# A review of the Nearctic jumping spiders (Araneae: Salticidae) of the subfamily Euophryinae north of Mexico

G. B. Edwards
Florida State Collection of Arthropods
Florida Department of Agriculture and Consumer Services
P.O. Box 147100
Gainesville, FL 32614-7100 U.S.A.

**Abstract**. The generic and specific composition of the Nearctic jumping spiders of the subfamily Euophryinae north of Mexico is reviewed, and the biogeographic affinities of the constituent groups are diagnosed. The five North American species of *Habrocestum* are removed from that non-euophryine genus; four are placed in the **New Genus** *Naphrys*, type species *Habrocestum acerbum* Peckham & Peckham 1909, creating the following **New Combinations**: *Naphrys acerba* (Peckham & Peckham), *Naphrys bufoides* (Chamberlin & Ivie 1944), *Naphrys pulex* (Hentz 1846), and *Naphrys xerophila* (Richman 1981). The fifth species is not an euophryine, and becomes *Chinattus parvulus* (Banks 1895), **New Combination**. Four species placed in the genus *Tylogonus*, another non-euophryine genus, are removed to the **New Genus** *Mexigonus*, type species *Sidusa minuta* F.O.P.-Cambridge 1901, creating the following **New Combinations**: *Mexigonus arizonensis* (Banks 1904), *Mexigonus dentichelis* (F.O.P.-Cambridge 1901), *Mexigonus minutus* (F.O.P.-Cambridge), and *Mexigonus morosus* (Peckham & Peckham 1888). One of the two species of Nearctic *Euophrys* has been misplaced, and becomes *Chalcoscirtus diminutus* (Banks 1896), **New Combination**. New state records are reported for *Chalcoscirtus diminutus* [Kansas, Michigan, Minnesota, Missouri, Nebraska, New Mexico], *Mexigonus minutus* [California], *Naphrys acerba* [New Mexico], and *Pseudeuophrys erratica* (Walckenaer 1826) [New York].

Of the eight known euophryine genera with Nearctic representatives, *Anasaitis* (one species) and *Corythalia* (two species) are considered Neotropical in origin, whereas *Chalcoscirtus* (three species), *Euophrys* (one species), and *Talavera* (one species) are considered Holarctic. The Palaearctic *Pseudeuophrys erratica* is introduced. The affinities of the apparently endemic Nearctic *Naphrys* (four species) and *Mexigonus* (four species) are uncertain at this time. Although not an euophryine, the presence of a species of *Chinattus* in eastern North America is biogeographically interesting, as the other species in the genus are Asian; it joins a diversity of taxa with this distribution.

## Introduction

The subfamily Euophryinae is one of the most speciose groups of jumping spiders world wide. The majority of species occur in the tropics, in both the Old and New World. Temperate areas have a moderate representation of genera and species. Some Nearctic euophryines belong to mostly Palaearctic genera, while others clearly are related to the Neotropical fauna. Two groups have uncertain affinities and appear to be endemic.

This subfamily as it is presently understood was defined by Proszynski (1976), who profusely illustrated much of the known genitalic variation. The Euophryinae are characterized by having each male embolus typically in the form of a distal, ventral spiral (coiled counterclockwise in the left palp) which is separated from the tegulum by a distal haematodocha, i.e., it belongs to the "free embolus" section of the family Salticidae (Maddison 1988, 1996). Proximally, the embolus typically consists of what I term an embolar disk, a relatively broad, subcircular part of the embolus which is attached to the distal haematodocha (some genera, e.g., *Pseudeuophrys*, have the disk poorly developed). The embolar disk usually has a smooth prolateral transition to a more narrow free apical portion which spirals away initially in a prolateroventral posterior direction, then continues around toward the distal end. The overall shape can appear nearly monoplanar to strongly three-dimensional, depending on the genus. Various modifications appear: (1) the entire embolus may be shifted slightly toward the retrolateral side; (2) the embolus may be repositioned so that it is sitting at the distal end, perpendicular to the tegulum; and (3) the embolus can be partially hidden on the dorsal side of the tegulum, leaving a distal, twisted rod or spike shaped embolus visible in ventral view (with the basal part of the spiral on the dorsal side of the disk). All of these modifications occur to some extent in the genus *Chalcoscirtus* (e.g., Logunov & Marusik 1999a). The repositioned and reduced spiral is often associated with a reduction in the presence of atrial rims (see below) in the female epigynum. The embolus position, gross details of the embolar disk and apical spiral, as well as the overall shape of the tegulum and the configuration of the sperm duct visible on the surface of the tegulum, are phylogenetically useful characters. Usually, the female epigynum consists of two large (but shallow), translucent atria each containing a small spermathecal duct opening (i.e., copulatory pore *sensu* Logunov 1999); the atria often are surrounded by rather heavily sclerotized rims, which may fuse together medially to form a strong septum. The atrial rims often become grooves which curl into contact with the copulatory pores from posteriorly prior to or after completing the turn around the edge of each atrium. Therefore the atria are not completely encircled by the rims in those cases where the copulatory pores are encountered by the rims/grooves prior to reaching the epigynal median posteriorly. When the rims are absent, the atria are poorly defined, and may appear more or less simply as a lighter colored area on the integument. The spermathecae are visible through the pale integument as dark ovals or spheres; their placement in relation to the atria and copulatory pores is also useful for phylogenetic analysis, along with the size of the atria, the shape and placement of the ducts connecting the spermathecae to the copulatory pores, and the configuration and amount of sclerotization of the atrial rims.

Other salticid subfamilies with a distal haematodocha have a different type of attachment to the tegulum than do euophryines, and often have a prolateral basal piece (e.g., dendryphantines; compare figures of each in Maddison 1996) which is likely not part of the embolus proper (Edwards 2003). The lack of a basal piece in euophryines may indicate an independent derivation of a distal haematodocha and spiral embolus.

## Methods

The following abbreviations are used in the descriptions: ALE = anterior lateral eyes, AME = anterior median eyes, CL = carapace length (excluding AME), OQ = ocular quadrangle (the quadrangular area encompassed by the ALE and PLE), OQL = ocular quadrangle length (ALE-PLE distance including eyes), PLE = posterior lateral eyes, PME = posterior median eyes. Complete synonymic lists of all species mentioned in this work can be found in Platnick (2003).

## The Nearctic fauna north of Mexico

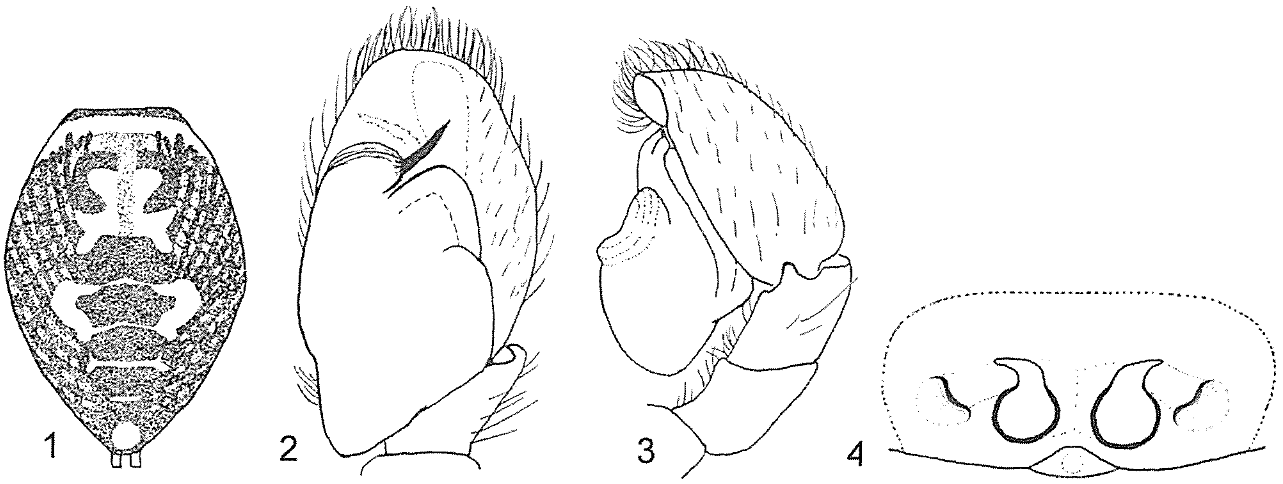
In general, most Nearctic species are small (< 5 mm in length) and compactly built. Many are cryptically colored (browns or grays) and moderately setose. Exceptions include the nearly glabrous, shiny carapace of *Chalcoscirtus* (which also has shiny abdominal integument) and *Euophrys*, and the iridescent white or varicolored bands on *Anasaitis* and *Corythalia*.

Nearctic genera north of Mexico presently included in the subfamily are (with most recent revision and/or reference, and number of species in the Nearctic region):

*Anasaitis* (Edwards 1999) - 1 species
*Chalcoscirtus* (Cutler 1990) - 2 species
*Corythalia* (Richman & Cutler 1978) - 2 species
*Euophrys* (Kaston 1948) - 2 species
*Habrocestum* (Richman 1981) - 5 species
*Pseudeuophrys* (Cutler 1982) - 1 species (introduced)
*Talavera* (Logunov 1992) - 1 species
*Tylogonus* (Richman 1981) - 3 species

Other genera with representative Nearctic species, e.g., *Neonella* Gertsch (1936) [primarily Neotropical in distribution], may ultimately be placed in this subfamily, but they are atypical in some respect, therefore are not included here. I have examined the type species of this particular genus, *Neonella vinnula* Gertsch, and not found characters to convince me that it is an euophryine. In particular, the sperm duct on the palpal tegulum lacks a S-shaped bend which is characteristic of euophryines (Bodner 2002). Also, although the embolus is spiral, it is strongly shifted to the retrolateral side, unlike any typical euophryine, but more similar to some synageline genera (e.g., *Peckhamia*). The epigynum is also reminiscent of that of an euophryine, but females of the same synageline genera are also superficially like euophryines.

Two groups of species of jumping spiders in North America presently are placed in genera that belong to different subfamilies, both of which belong to the "fixed embolus" part of the family, i.e., the distal haematodocha is absent (Maddison 1988, 1996). These are the genera *Habrocestum* and *Tylogonus*.



**Figures 1-4.** *Chinattus parvulus*. 1. male abdominal dorsum. 2-3. left palp: 2. ventral view. 3. retrolateral view. 4. epigynum (modified after Jones 1946).

### The status of Nearctic *Habrocestum*

Proszynski placed *Habrocestum* as a member of his newly defined Euophrydinae (he later changed to the correct spelling). However, he actually used three putative species of North American *Habrocestum* (Proszynski 1976: Table 12) to place the genus in his classification system, rather than the European type and related Old World species. *Habrocestum* is an Old World genus, with listed species distributions in the most recent catalog from Europe south to South Africa and east to Australia (Platnick 2003). Peng and Xie (1995), in a paper describing Chinese *Habrocestoides*, pointed out that true *Habrocestum* are restricted to the Mediterranean region and Africa. Logunov (1999) further clarified the placement of some Asian species. Unfortunately, the type species of *Habrocestum*, *H. pullatum* Simon 1876, described from France, is only known from the female sex. The overall appearance of this species resembles that of the North American "*Habrocestum*," particularly *H. pulex* (Hentz) in body form and *H. parvulum* (Banks) in genital structure. Richman (1981) noted these similarities, and opted to follow Proszynski (1976) in retaining the North American species in this genus when he revised the group.

Based on illustrations of several species of the genus presently available (e.g., Proszynski 1984, 1987; Metzner 1999), it seems likely that the genus *Habrocestum sensu stricto* is not an euophryine genus. The genital structure of both sexes appears rather similar to the genus *Phintella* and other genera which were placed in group 2 of the Heliophaninae (Maddison 1987). It is very unlike most of the North American species, which have a ventral spiral form to the embolus like most euophryines.

Proszynski (1987: 14) later stated that *H. pulex* was "apparently *Euophrys*." This is not correct either. Males of Old World *Euophrys* have an undecorated or lightly decorated carapace, and the embolus is long and slender throughout most of its spiral length, with an unmodified disk. This occurs as well in the single true North American species in the genus, *E. monadnock* Emerton 1891. Most of the North American "*Habrocestum*" have a relatively shorter embolus, with a modified disk. Males also have an extensive dorsal scale cover on the carapace. Females of *Euophrys* have an epigynum which has narrowly sclerotized atrial rims, the ducts are rather long, broad, and curled partly around the copulatory pores (from the medial side outward), and the copulatory pores are more or less centered within the atria. Most female "*Habrocestum*" have strongly sclerotized broad atrial rims, the ducts are very short and narrow, and the copulatory pores are near the medial margin of the atria.

The five species of North American "*Habrocestum*" actually belong to three species groups: (1) *H. pulex* (Hentz) 1846, (2) *H. acerbum* Peckham & Peckham 1909, *H. bufoides* Chamberlin & Ivie 1944, and *H. xerophilum* Richman 1981; and (3) *H. parvulum* (Banks) 1895. The first two groups have the above-listed characters of "*Habrocestum*" and belong together in the same genus, which presently lacks a name. The two groups are separated by body form (*H. pulex* is slightly larger and more elongate) and color pattern (*H. pulex* lacks the abdominal spotting pattern typical of the other three species). While in body form and markings *H. parvulum* is somewhat similar to the *acerbum* group, its spot pattern is different (Richman 1981) and genitalically it is distinct. The differences in the genitalia show that not only are its closest relatives not among the other North American "*Habrocestum*," it is not even a true euophryine. It may belong to the same informally defined group of genera that includes the Old World *Habrocestum*, hence its similarity to *Habrocestum pullatum*.

## *Chinattus parvulus* (Banks) new combination
### Figs. 1-4

*Saitis parvulus* Banks 1895
*Habrocestum parvulum*: Peckham & Peckham 1909
*H. p.*: Jones 1946, Richman 1981

This surprising relationship makes this species the salticid version of the alligator, as most species of *Chinattus* are known from China [other spiders, e.g., the trapdoor spider genus *Cyclocosmia* (Gertsch & Platnick1975), have a similar distribution]. Logunov (1999) recently described and reviewed this genus in Asia. It also adds another group in North America known to be related to the Palaearctic fauna. By inference, I accept Logunov's (1999) creation of *Chinattus* as distinct from *Habrocestoides* (described by Proszynski 1992), as I consider his diagnoses and comparison of the two genera to be adequate to demonstrate the need for their separation.Biogeographic evidence also supports this split, as true *Habrocestoides* appear to belong to the fauna of the Indian subcontinent. Proszynski (2001) disagreed with Logunov's decision to erect *Chinattus*, on the suggestion of W. Maddison tentatively placed *Habrocestum parvulum* in *Habrocestoides*, and synonymized *Chinattus* with *Habrocestoides* in his online catalog. As this electronic publication has no official status in nomenclatorial decisions, I would recommend that any disagreement about the distinctness of these two genera be analyzed in print. In the meantime, I place the species in the group to which it is most clearly related.

**Distribution:** Canada (Ontario), USA (eastern half). The species appears to be primarily Appalachian in distribution, although there are outlying populations as far west as Arkansas and Illinois, and it occurs in northern Florida (see below).

**Biology:** Some records of this species have indicated it was collected in moist conditions and on leaf litter, e.g., the type locality information includes, "from a cold swamp at Ithaca, Tompkins County, New York," and I have collected it in moist leaf litter near a ground spring runoff at Torreya State Park, Liberty County, Florida (a locality which has frequently been documented to have Appalachian fauna and flora).

**Diagnosis:** The size, color pattern, and genitalia of both sexes conform to the description of the genus (Logunov 1999).

Included among these characters is the enclosed posteromedial epigynal pocket. I note, however, that this feature occurs in more genera than just *Chinattus* and *Habrocestoides*. It occurs, for example, in the genus *Freya* (Galiano 2001) and other genera close to *Freya* (e.g., *Eustiromastix*; Galiano 1979), and may occur sporadically throughout the Salticidae. The appearance may vary somewhat among genera, but essentially it appears to be formed by a closure of the posteromedian pocket which is engaged by the male tibial apophysis during mating. What results is a heavily sclerotized lip, sometimes overhanging the epigastric furrow, which has a more or less circular indentation on its dorsal (internal) side. Presumably, the male tibial apophysis still engages with this structure during mating. Possibly the shape of the tibial apophysis would correspond in some morphological way to this modified epigynal pocket, as seems to be the case in *Freya*. It is unclear at this point whether or not the Neotropical species in the *Freya* group of genera are in any way related to the Eurasian group of genera which include *Chinattus* and *Habrocestoides*.

## *Naphrys*, new genus
### Figs. 5-8

**Type species:** *Habrocestum acerbum* Peckham & Peckham 1909
**Etymology:** A contraction of "North American *Euophrys*," to be considered an arbitrary combination of letters; gender feminine.

Other included species (all most recently placed in *Habrocestum*): *Habrocestum bufoides* Chamberlin & Ivie 1944, *Attus pulex* Hentz 1846, *Habrocestum xerophilum* Richman 1981; creating the following **New Combinations**: *Naphrys acerba* (Peckham & Peckham), **New State Record** - NEW MEXICO: Eddy Co., junc. Indian Big Springs and Hwy. 137, 11-12 June 2000, riparian woodland leaf litter, 1m 3f (G. B. Edwards, FSCA); *Naphrys bufoides* (Chamberlin & Ivie); *Naphrys pulex* (Hentz); *Naphrys xerophila* (Richman).

**Description:** Small, compact jumping spiders, 2.0-6.1 mm in length. PME slightly closer to PLE than to ALE. OQ slightly wider anteriorly. OQL 42-46% CL. Leg formula variable, but legs III and IV always longer than I and II. Tibia plus patella III equal to or slightly longer than tibia plus patella IV. Males of the *acerba* group with a conspicuous pair of abdominal dorsal posteromedial white spots. The defining characteristics of the embolus are its remarkable three-dimensional construction, with the prolateral edge of the embolar disk being unusually thick in some species (particularly *N. bufoides*), and the embolar disk having a ventral conical projection (especially prominent in *N. pulex*, but present in the three other species as well). The embolus tip is distinct also, never coming to a point, but remaining slightly broadened and C-shaped (viewed from distal to the tip), i.e., the tip is prolateroventrally concave (for embolus characters see SEM photographs in Richman 1981). The epigynum has rather large atria with strongly sclerotized rims. The copulatory pores are along the median or anteromedian edges of the atria. The atrial rims intersect the copulatory pores posteriorly. The rims fail to completely encircle the atria. The spermathecae are nearly spherical, more or less contiguous medially, and half or more the diameter of the atria. They are positioned about half way to entirely within the posterior part of the atria as seen in ventral view. The ducts between the copulatory pores and the spermathecae are very short and narrow.

**Diagnosis:** The conical projection on the embolar disk is apparently unique to this genus among the euophryines.

**Biology:** All species live on hardwood leaf litter, *N. pulex* and *N. bufoides* in mesophytic woodland, while *N. acerba* and *N. xerophila* occur in xeric woodland. *Naphrys pulex* also lives on rock outcrops (and buildings), and bark (either on living trees or logs of fallen dead trees). Additionally, I have taken *N. bufoides* on wet grass litter under dense stands of tall grass along the edges of lakes.

It is not clear to what other fauna the species of *Naphrys* might be related. There are some general similarities to Old World *Saitis*, but after examination of the type species of that genus, *Saitis barbipes* (Simon 1868), I have not found any characters that would seem to specifically relate it to *Naphrys*. The Neotropical euophryines are poorly diagnosed, and close relatives may exist in that region, particularly Central America (see comments below).

## The status of Nearctic *Tylogonus*

Richman (1981) moved some species of North American *Habrocestum* from that genus to *Tylogonus* when he revised the species that he considered to properly belong in *Habrocestum*. The reasons for this placement were largely based on somatic characters, particularly the excavate nature of the male chelicerae which are similar to true *Tylogonus*. Species of *Tylogonus* subsequently were placed in three species groups (Galiano 1985). The first group contains the type species, *T. auricapillus* Simon 1902; the northernmost true *Tylogonus* occurs in Panama (Galiano 1994). Galiano (1985) noted that while the second group was doubtfully maintained in the genus, the third group clearly did not belong, but was instead related [by genitalic conformation] to the "Evophrydinae." This was primarily the three species transferred to the genus by Richman (1981), although a fourth, entirely Mexican species was later included (Richman & Cutler 1988). Galiano's work therefore implies that *Tylogonus* is not an euophryine genus, which it clearly is not, although its closest relatives are uncertain (but appear to be near the marpissines and dendryphantines; W. Maddison, pers. comm. 2001). The species now placed in *Tylogonus* species group 3 were originally described as either *Sidusa* or *Habrocestum*, both of which actually refer to other groups of species. No other described genus seems to accomodate this group; it therefore also needs a name.

## *Mexigonus*, new genus
### Figs. 9-12

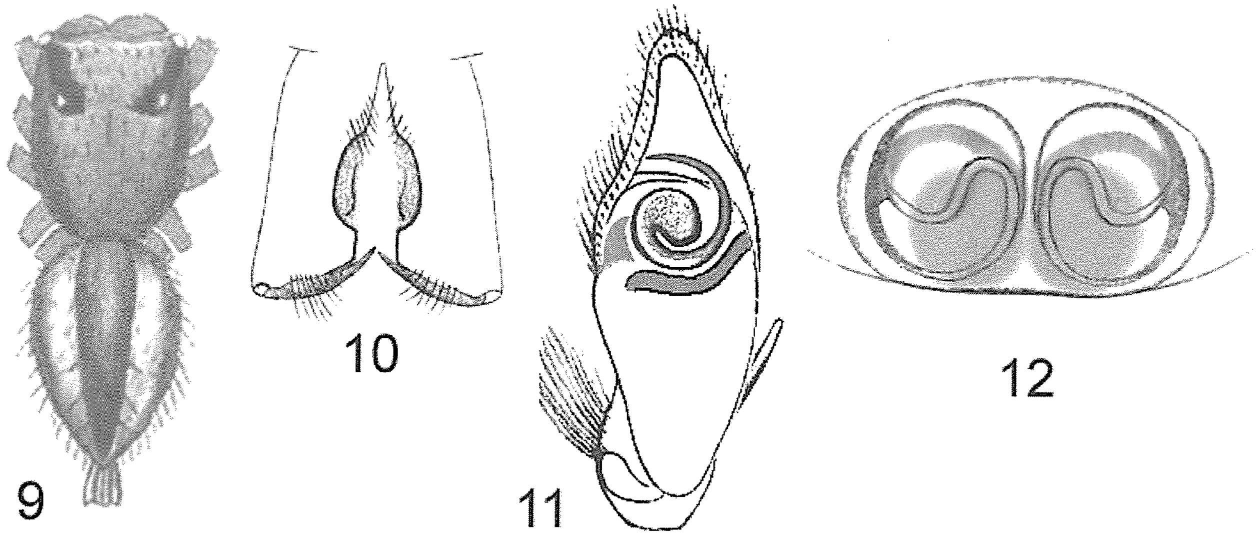
**Type species:** *Sidusa minuta* F.O.P.-Cambridge 1901.

**Figures 5-8.** *Naphrys acerba*. 5. male dorsal habitus. 6-7. left palp: 6. ventral view. 7. retrolateral view. 8. epigynum (modified after Peckham & Peckham 1909).

**Etymology:** A combination of the country which seems to be the center of origin of the genus (Mexico) and the Greek compounding form *-gonos* (in its latinized form) meaning "born," i.e., born in Mexico; gender is masculine.

Other included species (all most recently placed in *Tylogonus*): *Sidusa arizonensis* Banks 1904, *Sidusa dentichelis* F.O.P.-Cambridge 1901, *Astia morosa* Peckham & Peckham 1888; creating the following **New Combinations**: *Mexigonus arizonensis* (Banks); *Mexigonus dentichelis* (F.O.P.-Cambridge); *Mexigonus minutus* (F.O.P.-Cambridge), **New State Record** - CALIFORNIA: Los Angeles Co., Santa Monica, May 2002, 1m (J. Dietz #262, NHMLAC); same locality, 20 June 2002, 2m (J. Dietz #1098, NHMLAC); *Mexigonus morosus* (Peckham & Peckham).

**Description:** Body length 4.0-8.0 mm. PME closer to PLE than to ALE. OQ slightly wider anteriorly. OQL 41-48% CL. Carapace with a more or less weak narrow white band running through the lateral eyes and down each side of the thoracic slope. Male chelicerae excavate medially. Leg I usually the longest leg (especially in males). Tibia plus patella III shorter than tibia plus patella IV. The embolar disk and the apical spiral of the embolus are separated medially at their juncture, leaving a narrow angulate gap between them. The spiral surface is inclined medially toward the gap throughout its length (much like a banked road, or a partially unraveled bowl). The epigynum has the atrial rims completely encircling the atria to form a narrow septum between them, but then continuing across the face of each atrium as a curved or sinuate narrow sclerotized groove to intersect the copulatory pores, more or less bisecting each atrium in some species (e.g., *M. minutus*), but in other species lying close to the outer part of the rim (e.g., *M. arizonensis*), therefore easily overlooked. The ducts from the spermathecae are simple, but relatively long and thick compared to *Naphrys*. The position of the spermathecae and copulatory pores seems to indicate two species groups, one with the spermathecae located posteromedially and the pores laterally or anterolaterally within the atrial rims (*M. arizonensis, M. minutus*), and the other with the spermathecae located anteriorly and the pores anteromedially (*M. morosus*). The abdominal color patterns of the two groups are different also, with the *minutus* group mostly brown medially and pale laterally or posterolaterally, while the *morosus* group has a more diffuse brown and white color pattern. The venter of the abdomen is pale, variably speckled with dark gray. *Mexigonus dentichelis* is only known from the male, but by color pattern, it appears to belong to the *minutus* group. The differences exhibited by *M. morosus* possibly indicate that it would be better placed in a different genus, but until the Neotropical euophryines are better known, I leave it with its apparent closest relatives.



**Figures 9-12.** *Mexigonus minutus*. 9. male dorsal habitus. 10. male chelicerae, anterior view. 11. left palp, ventral view. 12. epigynum (modified after F. O. P.-Cambridge 1901).

**Diagnosis:** The narrow, angulate gap between the embolar disk and the apical spiral of the embolus, as well as the shape of the latter, seems to be unique among New World euophryines. The epigynal atrial rims extended as grooves within each atrium may be unique as well. Diagnostic illustrations of several species can be found in F. O. P.-Cambridge (1901).

**Biology:** What is known indicates that these species live on rock faces or sides of buildings in xeric woodland (D. B. Richman, pers. comm. 2001).

Probably other species described as *Sidusa* by F. O. P.-Cambridge (1901) belong in this genus, but final disposition awaits examination of types and a revision of *Mexigonus*. *Sidusa* (Peckham & Peckham 1895) presently has its own nomenclatorial problems (Bodner 2002). Although *M. dentichelis* has not been reported north of Mexico, I include it here in order to remove all of the misplaced species of *Mexigonus* from *Tylogonus*.

Like *Naphrys*, it is not clear what the closest relatives of *Mexigonus* might be. Possible genitalic synapomorphies with Central American euophryines such as the genus *Chapoda* (Peckham & Peckham 1896) and the species related to *Sidusa recondita* (Peckham & Peckham 1896) are suggestive of a relationship between these groups, *Mexigonus* and/or *Naphrys*. As the Neotropical euophryines are in strong need of revisionary work, no detailed comparisons can be made here.

## Other Changes and Records for Nearctic Euophryinae

A single species in a third euophryine group from North America which is presently misplaced is *Euophrys diminuta* (Banks 1896), which was also known as *Corythalia delicatula* Gertsch & Mulaik 1936. This species belongs neither to *Corythalia* nor *Euophrys* (J. Proszynski, pers. comm. 2001, noted to me the misplacement of this species in *Euophrys*). Upon detailed examination, it proves to belong to the genus *Chalcoscirtus*, subgenus *Chalcosibericus* (Marusik 1991).

### *Chalcoscirtus diminutus* (Banks) new combination

*Icius diminutus* Banks 1896
*Euophrys diminuta*: Petrunkevitch 1911
*Corythalia delicatula* Gertsch & Mulaik 1936
*Euophrys diminuta*: Edwards 1980

**Diagnosis:** The female genitalia are similar to *C. tanyae* Logunov & Marusik (1999b). The male genitalia also fit in the subgenus, with a slender, spike-like embolus in ventral view (in dorsal view, the basal part of the apical spiral is visible but fused to the dorsal posterior edge of the embolar disk), and a sperm duct configuration characteristic for the genus. The body form is similar to other *Chalcoscirtus*, mostly very dark and glossy, as the body integument is subglabrous. Females have a variable amount of white markings on the abdomen, which ranges from entirely black to mostly white. Males are almost entirely black in life (appearing dark brown after preservation in alcohol), with a long white clypeal fringe, and a white basal band on the abdomen. The male abdomen is almost entirely covered dorsally with a scutum. The palp tibia has a short, wide, ventral apophysis (flattened more or less into a transverse ridge) in addition to the retrolateral apophysis.

**Biology and Distribution:** Like the other two species in the genus in North America, *C. diminutus* lives on the ground. In Arizona, where it occurs at high elevation, *C. diminutus* occurs under rocks and debris like its congeners (Cutler 1990). Unlike those species, which are boreal in distribution, it occurs in different situations in other localities. In Florida, it is found in moist pine litter. In Michigan, it was taken in moist marsh leaf litter. Elsewhere (see new records below), it has been mostly taken from pitfall traps and/or in prairie. It has been reported sporadically across the southern USA (California, Arizona, Texas, Georgia, Florida) as *C. delicatula*, and from New York as *E. diminuta* (Richman & Cutler 1978). It appears to be widespread, based on reports here from the personal collection of Bruce Cutler (BCC) and from New Mexico State University, Las Cruces (NMSU; courtesy of curator David B. Richman), which are all **New State Records**:

**Kansas:** Franklin Co., 5 mi N of Ottawa on Hwy 59, sweeping roadside grass, 26 May 1984, 1m (R. Huber, BCC); Jefferson Co., Nelson Environmental Study Area, R20E, T11S, s.33, ~10 mi S of McLouth, oldfield, pitfall trap T8PS, 11 May 1988, 1m (E. Martinko, BCC); **Michigan:** Livingston Co., E. S. George Reserve, 22 June 1957, 1f; 26 June 1957, 1f; 30 June 1957, 1f; 2 August 1957, 1f (all H. K. Wallace, FSCA); **Minnesota:** Anoka Co., Allison Savanna, Nature Conservancy Area, T33N, R23W, NE1/4, s.2, ex dry seed pods of *Penstemon grandiflorus*, 13 June 1978, 1f (B. Cutler, BCC); same data except 21 July 1979, 1f (B. Cutler, BCC); **Missouri:** Johnson Co., Knob Knoster St. Pk., pitfall trap brushy prairie, 16-18 May 1979, 1m (Peck & Peaslee, BCC); same data except 17-19 June 1978, 1f (Peck & Peaslee, BCC); **Nebraska:** Jefferson Co., 3 mi. S. Reynolds, under small piece of wood, 30 July 1982, 1f (J. C. and J. E. Cokendolpher, FSCA); **New Mexico:** Doña Ana Co., Doña Ana Mts., Mt. Summerford (eastern base), 32E31' 03.2"N 106E48'08.0"W, three awn - black grama grassland, pitfall D plot 26, ca. 4500' el, 26 October 2000, 1f (David Hu, NMSU, det. D. B. Richman).

### *Pseudeuophrys erratica* (Walckenaer 1826)

*Attus erraticus* Walckenaer, 1826.
*Euophrys tigrina* C. L. Koch 1837.
*Euophrys erratica*: Simon 1876.
*Pseudeuophrys callida* Dahl 1912.
*Pseudeuophrys erratica*: Miller 1971; Logunov 1998.

The list of synonyms and citations is long; I only include here brief citations to the key name changes. The species was first reported in the USA by Cutler (1982) from New Jersey. The original and additional collections from the same locality are listed below, plus the first report of a new locality:

**New Jersey:** Bergen Co., Oradell, on fence, 29 June 1981, 1 f (B. Cutler, BCC); in woodpile in suburban lot, 25 October 1985, 1 m [matured 5 November 1985] 1 f [matured 10 November 1985] (B. Cutler, BCC); on wall of house, 19 April 1999, 2 m [matured 26 April 1999] 3 f [matured 29 April- 6 May 1999] 5 immature (B. Cutler, BCC); **New York:** New York Co., Manhattan, American Museum of Natural History, 5th floor, 1 June 1983, 1 m (B. Brewster, AMNH, det. B. Cutler), **New State Record.**

Following is a new checklist of the typical euophryines of the Nearctic region and their closest known affinities, with notes on distribution:

***Anasaitis*** - Caribbean (Neotropical)
*A. canosa* (Walckenaer 1837) - southeast USA, Cuba

***Chalcoscirtus*** - Holarctic
*C. alpicola* (L. Koch 1876) - boreal North America, eastern Russia
*C. carbonarius* Emerton 1917 - boreal North America, eastern Russia
*C. diminutus* (Banks 1896) - widespread USA

***Corythalia*** - Neotropical
*C. conspecta* (Peckham & Peckham 1896) - USA (Arizona) to Panama
*C. opima* (Peckham & Peckham 1895) - USA (Arizona) to Panama

***Euophrys*** - Holarctic
*E. monadnock* Emerton 1891 - boreal North America

***Mexigonus*** - endemic southwestern Nearctic
*Mexigonus arizonensis* (Banks 1904) - Mexico, USA (Arizona)
*Mexigonus dentichelis* (F.O.P.-Cambridge 1901) - Mexico
*Mexigonus minutus* (F.O.P.-Cambridge 1901) - Mexico, USA (Arizona, California, New Mexico)
*Mexigonus morosus* (Peckham & Peckham 1888) - USA (Arizona, California)

***Naphrys*** - endemic Nearctic
*Naphrys acerba* (Peckham & Peckham 1909) - northeast Mexico, USA (New Mexico, Texas)
*Naphrys bufoides* (Chamberlin & Ivie 1944) - USA (Florida, Georgia)
*Naphrys pulex* (Hentz 1846) - Canada, USA (eastern half)
*Naphrys xerophila* (Richman 1981) - USA (Florida)

***Pseudeuophrys*** - Palaearctic, introduced
*P. erratica* (Walckenaer 1826) - widespread Palaearctic, USA (New Jersey, New York)

***Talavera*** - Holarctic
*T. minuta* (Banks 1895) - boreal North America, eastern Russia

**Biogeographic Summary:** Species of *Anasaitis* and *Corythalia* are the only genera in the Nearctic region from this subfamily that definitely belong to the Neotropical fauna. *Anasaitis* is primarily Caribbean in distribution, and probably will have about a dozen species when the composition of the Caribbean euophryines is reviewed. One species has colonized the North American mainland [this species also occurs in Cuba according to Bryant (1940)]. *Corythalia* has over 50 described species throughout the Neotropics. The two species reported from Arizona represent the northernmost records for the genus. These Arizona records [with no other data] were reported by Peckham & Peckham (1909). Considering the length of time since the last report of these species from the USA, the possibility of incorrect original records or extirpation from the state should be considered.

The Nearctic species of *Chalcoscirtus*, *Euophrys*, and *Talavera* are in genera that have the majority of their species in the Palaearctic region, thus forming a Holarctic distribution for these genera. Two of the three species of *Chalcoscirtus* reported here belong to a subgenus, *Chalcosibericus*, which is otherwise largely distributed in Siberia and the Russian Far East. At least two of the North American species of *Chalcoscirtus* also occur in eastern Russia, as does the only Nearctic species of *Talavera* (Marusik 1991, Logunov & Koponen 2000). The introduced species of *Pseudeuophrys* is of Palaearctic origin. The species in this genus were most recently reviewed by Logunov (1998), who indicated a possible relationship of *Pseudeuophrys* with the Old World genus *Saitis* (New World species described in this genus are misplaced).

This leaves only *Mexigonus* and *Naphrys*, which have unclear affinities, and seem to be truly endemic Nearctic genera, with possible Neotropical relatives.

## Acknowledgments

My sincerest thanks to Drs. Wayne Maddison (University of Arizona), Bruce Cutler (University of Kansas), David Richman (New Mexico State University), and Jerzy Proszynski (Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw, Poland) for their comments and/or other assistance on the manuscript; to Rick Vetter (University of California, Riverside) and Janet Kempf (Natural History Museum of Los Angeles County - NHMLAC) for bringing to my attention the new California record of *Mexigonus minutus*; and to Dr. H. Don Cameron (Classics Scholar, University of Michigan) for confirming the proper spelling for the subfamily Euophryinae based on the genus *Euophrys* C. L. Koch 1834 and for reviewing the proposed new names. This is FDACS/DPI, Bureau of Entomology, Nematology, and Plant Pathology, Entomology Section Contribution Number 928.

## Literature Cited

**Banks, N.** 1895. Some new Attidae. Canadian Entomologist 27: 96-102.
**Banks, N.** 1896. Additions to the list of Long Island spiders. Journal of the New York Entomological Society 4: 190-193.
**Banks, N.** 1904. New genera and species of Nearctic spiders. Journal of the New York Entomological Society 12: 109-119.
**Bodner, G. S.** 2002. Biodiversity assessment and systematics of Neotropical jumping spiders (Araneae: Salticidae). Ph.D. dissertation, University of Arizona, Tucson. 405 p.

**Bryant, E. B.** 1940. Cuban spiders in the Museum of Comparative Zoology. Bulletin of the Museum Comparative Zoology, Harvard 86: 247-554.

**Cambridge, F. O. P.-.** 1901. Arachnida - Araneida and Opiliones. In Biologia Centrali-Americana, Zoology. London, 2: 193-312.

**Chamberlin, R. V., and W. Ivie.** 1944. Spiders of the Georgia region of North America. Bulletin of the University of Utah 35(9): 1-267.

**Cutler, B.** 1982. *Euophrys erratica* (Walckenaer), new to North America. Peckhamia 2: 36-37.

**Cutler, B.** 1990. A revision of the western hemisphere *Chalcoscirtus* (Araneae: Salticidae). Bulletin of the British Arachnological Society 8: 105-108.

**Dahl, F.** 1912. Über die Fauna des Plagefenn-Gebietes. In Conwentz, H. (ed.), *Das Plagefenn bei Choren*. Berlin, pp. 339-638 (Araneae, 575-622).

**Edwards, G. B.** 1980. Jumping spiders of the United States and Canada: changes in the key and list (4). Peckhamia 2: 11-14.

**Edwards, G. B.** 1999. *Corythalia canosa* (Araneae: Salticidae) reassigned to *Anasaitis*. Insecta Mundi 13: 10.

**Edwards, G. B.** 2003. Revision of the jumping spiders of the genus *Phidippus* (Araneae: Salticidae). Occasional Papers of the Florida State Collection of Arthropods, accepted.

**Emerton, J. H.** 1891. New England spiders of the family Attidae. Transactions of the Connecticut Academy Arts and Sciences 8: 220-252.

**Emerton, J. H.** 1917. New spiders from Canada and the adjoining states. Canadian Entomologist 49: 261-272.

**Galiano, M. E.** 1979. Revisión del género *Eustiromastix* Simon, 1902 (Araneae, Salticidae). Journal of Arachnology 7: 169-186.

**Galiano, M. E.** 1985. Tres nuevas especies de *Tylogonus* Simon, 1902 (Araneae, Salticidae). Histoire naturelle, Corrientes 5: 153-160.

**Galiano, M. E.** 1994. Dos nuevas especies de Salticidae (Araneae) de Panamá. Scientia (Panama) 8: 191-202.

**Galiano, M. E.** 2001. Revisión de las especies de *Freya* del grupo *decorata* (Araneae, Salticidae). Journal of Arachnology 29: 21-41.

**Gertsch, W. J.** 1936. Further diagnoses of new American spiders. American Museum Novitates 852: 1-27.

**Gertsch, W. J., and N. I. Platnick.** 1975. A revision of the trapdoor spider genus *Cyclocosmia* (Araneae, Ctenizidae). American Museum Novitates 2580: 1-20.

**Hentz, N. M.** 1846. Descriptions and figures of the araneides of the United States. Boston Journal of Natural History 5: 352-370.

**Jones, S. E.** 1946. Description of *Habrocestum parvulum* (Banks). Psyche, Cambridge 53: 27-29.

**Kaston, B. J.** 1948. Spiders of Connecticut. Bulletin of the Connecticut State Geological and Natural History Survey 70: 1-874.

**Koch, C. L.** 1834. Arachniden. In Herrich-Schäffer, G. A. W., Deutschlands Insekten. Heft 122-127.

**Koch, C. L.** 1837. *Übersicht des Arachnidensystems*. Nürnberg, Heft 1, pp. 1-39.

**Koch, L.** 1876. Verzeichniss der in Tirol bis jetzt beobachteten Arachniden nebst Beschreibungen einiger neuen oder weniger bekannten Arten. Zeitschrift des Ferdinandeums fur Tirol und Vorarlberg 3(20): 221-354.

**Logunov, D. V.** 1992. Definition of the spider genus *Talavera* (Araneae, Salticidae), with a description of a new species. Bulletin de Institute Royale Science Naturelle de Belgique (Entomology) 62: 75-82.

**Logunov, D. V.** 1998. *Pseudeuophrys* is a valid genus of the jumping spiders (Araneae, Salticidae). Revue Arachnologique 12: 109-128.

**Logunov, D. V.** 1999. Redefinition of the genus *Habrocestoides* Proszynski, 1992, with establishment of a new genus, *Chinattus* gen n. (Araneae: Salticidae). Bulletin of the British Arachnological Society 11: 139-149.

**Logunov, D. V. & S. Koponen.** 2000. A synopsis of the jumping spider fauna in the Russian Far East (Araneae, Salticidae). Entomologica Fennica 11: 67-87.

**Logunov, D. V., & Y. M. Marusik.** 1999a. A brief review of the genus *Chalcoscirtus* Bertkau, 1880 in the faunas of Central Asia and the Caucasus (Aranei: Salticidae). Arthropoda Selecta 7: 205-226.

**Logunov, D. V., & Y. M. Marusik.** 1999b. New species and new records of the jumping spiders from the Russian Far East (Araneae, Salticidae). Acta Arachnologica Tokyo 48: 23-29.

**Maddison, W. P.** 1987. *Marchena* and other jumping spiders with an apparent leg-carapace stridulatory mechanism (Araneae: Salticidae: Heliophaninae and Thiodinae). Bulletin of the British Arachnological Society 7: 101-106.

**Maddison, W. P.** 1988. A revision of jumping spider species groups formerly placed in the genus *Metaphidippus*, with a discussion of salticid phylogeny (Araneae). Ph.D. dissertation, Harvard University, Cambridge, 389 p.

**Maddison, W. P.** 1996. *Pelegrina* Franganillo and other jumping spiders formerly placed in the genus *Metaphidippus* (Araneae: Salticidae). Bulletin of the Museum Comparative Zoology 154: 215-368.

**Marusik, Y. M.** 1991. Spider genus *Chalcoscirtus* (Aranei, Salticidae) from the USSR. Communication 2. Zoologicheskii Zhurnal 70(1): 19-31.

**Metzner, H.** 1999. Die Springspinnen (Araneae, Salticidae) Griechenlands. Andrias 14: 1-279.

**Miller, F.** 1971. Pavouci-Araneida. Klíc zvíreny CSSR 4: 51-306.

**Peckham, G. W., and E. G. Peckham.** 1888. Attidae of North America. Transactions of the Wisconsin Academy Sciences, Arts and Letters 7: 1-104.

**Peckham, G. W., and E. G. Peckham.** 1895. Spiders of the *Homalattus* group of the family Attidae. Occasional Papers of the Natural History Society of Wisconsin 2: 159-183.

**Peckham, G. W., and E. G. Peckham.** 1896. Spiders of the family Attidae from Central America and Mexico. Occasional Papers of the Natural History Society of Wisconsin 3: 1-101.

**Peckham, G. W., and E. G. Peckham.** 1909. Revision of the Attidae of North America. Transactions of the Wisconsin Academy Sciences, Arts and Letters 16(1): 355-655.

**Peng, X. J., and L. P. Xie.** 1995. Spiders of the genus *Habrocestoides* from China (Araneae: Salticidae). Bulletin of the British Arachnological Society 10: 57-64.

**Petrunkevitch, A.** 1911. A synonymic index-catalogue of spiders of North, Central and South America with all adjacent islands, Greenland, Bermuda, West Indies, Terra del Fuego, Galapagos, etc. Bulletin of the American Museum of Natural History 29: 1-791.

**Platnick, N. I.** 2003. The world spider catalog, version 3.5. American Museum of Natural History, online at http://research.amnh.org/entomology/spiders/catalog81-87/index.html

**Proszynski, J.** 1976. Studium systematyczno-zoogeograflczne nad rodzina Salticidae (Aranei) Regionów Palearktycznego i Nearktycznego. Wyzsza Szkola Pedagogiczna Siedlcach 6: 1-260.

**Proszynski, J.** 1984. Atlas rysunków diagnostycznych mniej znanych Salticidae (Araneae). Wyzsza Szkola Rolniczo-Pedagogiczna, Siedlcach.177 pp.

**Proszynski, J.** 1987. Atlas rysunków diagnostycznych mniej znanych Salticidae 2. Zeszyty Naukowe Wyzszej Szkoly Rolniczo-Pedagogicznej, Siedlcach.172 pp.

**Proszynski, J.** 1992. Salticidae (Araneae) of India in the collection of the Hungarian National Natural History Museum in Budapest. Annals Zoologici, Warszawa 44: 165-277.

**Proszynski, J.** 2001. Salticidae (Araneae) of the World. Online site: http://spiders.arizona.edu/salticid/main.htm.

**Richman, D. B.** 1981. A revision of the genus *Habrocestum* (Araneae, Salticidae) in North America. Bulletin of the American Museum of Natural History 170: 197-206.

**Richman, D. B., and B. Cutler.** 1978. A list of the jumping spiders (Araneae: Salticidae) of the United States and Canada. Peckhamia 1: 82-110.

**Richman, D. B., and B. Cutler.** 1988. A list of the jumping spiders of Mexico. Peckhamia 2: 63-88.

**Simon, E.** 1868. Monographie des espèces européennes de la famille des attides (Attidae Sundewall. - Saltigradae Latreille). Annals Societé Entomologique de France (4) 8: 11-72, 529-726.

**Simon, E.** 1876. Les arachnides de France. Paris, 3: 1-364.

**Simon, E.** 1902. Description d'arachnides nouveaux de la famille des Salticidae (Attidae) (suite). Annals Societé Entomologique de Belgique 46: 24-56, 363-406.

**Walckenaer, C. A** 1826. Aranéides. In Faune française ou histoire naturelle générale et particulière des animaux qui se trouvent en France, constamment ou passagèrement, à la surface du sol, dans les eaux qui le baignent et dans le littoral des mers qui le bornent par Viellot, Desmarrey, Ducrotoy, Audinet, Lepelletier et Walckenaer. Paris, livr. 11-12: 1-96.

**Walckenaer, C. A** 1837. Histoire naturelle des insectes. Aptères. Paris, 1: 1-682.