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**Taxonomical revision & cladistic analysis of
Avicularia Lamarck 1818 (Araneae,
Theraphosidae, Aviculariinae).**

Thesis presented at the Institute of Biosciences of the University of Sao Paulo,
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Abstract

The genus *Avicularia* Lamarck 1818 contains the oldest mygalomorph species described. Its taxonomical history is very complex and for the first time it has been revised. A cladistic analysis with 70 characters and 43 taxa were done. The preferred cladogram was obtained using the computer program Pee Wee and concavity 6. The subfamily *Aviculariinae* contains the genera *Stromatopelma*, *Heteroscodra*, *Psalmopoeus*, *Tapinauchenius*, *Ephebopus*, *Pachistopelma*, *Iridopelma*, *Avicularia*, Genus 1 and Gen. nov. 1, Gen. nov. 2, Gen. nov. 3 and Gen. nov. 4. *Aviculariinae* is monophyletic, sharing the presence of spatulated scopulae on tarsi and metatarsi, juveniles with a central longitudinal stripe connected with lateral stripes on dorsal abdomen and arboreal habit.

The synapomorphy of *Avicularia* is the presence of a moderately developed protuberance on tegulum. The genus is constituted by 14 species: *A. avicularia* (type species), *A. juruensis*, *A. purpurea*, *A. taunayi*, *A. variegata* status nov., *A. velutina*, *A. rufa*, *A. aymara*, *Avicularia* sp. nov. 1, *Avicularia* sp. nov. 2, *Avicularia* sp. nov. 3, *Avicularia* sp. nov. 4, *Avicularia* sp. nov. 5 and *Avicularia* sp. nov. 6. They are found from the Caribbean islands through Peru, Ecuador, Columbia, Venezuela, Guyana, French Guiana, Suriname and Brazil.

Four new genera are proposed: Gen. nov. 1, with 3 species: Gen. nov. 1 *hirschii* comb. nov. (type species), Gen. nov. 1 *minatrix* comb. nov. and Gen. nov. 1 sp. nov. 1. Gen. nov. 2 and Gen. nov. 3 are monotypics: Gen. nov. 2 *versicolor* comb. nov. and Gen. nov. 3 *laeta* comb. nov.. Gen. nov. 4 has 3 species, Gen. nov. 4 *sooretama* comb. nov. (type species), Gen. nov. 4 *diversipes* comb. nov. and Gen. nov. 4 *gamba* comb. nov..

Other taxonomical changes are proposed: *Catumiri parvum* (Keyserling 1878) comb. nov., *Grammostola anthracina* (C.L. Koch 1842) comb. nov. and *Euathlus affinis* (Nicolet 1849) comb. nov.. The following species are considered as nomina dubia: *Ischnocolus hirsutum* (Ausserer 1875) nomen dubium, *Ischnocolus alticeps* Keyserling 1878 nomen dubium, *Pterinopelma tigrinum* Pocock 1903 nomen dubium, *Mygale detrita* Koch 1842 nomen dubium, *Ischnocolus doleschalli* (Ausserer 1871) nomen dubium, *A. geroldi* Tesmoingt 1999 nomen dubium, *A. holmbergi* Thorell 1890 nomen dubium, *A. metallica* Ausserer 1875 nomen dubium, *Mygale ochraceae* (Perty 1833) nomen dubium, *Eurypelma rapax* Ausserer 1875 nomen dubium, *A. ulrichea* Tesmoingt 1996 nomen dubium, *Mygale walckenaeri* Perty 1833 nomen dubium, *A. exilis* Strand 1907 nomen dubium, *A. fasciculata* Strand 1907 nomen dubium, *A. fasciculata clara* Strand 1907 nomen dubium, *A. soratae* Strand 1907 nomen dubium, *A. subvulpina* Strand 1906 nomen dubium and *A. surinamensis* Strand 1907 nomen dubium. The following species were considered as species inquirendae: *Avicuscodra arabica* Strand 1908 species inquirenda, *Avicularia ancylochyra* Mello-Leitao 1923 species inquirenda, *A. cuminami* Mello-Leitao 1930 species inquirenda, *A. glauca* Simon 1891 species inquirenda, *A. gracilis* (Keyserling 1891) species inquirenda, *Mygale leporina* Koch 1842 species inquirenda, *A. nigrotaeniata* Mello-Leitao 1940 species inquirenda and *Mygale plantaris* Koch 1842 species inquirenda.

Introduction

The spiders probably arose in the Devonian period some 400 million years ago (Seldon *et al.*, 1991) and today are spread all over the planet, winning virtually all environments except the open sea (Foelix, 1996). 109 families are currently known, with 3802 genera and more than 41 000 species (Platnick, 2011).

The order Araneae, which these animals belong to, consists of two suborders (Platnick & Gertsch, 1976): Mesothele and Opisthothele. The first houses the infraorder Liphistiomorphae, containing the spiders that retains more primitive characters, such as segmentation outside the abdomen. The second is divided into two infraorders: Mygalomorphae and Araneomorphae, in which older central spinnerets are absent and are instead located more at the posterior of the abdomen than in Mesothele (Platnick & Gertsch, 1976).

The mygalomorphs, or tarantulas, occur on all continents except Antarctica. They retain some plesiomorphic features such as the presence of four booklungs and fangs set in parallel chelicerae. Synapomorphy is present as loss of the anterior median spinnerets and reduction of lateral spinnerets earlier. In addition, they exhibit a unique combination of characters: presence of cuspules in the maxillae, reduced number of sclerites in the male copulatory bulb and the basal segment of posterior spinnerets sub segmental (Raven, 1985).

Most of these spiders are fossor or semi-fossorial (Brescovit *et al.*, 2002), finding shelter in natural cavities (Smith, 1990) or by building burrows (Perez-Miles *et al.*, 1993) with or without trapdoors (Brescovit *et al.*, 2002). There are also species that build webs to catch prey - for example, species of the family Dipluridae (Coyle, 1988) – and arboreal species in the family Theraphosidae, subfamilies Aviculariinae (Stradling, 1994) and Selenocosminae (Valerio, 1979), which build their refuges in different types of vegetation.

The family Theraphosidae

There are 15 families of mygalomorphs, with 11 recorded in Brazil (Platnick, 2011). The family Theraphosidae contains 933 species in 118 genera (Platnick, 2011). Including the species that reaches the largest size among the spiders: *Theraphosa blondi* (Latrielle, 1804), Amazonian species, measuring 26cm (Marshall & Uetz, 1993). Although most are terrestrial, living in burrows in the soil or under rocks and other natural cavities, there are some arboreal species in the South and Central Americas, Asia and Africa (Stradling, 1994; Smith, 1990; Smith, 1995). They are distributed in all continents, in all areas in many tropical and subtropical areas (Bertani, 2001). Little is known about the biology of this group. Much of the knowledge in this area of study is derived from animals in captivity (Yanez *et al.*, 1999; Coast & Perez-Miles, 2002). Of the seven traditionally accepted subfamilies of Theraphosidae (Raven, 1985), only three are found in Brazil: Aviculariinae, and Ischnocolinae Theraphosinae.

Besides coveted by collectors because of their large size and attractive colour, Theraphosids have aroused the interest of biochemists. Gomesina Recently, a peptide with anti-microbial activity was extracted from the hemolymph of *Acanthoscurria gomesiana* Mello-Leitao, 1923 and should have wide spread application in pharmaceutical industry

(Silva Junior et al, 2000). The toxins are also targets of mygalomorph research. The results obtained so far indicate that they can be used as pharmacological tools and therapies (King, 2004). Currently, for the 14 species of tarantulas already studied, there are more than 30 different types of toxins known, which act in different parts of the cell, with a variety of biological functions (Escoubas & Rash, 2004). Another property of the peptides coming from Theraphosids and recently discovered to inhibit atrial fibrillation. The peptide obtained from the venom of *Grammostola rosea* Walckenaer 1837 may be useful in the study of transduction mechanisms at the molecular level and the organism as a whole, opening the door for developing new classes of drugs (Bode et al., 2001).

In terms of taxonomy, Theraphosidae is a chaotic family (Raven, 1990), not only because of its wide distribution and existence of a few specialists, but also because of the monotony of the morphological group (Bertani, 2001). Another important aspect that makes it difficult to work with the taxon is the large number of amateurs who describe new species, as these are usually described from specimens taken mainly to Europe and the United States illegally, often with the incorrect origin. Errors may occur regarding the location of the specimen, even the continent of origin, causing, for example, the author to include it in the wrong subfamily (Bertani & Fukushima, 2004). The lack of material deposited in scientific collections for review and analysis (Bertani, 2001), a description of characters with little information relevant to the systematics and taxonomy by the researchers of the beginning of last century, and poor preservation of the holotype causes taxonomic confusion which continues to this day. Even knowing the great need for taxonomic revisions in this family (Raven, 1990), there are few existing studies on the subject (Bertani, 2001, Fukushima et al., 2005), which hinders the realization of works in other areas of biology, since it prevents the reliable identification of individuals (Escoubas & Rash, 2004).

The genus *Avicularia* Lamarck, 1818

The genus *Avicularia* was described by Lamarck (1818), and placed the species described by Linnaeus (1758) as *Aranea avicularia* in the 10th edition of his book *Systema Naturae*, the oldest species of mygalomorph. The history of the genus is complex and reflects the state of knowledge of arachnology from its beginnings to the present day.

The opinion of several authors on the species that should be included in the genus diverged greatly over the years. Because of this, many species have been included in *Avicularia*, synonymised, or transferred. Even the concept of gender was constantly changed: was once considered a junior synonym by some authors, valid for others, restricted to some species by some. This resulted in a major taxonomic confusion, compounded by the fact that many types were lost or destroyed during the Second World War.

The description of the genus made by Lamarck in 1818 was somewhat vague, which led to disagreements about the species that should be in the genre over the years. The author described the spiders belonging to the genre as being of large size, with eight legs, eight eyes in the shape of St Andrew's cross (i.e., X-shaped) and having a brush with velvet metatarsals. Lamarck included the species *Avicularia canceridea* Lamarck 1818 (junior synonym of *Aranea avicularia* Linnaeus 1758), *Avicularia blondii* Latrielle 1804 and *Avicularia fasciata* Latreille 1804 in this genus.

Even after Lamarck's description of the genus *Avicularia* in 1818, many arachnologists continued to refer to and even to describe several species of mygalomorph as *Mygale* Latreille 1802. Later this name was used by Latrielle to designate a genus, which was the first mentioned species *Mygale avicularia* (Bonnet, 1957).

Cuvier (1800) had already described a genus of mammals of that name and, therefore, the name was pre-occupied. But still, as noted above, the name was still used to describe

species of spiders. Proof of this from 1837 until 1883, seven species that are currently in the genus *Avicularia* were described as belonging to the genus *Mygale*: *Mygale versicolor* Walckenaer 1837, *Mygale leoprina* C. L. Koch 1841, *Mygale caesia* C.L. Koch 1842, *Mygale detrita* C.L. Koch 1842, *Mygale laeta* C.L. Koch 1842, *Mygale affinis* Nicolet 1849 and *Mygale walckenaeri* Perty 1883. Apparently, there was a gradual acceptance of the name *Avicularia*, and the recognition that the name *Mygale* should no more be applied to the spiders.

The reluctance to accept the name proposed by Lamarck seems to have had cultural roots. According to Smith (2000a), the name given to the genre *Avicularia* by Lamarck and Linnaeus derived from the use made of that word to describe *Araneae avicularia* (Beechhold II, 1997, the Latin for bird + eater, which is the reference). This name, Smith said, and Linnaeus made a direct reference to the famous illustration of Maria Sibylla Merian (1705) in *Metamorphosis Insectorum Surinamensium*, in the description of the species. In this illustration, Merian draws a spider feeding on a bird (Fig. 1). However, in the new era of rational science of the 19th century the existence of a large spider that can eat a bird could be the result of a "hysterical female mind," imbued with myths, fantasies and legends, as Smith says (2000a). The idea of a bird-eating spider was ridiculed by many naturalists, including by major names like Langsdorff (Smith 2000b). Thus, the use of the name would be a setback as *Avicularia* permeated the science of mythology and legends, inconceivable for a scientist of the time, and therefore should not be used. Only about fifty years later, with the studies of Ausserer (1871), could the name come to be used.

Big names in the genus *Avicularia* arachnology studied throughout the 19th century and beginning of the 20th century: Ausserer (1875) described two new species, *Avicularia rutilans* Ausserer 1875 from Columbia and *Avicularia metallica* Ausserer 1875 from Suriname, Thorell (1890) described *Avicularia holmbergi* Thorell 1890 from French Guiana, Simon (1889) described *Avicularia velutina* Simon 1889 from Venezuela and soon after *Avicularia glauca* Simon 1891 from Panama (Simon, 1891); F.O. Pickard-Cambridge (1896) described *Avicularia avicularia variegata* FOP-Cambridge 1896 from Brazil, Pocock (1903), another great arachnologist described *Avicularia minatrix* Pocock 1903 from Venezuela, and Strand (1906, 1907a, b, c, d), within two years, described six species - *Avicularia subvulpina* Strand 1906; *Avicularia exilis* Strand 1907, *Avicularia fasciculata* Strand 1907, *Avicularia fasciculata clara* Strand 1907 (all with type locality "South America"); *Avicularia soratae* Strand 1907 from Bolivia and *Avicularia surinamensis* Strand 1907 from Suriname.

Among these authors, only F.O. Pickard-Cambridge (1896 and Simon (1903) proposed a diagnosis for the genre. F.O. Pickard-Cambridge (1896) diagnosed *Avicularia* as having "anterior row of eyes strongly procurved; first pair of legs shorter than the fourth, four pairs of sigils visible in the sternum; pair of posterior spinnerets longer than the width of the sternum; carapace almost straight in profile view; patella and tibia of leg IV longer than the carapace; broad metatarsi; arboreal." Simon (1903) made a different diagnosis than that of F.O. Pickard-Cambridge (1896). Among the features used to describe the genre is the presence of posterior lateral eyes much smaller than the anterior, anterior row of eyes very procurved, males with oblique tibial apophysis. This description was almost faithfully translated years later by Mello-Leitao (1923).

This Brazilian arachnologist also studied the *Avicularia* genus, especially between 1920-40. In her review of "terafosoideas" of Brazil, 1923, Mello-Leitao described three species: *Avicularia ancylochira* Mello-Leitao 1923, *Avicularia bicegoi* Mello-Leitao 1923 and *Avicularia juruensis* Mello-Leitao 1923. In 1930, Mello-Leitao described a new species from Brazil: *Avicularia cuminami* Mello-Leitao 1930. Years later, the same author described a few more new species of the genus: *Avicularia pulchra* Mello-Leitao 1933, from Brazil; *Avicularia nigrotaeniata* Mello-Leitao 1940 from Guyana and *Avicularia palmicola* Mello-

Leitao 1945 again from Brazil. Also during this period, the Argentine arachnologists Schiapelli and Gerschmann (1945) described a new species from Brazil, called *Avicularia rufa*.

In 1955, Roewe counted 30 species and 2 subspecies belonging to *Avicularia*, which were found from the islands of Trinidad and Martinique to the North of South America, to Brazil.

For many years, contributions to the taxonomy of the genus *Avicularia* was only description of new species (Ausserer, 1875; Thorell, 1890; Simon, 1891; F.O. Pickard-Cambridge, 1896; Pocock, 1903; Strand, 1906 and the 1907a, b, c, d; Mello-Leitao, 1923, 1930, 1933 and 1945; Schiapelli & Gerschmann, 1945), a brief diagnosis of the genus (Ausserer, 1871; Simon, 1892; F.O. Pickard-Cambridge, 1896; Mello-Leitao, 1923; Valerio, 1979) and catalogs listing the species that were considered of the genus (Roewe, 1955; Bonnet, 1957).

One of the most significant changes would occur in the genus in 1985 when Raven (1985) considered the genus *Eurypelma* CL Koch 1850 a junior synonym of *Avicularia*. Thus, more than 20 species were transferred to *Avicularia*: *Eurypelma aberrans* Chamberlin 1917, *Eurypelma affine* (Nicolet 1849), *Eurypelma alticeps* (Keyserling 1877), *Eurypelma anthracinum* C.L. Koch 1842, *Eurypelma aureoiceps* Chamberlin 1917, *Eurypelma aymarum* Chamberlin 1916, *Eurypelma borelli* Simon 1897, *Eurypelma caniceps* Simon 1890, *Eurypelma cyaneopubescens* Strand 1907, *Eurypelma diversipes* (C.L. Koch 1842), *Eurypelma doleschalli* (Ausserer 1871), *Eurypelma duplex* Chamberlin 1925, *Eurypelma embrithes* Chamberlin & Ivie 1936, *Eurypelma emilia* (White 1856), *Eurypelma epicureanum* Chamberlin 1925, *Eurypelma geotoma* Chamberlin 1937, *Eurypelma gracile* (Keyserling 1891), *Eurypelma guyanum* (Simon 1892), *Eurypelma hageni* (Strand 1906), *Eurypelma sericeum* (Ausserer 1875), *Eurypelma serratum* Simon 1890, *Eurypelma smithi* F. Cambridge 1897, *Eurypelma spinicrus* (Latrielle 1819), *Eurypelma stoicum* Pocock 1903, *Eurypelma tamaulipicum* Chamberlin 1937, *Eurypelma tigrinum* Pocock 1903 and *Eurypelma truncatum* F. Cambridge 1897. With this synonymy the number of species of the genus *Avicularia* increased considerably.

At the time, Raven had not reviewed *Eurypelma* species by species. However, especially after the work of Schmidt (1993) and Smith (1995), it was found that many of them belong to other genera, especially *Aphonopelma* Pocock, 1901, and were transferred. At this point, there remains only 16 species in *Avicularia*: *Avicularia alticeps* (Keyserling 1878), *Avicularia anthracina* (CL Koch 1842), *Avicularia Aymara* (Chamberlin 1916), *Avicularia borelli* (Simon 1897), *Avicularia diversipes* (CL Koch 1842), *Avicularia doleschalli* (Ausserer 1871), *Avicularia gracilis* (Keyserling 1891), *Avicularia guyana* (Simon 1892), *Avicularia hirsuta* (Ausserer 1875), *Avicularia obscura* (Ausserer 1875), *Avicularia ochracea* (Perty 1833), *Avicularia panamensis* (Simon 1891), *Avicularia parva* (Keyserling 1878) *Avicularia plantaris* (CL Koch 1842), *Avicularia rapax* (Ausserer 1875) and *Avicularia tigrina* (Pocock 1903).

So now *Eurypelma* has welcomed a number of species morphologically very different, this taxonomic confusion was transferred to *Avicularia* with the synonymy proposed by Raven.

Also in 1985, Raven synonymized the genus *Ancylochirus*, with its single species *Ancylochirus taunayi* Mello-Leitao, 1920, with the genus *Avicularia*, resulting in the new combination *Avicularia taunayi* (Mello-Leitao 1920).

In 90 years only one species of *Avicularia* was described: *Avicularia purpurea* Kirk 1990 from Ecuador (Kirk, 1990). Since then, many new species were being added to the genus, almost all described by amateurs: *Avicularia urticans* Schmidt 1994, *Avicularia aurantiaca* Bauer 1996, *Avicularia azuraklaasi* Tesmoingt 1996, all from Peru (Schmidt,

1994; Bauer, 1996; Tesmoingt, 1996a); *Avicularia recifensis* Struchen & Brandle 1996, *Avicularia ulrichea* Tesmoingt 1996, both from Brazil (Struchen & Brandle, 1996; Tesmoingt, 1996b); *Avicularia huriana* Tesmoingt 1996, from Ecuador (Tesmoingt, 1996c); *Avicularia braunshauseni* Tesmoingt 1999 and *Avicularia geroldi* Tesmoingt 1999, also from Brazil (Tesmoingt, 1999a, b). Also during this period, Lucas, Silva & Bertani (1992) transferred *Epebopus violacea* Mello-Leitao 1930 to the genus *Avicularia*, creating the new combination *Avicularia violacea* (Mello-Read 1930).

In the twenty-first century, few more descriptions and taxonomic changes were made. In 2006 *Avicularia hirschii* Bullmer, Thierer-Lutz & Schmidt 2006, was described from Ecuador (Bullmer, Thierer-Lutz & Schmidt, 2006), in 2008, *Avicularia violacea* Mello-Leitao 1930 was transferred to the genus *Tapinauchenius* Ausserer 1871 (subfamily Aviculariinae) by West and colleagues (West *et al.*, 2008), *A. obscura* (Ausserer 1875) was transferred to the new genus *Ami* Perez-Miles 2008 (Perez-Miles *et al.*, 2008) and Gallon (2008) found *Avicuscodra* Strand 1908 (Strand, 1908) a junior synonym of *Avicularia*, thus creating the new combination *Avicularia arabica* (Strand 1908). In 2009, *Avicularia borelli* Simon 1897 was transferred to the genus *Grammostola* Simon 1892 (subfamily Theraphosinae) (Gabriel, 2009a), *Avicularia guyana* (Simon 1892) was transferred to *Eupalaestrus* (Gabriel, 2009b) and *Avicularia panamensis* (Gabriel, 2009b) was transferred to *Sericopelma*. Two new species were described: *Avicularia sooretama* Bertani & Fukushima 2009 and *Avicularia gamba* Bertani & Fukushima 2009, both from Brazil (Bertani & Fukushima, 2009).

The latest diagnosis of the genus was published in that period, proposed by Gallon (2008). The author characterized *Avicularia* as a distinct genus from other Theraphosids, except *Pachistopelma* and *Iridopelma* (genres that, along with *Avicularia*, would form the second subfamily Aviculariinae) because the presence of Type II urticating bristles on the dorsal side of the abdomen. The male of *Avicularia* are distinguished from *Iridopelma* by the absence of leg II tibial apophysis and the females by the absence of lobules in the spermathecae. In addition, both sexes of *Avicularia* can be distinguished from *Iridopelma* by leg IV being longer than leg I (the opposite of what occurs in *Iridopelma*). *Pachistopelma* of both sexes can be distinguished by having the anterior row of eyes strongly procurved, and not straight.

Although the genus has a large number of species that have enormous historical importance, it was never revised. Only published works were more restricted, transferring some species of *Avicularia* to *Aphonopelma*, *Brachypelma* *Iridopelma* and, among other genera of Theraphosids as well as other genera belonging to families completely different in morphological terms such as Idiopidae, and even to Nemesiidae and Filistatidae (Araneomorphae) (Platnick, 2011). The presence of 29 species as nomina dubia and 3 species as nomina nuda (Platnick, 2011), besides the fact that many species were not considered valid studies reinforce the fairly large necessity to review this genre.

Until now, the *Avicularia* genus has 55 species recorded from Mexico and Panama, through the islands of Trinidad, Cuba, Puerto Rico and Martinique, in addition to Venezuela, Columbia, Peru, Ecuador, Guyana, French Guiana, Suriname, Chile, Uruguay and Brazil (Platnick, 2011).

From an ecological aspect, *Avicularia* are arboreal animals, building their silk refuges both in vegetation and in human dwellings and other structures (Stradling, 1994). Studies of the species that was called *Avicularia avicularia* demonstrated that, despite being sedentary, this species has a well-defined pattern of daily activities: during the day remained within its shelter, while at night emerged and adopted the posture of the legs completely extended, which facilitate the uptake of vibratory stimuli of the substrate caused by potential prey (Stradling, 1994).

An interesting mechanism was observed by Bertani & Marques (1996) in a kind of *Avicularia*. The authors found that the Type II urticating bristles in his abdomen were transferred by direct contact when the spiders were not disturbed and actively released, as with other types of bristles present in other species of Theraphosids. When disturbed, the bristles were found on the skin of possible predator. In 2003, Bertani *et al.* observed that the species *Avicularia versicolor* Walckenaer 1837, unlike other *Avicularia*, played an active type II urticating bristles at the tips of tarsi IV, demonstrating that the structural modification of the variety is related to the behavior of these spiders.

Careful and detailed studies on the habits, life cycle, reproduction, behavioral aspects, biogeography and conservation are virtually nonexistent. The data that exists is mainly on reproduction of specimens in captivity from the great tarantula trade that exists in Europe and the United States, where the species of *Avicularia* are among the favorites.

A taxonomic revision of the genus *Avicularia* has allowed a great deal of knowledge about the fauna of neotropical Theraphosids (since the genus is well known, but made up of species that cannot be identified due to the current taxonomic chaos) and it is organized and updated, making future studies in the areas of ecology, systematics, conservation and group behavior possible. This genus contains many species that can be used for research into new drugs and other biotechnological products as happens with other species of tarantulas. (Scoubas & Rash, 2004, Bode *et al.*, 2001).

Conclusions

- 1) The genus *Avicularia* Lamarck 1818 is considered monophyletic. The synapomorphy of *Avicularia* is the presence of a moderately developed protuberance on tegulum.
- 2) The genus *Avicularia* consists of 14 morphologically very similar species: *A. avicularia* (type species), *A. juruensis*, *A. purpurea*, *A. rufa*, *A. taunayi*, *A. variegata* comb. nov., *A. velutina*, *A. aymara*, *Avicularia* sp. nov. 1, *Avicularia* sp. nov. 2, *Avicularia* sp. nov. 3, *Avicularia* sp. nov. 4, *Avicularia* sp. nov. 5 and *Avicularia* sp. nov. 6, which occurred in the Caribbean to Peru, Ecuador, Columbia, Venezuela, Guyana, French Guiana, Suriname and Brazil.
- 3) The Aviculariinae subfamily is monophyletic and is presented by the presence of well developed spatulated tarsal and metatarsal scopulae; a central longitudinal lateral stripe connected to the abdomen by lateral stripes on the dorsal side of the abdomen.
- 4) The Aviculariinae subfamily consists of the following genera: *Stromatopelma*, *Heteroscodra*, *Psalmopoeus*, *Tapinauchenius*, *Ephebopus*, *Pachistopelma*, *Iridopelma*, *Avicularia*, Genus 1, Genus nov. 1, Genus nov. 2, Genus nov. 3 and Genus nov. 4.
- 5) Genus nov. 1 occurs in Venezuela, Ecuador, Peru and Brazil and is composed of 3 species: Genus nov. 1 *hirschii* comb. nov. (type species), Genus nov. 1 *minatrix* comb. nov. and Genus nov. 1 sp. nov. 1. Genus nov. 2 and Genus nov. 3 are both composed of a single species, Genus nov. 2 *versicolor* comb. nov. (described from Martinique & Cuba) and Genus nov. 3 *Laeta* comb. nov. (described from Puerto Rico, Virgin Islands & Cuba). Genus nov. 4 consists of 3 species: Genus nov. 4 *sooretama* comb. nov. (type species), Genus nov. 4 *diversipes* comb. nov. and Genus nov. 4 *gamba* comb. nov. and is described from South West of Bahia to Rio De Janeiro.

