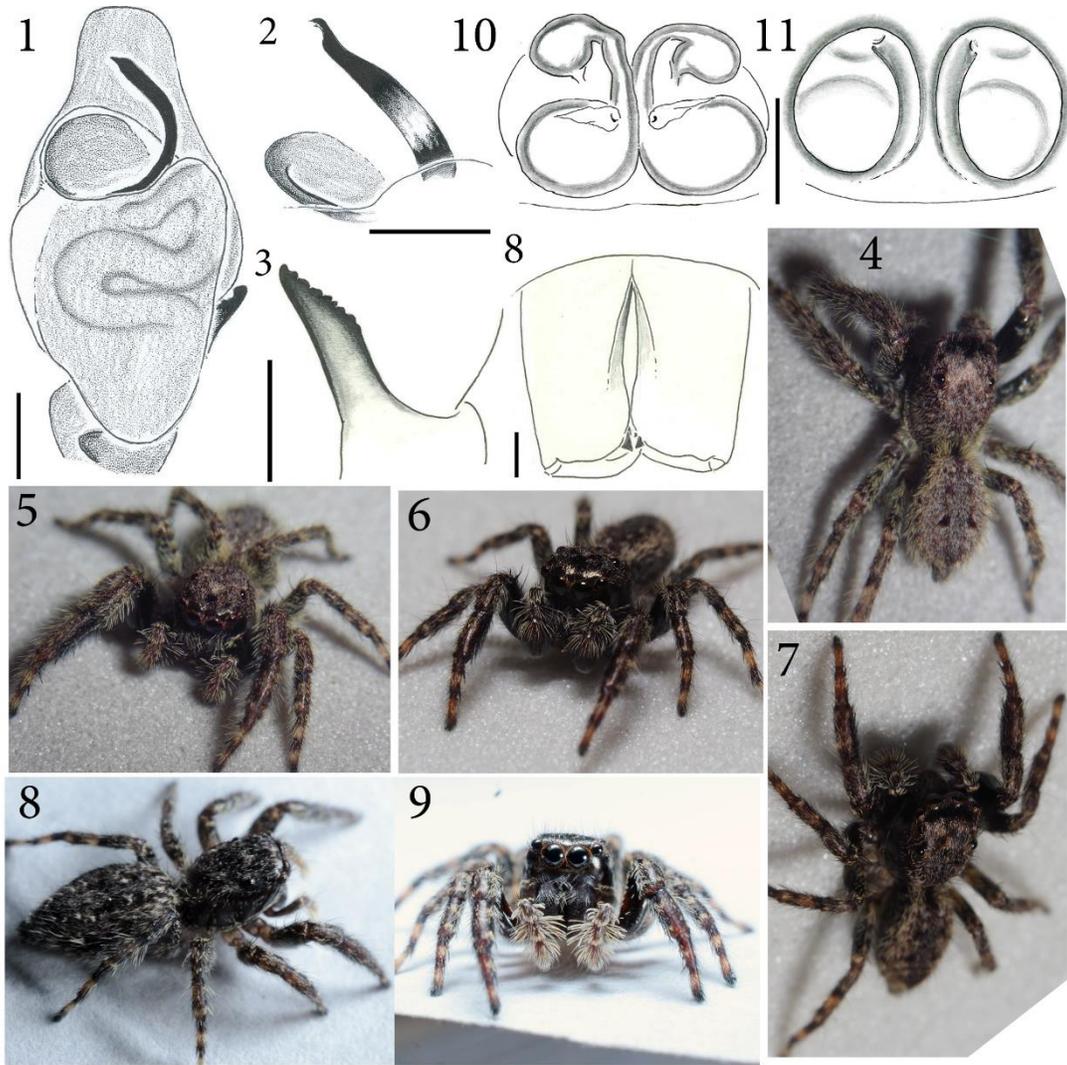
**Description.** *Male* (NA14-2236). Carapace length 2.8. Abdomen length 3.0. **Carapace** black covered by scattered short white and brown setae. Shape is ovoid with some red setae near the eyes. **Clypeus** glabrous and dark without any setae. AME with a thin margin of red brown setae. **Chelicerae** covered at the base by long white brown setae. Almost 2.5 times longer than wide with a narrow excavation. Promargin with two teeth. Retromargin with one simple tooth. **Palp** black covered by long yellowish setae from the distal part of femur to tibia. Patella shows a small basal dorsal patch of yellowish setae. Cymbium dark. **Embolus** arising from its disk ca. 7:00 forming a spiral and rotating prolaterally exposing the laminar side of the embolus, ending into a broad tip suddenly constricted forming an acute triangle and bent towards the retrolateral margin. RTA broad but longer than wide dorsally serrated ending in a tiny bump pointing distally. **Legs** dark brown with base of tarsus and metatarsus yellow amber, except on legs I where the yellow is darker. Hirsute by dark setae and small yellow pale patches at the dorsal basal and dorsal distal side of tibiae. **Abdomen** mottled mostly light brown. Dark dorsal medial band irregular ending into a dark triangle over the nal tubercle.

*Female* (MX2\_6102). Carapace length 3.3. Abdomen length 3.4. **Carapace** and rest of habitus as in male except as noted. **Chelicerae** are more bulky than male and shorter. **Epigyne** with copulatory openings originating closest to the anterior external margin of the plate. Copulatory ducts thin arching anteriorly before entering the spherical spermatheca from above, which are much bigger than the diameter of the ducts.

**Note on the type locality.** The locality of Omilteme is currently not recognized as an official municipality. The locality might have been between 17.5 N, -99.7 W and Chilpancingo.

**Material examined.** 14 males, 6 females, 17 juveniles from MÉXICO: MEXICO CITY: Distrito Federal: Sep 1943, Aug 1978, H.D. Frizzell, J. Klass, P. Klass (10\$m, 13\$j); MEXICO CITY: UNAM, Pedregal de San Angel, REPSA: 19.317 to 19.318 °N, 99.192 to 99.195 °W, 2322-2327

m, 4 Aug 2014, W. Maddison, Ruiz et al., WPM#14-072 (\$m = NA14-2236); HIDALGO: 4 km NE of Tlanchinol on HWY 105: 21.03 °N, 98.65 °W, 395 m, 14 Jun 1983, W. Maddison, WPM#83-064 (1\$f); HIDALGO: W.M. Mann (1\$f); HIDALGO: Jacala: 1371 m, 11 Jul 1939, R. Haag (1\$m, 1\$j); HIDALGO: Pachuca: W.M. Mann (1\$f); HIDALGO: Santa Rita: 7 Jun 2002, G. Binford, P. Barea & Blanca (1\$m); PUEBLA: 5 km N of HWY 130 on road to Naupan: 20.17 °N, 98.12 °W, 1981 m, 16 Jun 1983, W. Maddison, WPM#83-069 (1\$m, 3\$j); PUEBLA: Tlatlahuqui, Gomez Tepetenos: 19.72641 °N, 97.49318 °W, 2689 m, 25 Aug 2019, U. Garcilazo, E. Mikkelsen, L.C. Eguiluz-Ortiz, O. Caballero-Hernandez & H.D. Jimeno-Sevilla, GCU/19@059 (2\$: \$f = MX2\_6102, \$f = MX2\_6203); JALISCO: La Bufa: 20.7294 to 20.7334 °N, 104.8257 to 104.827 °W, 2500 m, 6 Feb 2014, W. Maddison, H. Proctor, I. Navarro, WPM#14-010 (\$f = JAL14-8746).



**Figure 74.** *Mexigonus neglectus*. Figures 1-7 male MX17-1501. 8-12 female MX17-1416. 1-3 palp, embolus and RTA. 4 chelicerae. 10-11 epigyna dorsal and ventral view.

## Discussion

The description of 59 new species, in addition to the transfer of eight species from other genera, bring the total number of described species in *Mexigonus* from five to 72 species, making the genus large among Euophryini. Most of the species transferred from other genera were collected by Kraus in El Salvador and F.O.P. Cambridge in Mexico. One of the most important characters that allowed identification of these as species of *Mexigonus* is the dark dorsal medial band in the abdomen of males that is often reduced to a dark triangle over the anal tubercle in females. Other characters mentioned by Edwards (2003) retain their validity in the diagnosis, but they are especially useful to diagnose representatives of the Trans Mexican Volcanic Belt (TMBV) and higher latitudes, in particular the excavated male chelicerae. Many species from Southern Mexico, El Salvador and Guatemala show a slender and long embolus (*\$tomato\_red* and *\$blue\_legs* morphological groups) that can no longer be considered laminar; instead, the chelicerae are often smooth and the rotation of the embolar disk to allocate the length of the embolus makes the embolar gap difficult to interpret (e.g. *M. \$tuxedo*, fig. 69;1-2).

We provide a preliminary look into the distribution, habitat, and some of the natural history of the different species and groups in this study while delimiting the boundaries of their morphology intending to form strong diagnoses. We focused our attention in morphological traits that we believe have been involved in the speciation process. We found that whereas the general shape of the body and genitalia slightly varies within species that are otherwise similar in morphology and distribution, there was a pronounced difference in structures used by males during sexual display, some of which were directly observed being used in the field. These structures were almost always found on the face, chelicerae, dorsal and prolateral faces of pedipalps and first legs. Species in the *\$banderas* group have dark first legs with a tarsus ornamented by white setae that they move like flags. Species found in San José del Pacífico show dense lateral fringes of setae on the first legs sometimes covering the entire appendage. Species in the

\$tomato\_red group have swollen femora and sometimes patellae covered in iridescent cuticle surrounded by bicolored and occasionally golden fringes of setae that they display to females. Remarkable examples of ornamentations are seen in males of the \$quetzal group, where a dense bristle of black and sometimes red setae completely covers the first legs, palps and chelicerae, complemented by fringes of neon or rainbow metallic reflection in the clypeus or the legs. For logistic reasons, only a small fraction of the total diversity of *Mexigonus* in the \$quetzal morphological group could be sampled, and additional new species in this group surely exist in cloud forests of the Sierra Madre de Chiapas in Guatemala and El Salvador. The colourful patterns of ornamentation found in these species are relevant for comparative studies in the evolution of colour vision and sexual selection.

Most species of *Mexigonus* described to date are be found in temperate habitats of oak and pine forests. Their phenology seems to indicate adults can be found from July to September but this pattern is surely biased by the expedition dates. They show a quick replacement of species over short distances within the mountains of North America and seem to be present in all the main orographic systems of Mexico and mentioned by Mastretta-Yanes et al. (2015). Although our collecting sites were not standardized to properly measure beta diversity, the quick replacement of entire assemblages of *Mexigonus* species became evident between mountain ridges, mountains, localities within the same mountain and in some cases, different transects in the same locality separated from each other by less than 2 km in San Andrés Chicahuaxtla, located in the mountains of Oaxaca. Four of our localities had an unusually elevated richness in *Mexigonus* species. San José del Pacífico, Nicolás Bravo, Lachatao and Parque Nacional El Triunfo. Most of these localities are categorized in the metadata provided by INEGI (2011) as cloud forests. These ecosystems have complex vegetative stratification and high biomass production with high humidity, which could have allowed specialization and promote speciation.

*Mexigonus* species show specific preferences in habitat, with a particular set of structural features that predict where species can be found. Most *Mexigonus* will inhabit suspended leaf litter close to the ground, which is often of mixed composition of oak and pine leaves in humid habitats slightly exposed to the sunlight. Other species of *Mexigonus* such as *M. sacultzinapa* and *M. diamond* are found in bushes of *Baccharis*. Species in the *M. tomato\_red* group are found in *Arbutus* spp. and on small oak trees around 1.5 to 2 m tall. The species *M. yuka* that can be found in the semi-desertic Mexican plateau finds its habitat almost exclusively in the dried/green leaf boundary of big arborescent *Nolina* spp. and *Yucca* spp., whereas *M. yeti* prefers the slightly exposed clearings of pine litter in the ground of highlands. The species in the *M. blue\_legs* group are exceptionally hard to find. Most species are restricted to highly stratified vines and branches, densely covered in deep layers of pine litter and soil, which are sometimes provided by dying pines in the deep and highly sloped valleys of primary and sometimes secondary forests.

The species *M. yuka* is the biggest species of *Mexigonus* known to date and it was found living exclusively in arborescent palm trees of the genus *Nolina* sp. These plants seem to have a key role in the Mexican plateau for arthropods, providing shelter from the hot semi-desertic temperatures and protection from predators. With inflorescences pollinated by big bees, wasps and flies (Ruiz-Sanchez & Spech, 2013), the big size and aggressive behavior of the species might be result of predatory specialization to these preys. The dated phylogeny of *Nolina parviflora* estimated in Ruiz-Sanchez & Spech (2013) shows the MRCA of this species at the Miocene ca. 20 My, which coincides with the first stages of uplift of the TMVB and the dated phylogeny of Zhang and Maddison (2013).

This study is aimed to provide a groundwork for future studies in the ecology and evolution of *Mexigonus*. The description of each new species represents a precursor to understand their distribution, ecological interactions, phylogenetic relationships and patterns of diversification.

The elevated number of taxa described also exemplifies the poorly known diversity of arthropods in the neotropics, helping to increase awareness into the issue of diversity loss and destruction of habitats.

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## APPENDIX A. Localities and Coordinates

Table 1. List of collecting localities and coordinates for *Mexigonus*. N/A for data is not available.

Country	Province	Locality	Coordinates	
COSTA RICA	Cartago	Cerro de La Muerte. Km 68 carretera #2	N/A	
	San Jose Providencia	Cerro de La Muerte	N/A	
GUATEMALA	El Progreso	Cerro pinalon, Finca Las Nubes	15.0838 °N,-89.9425 °W	
MEXICO	Chiapas	10 km SW of Ococingo on road to Oxchuc	15.08385 °N,-89.94258 °W	
		5 km W of San Cristobal de Las Casas on HWY 190	16.9 °N,-92.2 °W	
		5-10 km E of Rayon on HWY 195	16.7333 °N,-92.6833 °W	
		El Triunfo station area	17.2 °N,-93 °W	
		Grutas de San Cristobal ca. 16 km SE of San Cristobal on HWY 190	15.657 °N,-92.809 °W	
		Huitepec Reserve	16.6833 °N,-92.5833 °W	
			16.75 °N,-92.681 °W	
			16.7501 °N,-92.6883 °W	
			P.N. El Triunfo	15.647 °N,-92.809 °W
			P.N. El Triunfo, Cerro El Triunfo, peak	15.6693 °N,-92.8117 °W
			P.N. El Triunfo, Costa Trail, north of crest	15.656 °N,-92.807 °W
			P.N. El Triunfo, crest of Costa Trail	15.6474 °N,-92.8096 °W
			P.N. El Triunfo, entrance to Costa Trail	15.6559 °N,-92.8073 °W
			P.N. El Triunfo, trail to Cerro El Triunfo	15.669 °N,-92.812 °W
			P.N. Lagunas de Montebello, Lago de Carrizal	16.1136 °N,-91.7267 °W
			P.N. Lagunas de Montebello, Lago Montebello	16.107 °N,-91.706 °W
			P.N. Lagunas de Montebello, park office	16.114 °N,-91.731 °W
			P.N. Lagunas de Montebello, trail from park office	16.114 °N,-91.727 °W
				16.114 °N,-91.73 °W
			Palenque ruins area	17.4833 °N,-92.0167 °W
			San Cristobal de las Casas, ECOSUR	16.707 °N,-92.616 °W
			San Fernando	16.846 °N,-93.215 °W
			San Rafael de los Arcos	16.134 °N,-91.728 °W
			trail from Santa Rita to El Triunfo	15.6807 °N,-92.7956 °W
				15.6888 °N,-92.7945 °W
				15.6904 °N,-92.7923 °W
				15.6904 °N,-92.7989 °W
		15.691 °N,-92.793 °W		
		16.0839 °N,-91.6716 °W		
	Tziscaco	N/A		
	Distrito Federal	Distrito Federal	N/A	
		UNAM, Pedregal de San Angel, REPSA	19.317 °N,-99.192 °W	
	Guanajuato	Xichu	N/A	
	Hidalgo	3.4 km SW of Cuesta Colorada on HWY 85	21.0167 °N,-99.1333 °W	
		4 km NE of Tlanchinol on HWY 105	21.0333 °N,-98.65 °W	
		El Ocote, 13.6 mi NE of La Mission turnoff of HWY 85	21.0833 °N,-99.0167 °W	
		Jacala	N/A	
		Pachuca	N/A	
		Santa Rita	N/A	
	Jalisco	Ahualulco del Mercado. Piedras Bolas	20.64945 °N,-104.05592 °W	
		between San Sebastian and La Bufa	20.7457 °N,-104.8213 °W	
		Estación de Biología Chamela, Arroyo Zarco	19.496 °N,-105.039 °W	
		Estación de Biología Chamela, Chachalaca Trail	19.4966 °N,-105.0426 °W	
		Estación de Biología Chamela, jcn. Buho & Chachalaca Trails	19.4993 °N,-105.0383 °W	
		Guadalajara	N/A	
		La Bufa	20.7294 °N,-104.8257 °W	
		near Paso de La Virgen	20.6953 °N,-104.8707 °W	

Table 1 (cont.)

Country	Province	Locality	Coordinates
		San Sebastian del Oeste. Cerro de la Bufa	20.7495 °N,-104.8284 °W
			20.7518 °N,-104.8328 °W
		Tala. Bosque de la Primavera, Río el salado	N/A
Mexico		Coyoltepec	19.0703 °N,-99.3876 °W
Mexico City		Coyoacán. REPSA	19.317294 °N,-99.316619 °W
		Coyoacán. REPSA Jardín Botánico	19.317294 °N,-99.316619 °W
		Jardín Botánico II REPSA UNAM	19.31285 °N,-99.19646 °W
		Jardín Botánico REPSA UNAM	19.31875 °N,-99.19473 °W
		REPSA Nucleo Oriente	19.31284 °N,-99.19416 °W
Mexico State		Coatepec Harinas. Meyuca de Morelos, Cerro de las Huacas	18.8525 °N,-99.7584 °W
Michoacan			N/A
		Morelia, Cuanajillo, El Aguila	19.647 °N,-101.339 °W
		Morelia, Universidad Michoacana San Nicolas de Hidalgo	19.689 °N,-101.204 °W
			19.689 °N,-101.208 °W
		tancitaro	N/A
Morelos		Municipio Huitzilac, Barrio de la Cruz	19.004 °N,-99.228 °W
		near Huitzilac	19.027 °N,-99.285 °W
Nayarit		Tepic. Cerro de San Juan	21.50714 °N,-104.92218 °W
Nuevo Leon		Chippingue Mesa Just S of Monterrey	25.6 °N,-100.4 °W
		el potosi. Cerro potosi	N/A
		Road up to microwave tower on Cerro potosi	24.8667 °N,-100.2333 °W
		Santa Rosa Canyon, 29 km W of Linares along HWY 60	24.8 °N,-99.8 °W
		summit of cerro potosi	24.8667 °N,-100.2333 °W
Mexico	Oaxaca	13.2 km NNW Ixtlan de Juarez	17.44378 °N,-96.51258 °W
		14.6 km from Manzanal along road to San Agustín Loxicha	16.0784 °N,-96.5668 °W
		2 km S of El Tule	17.0333 °N,-96.6667 °W
		23 km SW of Valle Nacional on HWY 175	17.6 °N,-96.4 °W
		27 km SW of Valle Nacional on HWY 175	17.6 °N,-96.4 °W
		27.4 km SW Valle Nacional	17.5963 °N,-96.4744 °W
		31 km N of Guelatao de Juarez	17.5 °N,-96.5 °W
		36.4 km from San Francisco Ixtlahuac	N/A
		4.5 km from Manzanal along road to San Agustín Loxicha	16.1143 °N,-96.5158 °W
		48 km SW of valle Nacional on HWY 175	17.5 °N,-96.5 °W
		50 km NW of Oaxaca on HWY 190	17.2333 °N,-97 °W
		58 km SW of Valle Nacional on HWY 175	17.5 °N,-96.5 °W
		60 km SW of Valle Nacional on HWY 175	17.5 °N,-96.5 °W
		9 mi E of El Cameron	N/A
		Cuicatlan	N/A
		Dominguillo	N/A
		Ixtlán de Juárez, Universidad de la Sierra Juárez	17.313 °N,-96.486 °W
		N/A	17.314 °N,-96.48 °W
		La Cumbre. 42 km N of Oaxaca on HWY Oaxaca-Tuxtepec	N/A
		Mirador. Dominguillo. Cuicatlan	N/A
		Monte Alban ruins	17.0333 °N,-96.7833 °W
		Monte Alban, top at pine patches	17.05254 °N,-96.76371 °W
		near km 88 of HWY 175	17.5898 °N,-96.3973 °W
		near km 89 of HWY 175	17.592 °N,-96.398 °W
		near Pluma de Hidalgo	15.921 °N,-96.4223 °W
		N/A	15.94 °N,-96.433 °W

Table 1 (cont.)

Country	Province	Locality	Coordinates
		Puente Barranca Matlilizahua	15.995 °N,-96.534 °W
		Puerto Antonio, km 71 of HWY 175	17.665 °N,-96.3323 °W
		San Andrés Chicahuaxtla	17.168 °N,-97.842 °W
		San Andres Chicahuaxtla, area I property of Amador Tello Rojas	17.16772 °N,-97.84242 °W
		San Andres Chicahuaxtla, area I property of Amador Tello Rojas on crop's edge	17.16792 °N,-97.84294 °W
		San Andres Chicahuaxtla, area I property of Amador Tello Rojas on road heading south west	17.16733 °N,-97.84248 °W
		San Andres Chicahuaxtla, area II along curve on road facing southeast	17.162 °N,-97.83416 °W
		San Andres Chicahuaxtla, area II heading to Cerro Zazamora	17.16093 °N,-97.83034 °W
		San Andres Chicahuaxtla, area II on pine trees on trail facing south	17.16228 °N,-97.83434 °W
		San Andres Chicahuaxtla, area II on slope with pine facing west	17.16085 °N,-97.83288 °W
		San Andres Chicahuaxtla, area III on slope facing south	17.14909 °N,-97.83832 °W
		San José del Pacifico	16.172 °N,-96.502 °W
		N/A	16.1721 °N,-96.502 °W
		N/A	16.173 °N,-96.5 °W
		N/A	16.177 °N,-96.5 °W
		San Miguel Amatlán	17.2751 °N,-96.48 °W
		Santa Catarina Lachatao	17.249 °N,-96.459 °W
		N/A	17.25 °N,-96.464 °W
		N/A	17.2503 °N,-96.466 °W
		N/A	17.265 °N,-96.479 °W
		N/A	17.269 °N,-96.473 °W
		Santa María Tinú	17.3841 °N,-97.1286 °W
		Santiago Comaltepec, Humo Chico	17.573 °N,-96.504 °W
		N/A	17.576 °N,-96.503 °W
		Santiago Comaltepec, Humo Chico comedor	17.5779 °N,-96.507 °W
		Sendero Interpretive San Bernardino	17.606 °N,-96.384 °W
		Sendero Interpretivo el Relámpago, km 88 of HWY 175	17.591 °N,-96.398 °W
		N/A	17.592 °N,-96.398 °W
		Yukunachica	N/A
		Zimatlán de Juárez. Casa de Ana Carlos Delgado	16.840483 °N,-96.783433 °W
	Puebla	1.5 km W of HWY 130 bypass of Xicotepec de Juarez	20.2833 °N,-97.9833 °W
		5 km N of HWY 130 on road to Naupan	20.1667 °N,-98.1167 °W
		microwave tower 19 km SE of Tehuizingo on HWY 190	18.2167 °N,-98.1833 °W
		Nicolas Bravo	18.62918 °N,-97.29688 °W
		Nicolas Bravo II	18.6277683 °N,-97.298393 °W
		Road to Perote	19.62004 °N,-97.38352 °W
		Tlatlahuqui, Gomez Tepetenos	19.72641 °N,-97.49318 °W
	Queretaro	11 km W of San Luis potosi border on HWY 120 ca. 35 km W of Xilitla	21.25 °N,-99.16 °W
		Las Ranas. 1.4 km N San Joaquin	20.92642 °N,-99.56193 °W
		Sierra Gorda, HWY 120 near Maguey Verde	21.105 °N,-99.696 °W
		Sierra Gorda, NE of Pinal de Amoles on HWY 120	21.15 °N,-99.616 °W
		Sierra Gorda, SW of Ahuacatlán on HWY 120	21.187 °N,-99.57 °W
		Sierra Gorda, SW of Jalpan on HWY 120	21.207 °N,-99.499 °W
		Sierra Gorda, W of Pinal de Amoles, km 131 of HWY 120	21.1247 °N,-99.6654 °W
		N/A	21.125 °N,-99.665 °W
	San Luis Potosi	1 km E of Las Abritas on HWY 80	22.4833 °N,-99.3833 °W
		14 mi. E. of Xilitla	N/A
		Charcas	N/A
		near Taman, ca. 16 km SW of Tamazunchale on HWY 85	21.1833 °N,-98.8833 °W

Table 1 (cont.)

Country	Province	Locality	Coordinates
		Xilitla	N/A
		Xilitla, Cueva de Salitre	21.3833 °N,-98.9833 °W
	Veracruz	12 km S of Yecuatla on Hwy 127	19.8 °N,-96.8 °W
		2 km SE of Naolinco on HWY 127	19.6 °N,-96.9 °W
		6 km NE of Coscomatepec on HWY 125	19.1167 °N,-97.0333 °W
		7 km N of Huatusco on HWY 125	19.2 °N,-96.9 °W
		Acomulco, Cerro "El Filo"	19.14396 °N,-97.15194 °W
		Acomulco, Cerro "El Filo" dry	19.14601 °N,-97.14953 °W
		Acultzinapa, Cerro el Teoxistle	18.66979 °N,-97.22539 °W
		Acultzinapa, Mara chihuato	18.67685 °N,-97.19939 °W
		Atotonilco de Calchahualco	19.13881 °N,-97.20312 °W
		Atotonilco de Calchahualco top	19.13717 °N,-97.20265 °W
		Atzalan, Alseseca	19.82796 °N,-97.23318 °W
		Cerro Mohon	19.90122 °N,-97.2917 °W
		Jesus Maria Acatla, Xocotla	19.18443 °N,-97.13235 °W
		Nueva Vaqueria	19.09123 °N,-97.22417 °W
		Nueva Vaqueria, Pine trees	19.09367 °N,-97.22215 °W
		Rio Pancho Poza	19.75297 °N,-97.25205 °W
		Road to Humeros, Frijol Colorado	19.60656 °N,-97.38615 °W
		Road to Perote II	19.60431 °N,-97.38354 °W
		Xamaticpac	19.1264 °N,-97.06738 °W
USA	Arizona	Cochise Co., Huachuca Mnts., Miller Canyon	31.416 °N,-110.276 °W
		Cochise Co., Huachuca Mts., Carr Peak	N/A
		Graham Co., E side of Pinaleno Mts., Wet Canyon Picnic area on HWY 366	N/A
		Graham Co., North Ash Creek	N/A
		Navajo Co.: Show Low	N/A
		Pima Co., Santa Catalina Mts., General Hitchcock Cmpgd on Catalina Highway from Tuscon to Mt. Lemmon	N/A
		Pima Co. Bear Canyon, Catalinas	N/A
		Pima Co., Santa Catarina Mountains, San Pedro Vista	32.399 °N,-110.69 °W
		Santa Cruz Co., Madera Canyon	31.707 °N,-111.878 °W
		Santa Cruz Co., Santa Rita Mnts., Madera Canyon	N/A
		Santa Cruz Co., Santa Rita Mnts., Madera Canyon, Santa Rita lodge	31.725 °N,-110.881 °W
		Santa Cruz Co., Santa Rita Mts., Madera Canyon, nr. Bog Springs Cmpgd	N/A
		Santa Cruz Co.: Madera Canyon, Santa Rita Lodge	31.725 °N,-110.881 °W
		Santa Cruz Co.: Santa Rita Mts., Madera Canyon, roundup picnic area	N/A
		Santa Cruz Co.: Santa Rita Mts., Mt. Hopkins summit	31.69 °N,-110.88 °W
		Sedona	N/A
	California	Los Angeles Co., Topanga Canyon, old Topanga Canyon Road	N/A
		Los Angeles Co., Topanga Canyon, Santa Monica Mts., cottonwood, live oaks, chaparral	N/A
		Man Co., Cataract Creek, Mt. Tamalpis	37.9215 °N,-122.6268 °W
		Monterey Co.: Monterrey, John Hopkins Marina Station	N/A
		San Luis Obispo	31.2619 °N,-120.7539 °W
		Santa Cruz Co. 4.0 mi N Soquel	N/A
	Colorado	El paso Co., Colorado Springs	N/A
		Gunnison Co. 5 mi S of Gunnison Gold Basin Rd	N/A
		Las Animas Co.	N/A
		Las Animas Co: Weston, 7800	N/A
	Los Angeles	Little Sycamore Canyon on Yerba Buena road	N/A
		N/A	34.032 °N,-118.3016 °W
	New Mexico	Grant Co.: Lake Roberts	33.03 °N,-108.157 °W
		Sandia Man cave trail 8000' N. Las Huertas Creek Canyon. Bernalillo Co.	N/A
	N/A	Jasper Ridge	N/A

## APPENDIX B. Species Distribution Maps



Map 1. Distribution map of species in the \$triste morphological group.



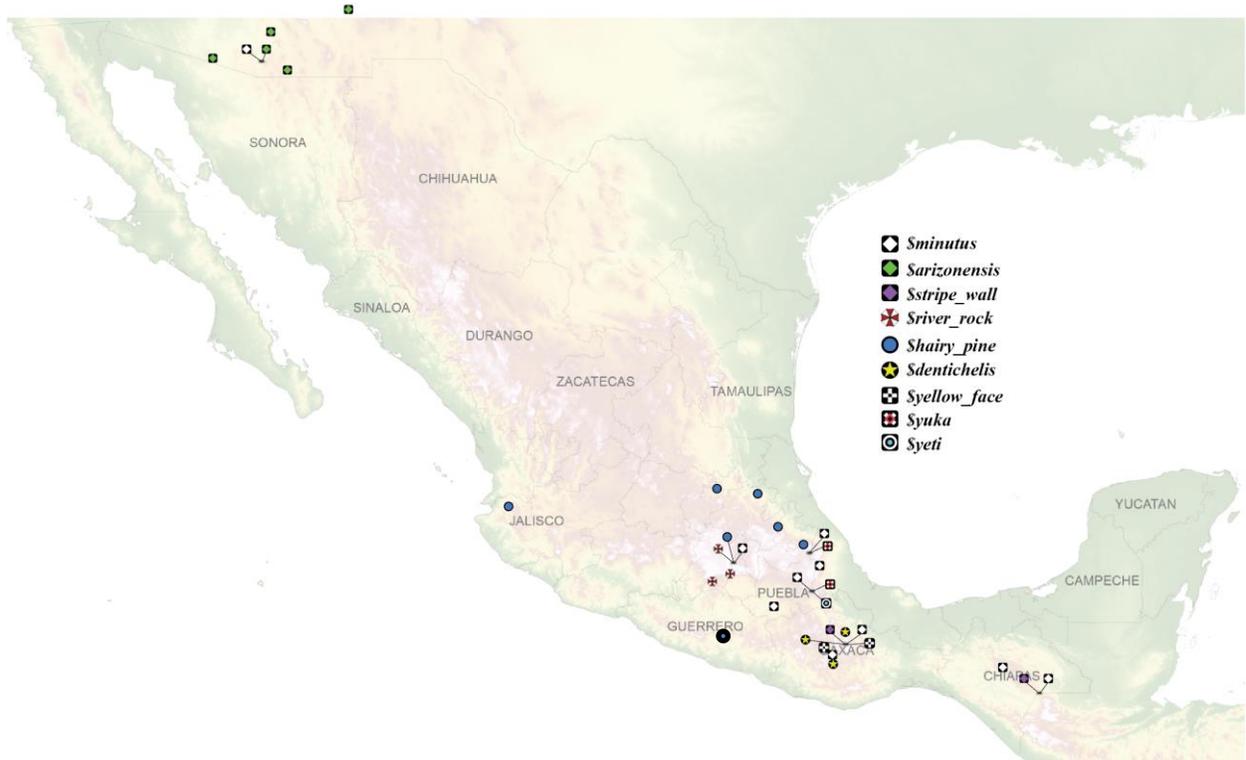
Map 2. Distribution map of species in the \$banderas morphological group.



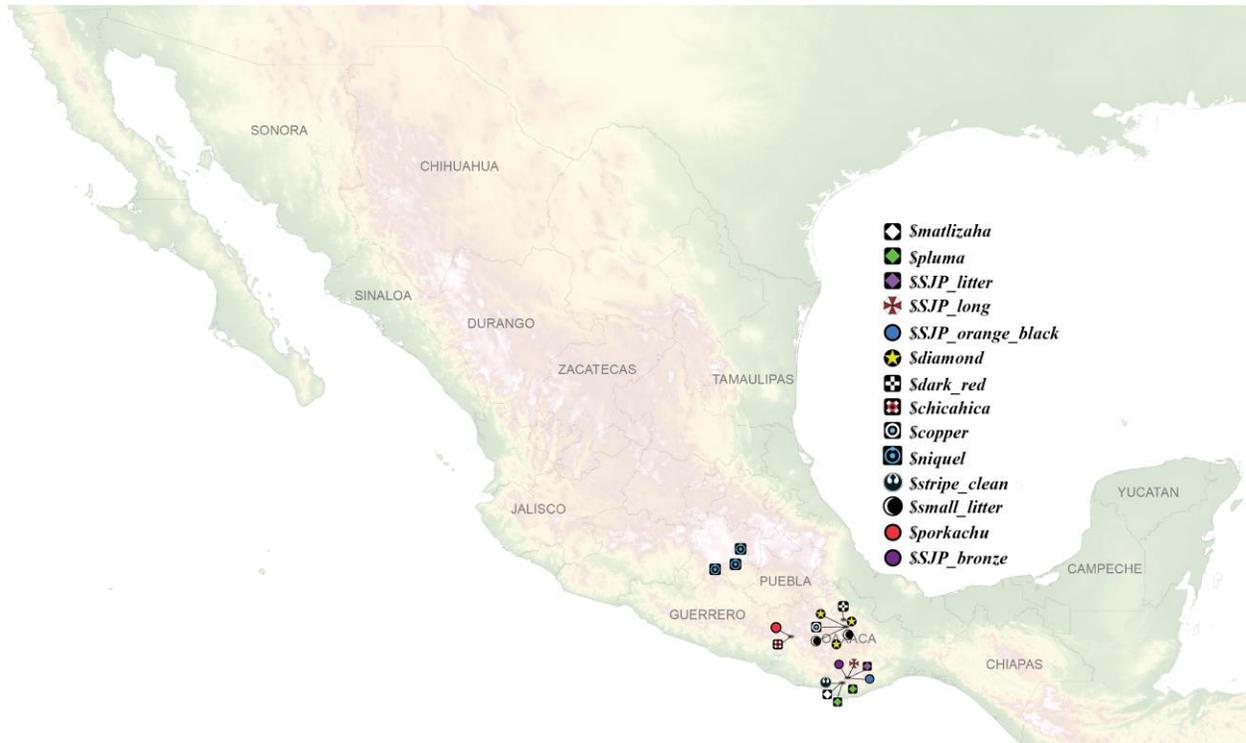
Map 3. Distribution map of species in the *Squetzal* morphological group.



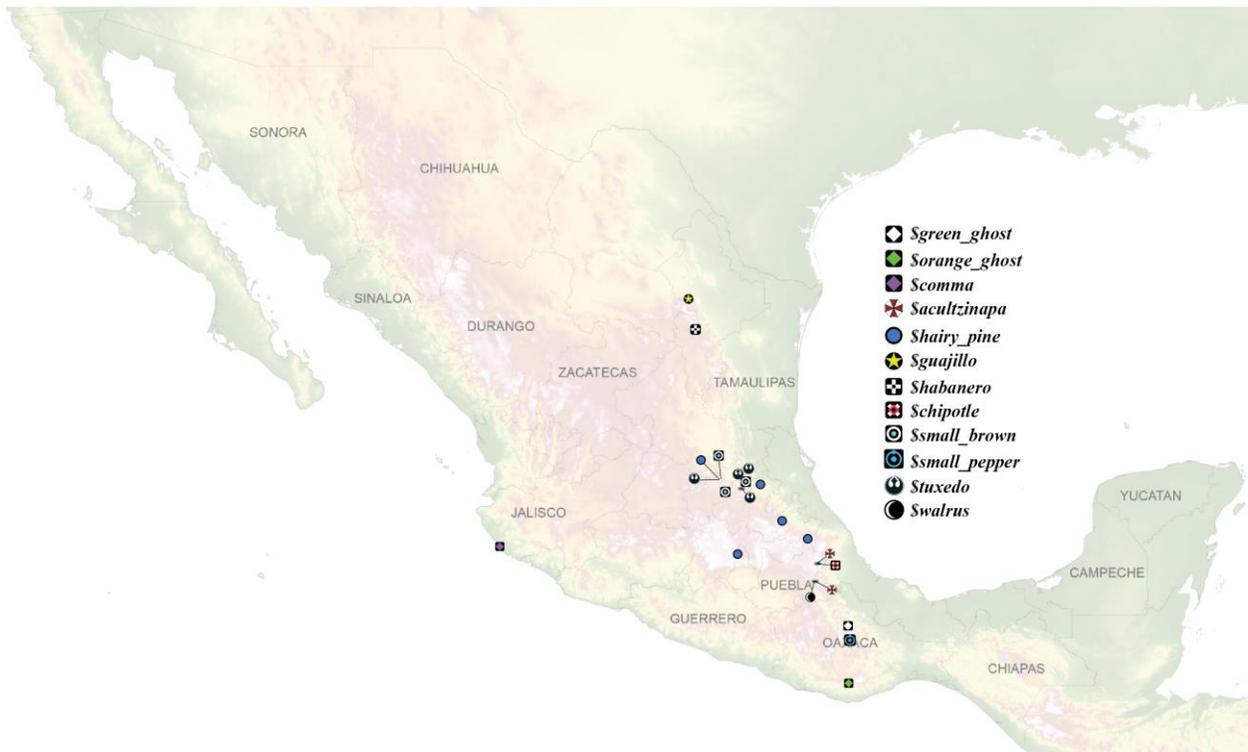
Map 4. Distribution map of species in the *Stomato\_red* morphological group.



Map 5. Distribution map of species in the *Salbidus* morphological group.



Map 6. Distribution map of species in the *Smatlizaha* morphological group.



Map 7. Distribution map of species with uncertain morphological group.



Map 8. Distribution map of species transferred from other genera.