

## **The Coniopterygidae of America (Neuroptera)**

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### **ABSTRACT**

A review of the history of the American species gives 4 spp. in 1900, 31 spp. in 1970 and 133 spp. at present of which 46 are recorded from the U.S. and Canada. In North America the only definite Gondwanian genus is **Neoconis**; all other species belong to holarctic generic groups. South of U.S. other Gondwanian genera are **Pampoconis** and probably **Incasemidalis**. Among the genus **Coniopteryx** there are three American species groups.

### **HISTORY**

The first coniopterygid to be described from America was **Coniopteryx westwoodi** FITCH (1856) from eastern North America. During the last century three more North American species were added to this, two described by Nathan BANKS and one by H. HAGEN.

During the years 1905-1907 BANKS described an additional six species from North America, three of which have proved to be synonymic with his own species. During the same years Günther ENDERLEIN described 12 species from Central and South America, two of which I have reduced to synonymy based on the females, but there are still five out of the remaining ten of which the male genitalia have not been figured.

In 1912-1918 our notorious Longinos NAVAS described four species from New York, all of which have proved to be synonyms. During the 1930ies five species were described, one from Mexico, one from South America and three from the Caribbean. BANKS was the author for two, NAVAS for two and SMITH for one species. Not yet interpreted are one described by NAVAS and the one described by SMITH.

Thus in 1972, when my revision of the family was published (MEINANDER 1972), I recognized 31 species from America of which nine were reduced into synonymy and the male genitalia of seven (ENDERLEIN 5, NAVAS 1 and SMITH 1) are not figured. Of the accepted 22 species, seven were from the United States. In my revision I recorded 33 new species, 23 of which were from Canada and/or the U.S. The total number in 1972 thus was 55 species of which 30 were recorded from the U.S. and Canada.

After my revision a boom of new species appeared; I know of 78 described and undescribed new species, i.e., 23 more than all species in my revision. Of them, only 16 species are from U.S., making the total sum at present 133 American species, of which 45 have been recorded from the U.S. and Canada.

Although many species remain to be described, we have reached a fairly good knowledge of the species diversity in America. In large collections from southern parts of South America which I recently investigated, I did not find any new species. It is true that the number of species there is comparatively low, but when I recently got material from the Amazon containing 119 specimens which could be identified (many females which could not be identified were not counted), I could recognize 25 species of which only four were new. The new species all belonged to the genus **Coniopteryx**, three to **Scotoconiopteryx** and one to **Coniopteryx** s. str.

## THE HOLARCTIC ELEMENT

The holarctic element dominates in North America; of 44 species recorded in the U.S. and Canada, two thirds or 28 species belong to holarctic generic taxa.

**Aleuropteryx** is distributed in the holarctic region and in South Africa. All eight North American species belong to the **A. loewii** group, which also occurs in Europe and Asia Minor. Of the eight North American species, seven are restricted to Southwest U.S.A. and Mexico. In the east the European species **A. juniperi** is recorded quite recently and thus may be introduced, as there is no single old specimen in the collection.

The subfamily Aleuropteryginae is represented in Europe by still another genus **Helicoconis**, of which four species are recorded from North America. **H. walshi** occurs in the forested northern parts of the U.S. and Canada, **H. similis** in western Canada and **H. californica** in California. Moreover there is a record of the European species **H. lutea** labelled Pa. Spring Br. DDT Exp 1945. It thus may have been introduced for biological control experiments, as I suspected in my revision (1972). It has, however, later been recorded from Canada and Alaska, which indicates that whether it is introduced or not, it occurs in natural habitats with a large distribution.

Of the **Coniopteryx**, two subgenera are holarctic. Two of the European subgenera, **Holoconiopteryx** and **Metaconiopteryx**, do not occur in North America.

Among the subgenus **Coniopteryx** s. str. the holarctic element is represented by **C. tineiformis**, which is spread throughout Europe and North America (from coast to coast) (Alaska - New Foundland) in the northern coniferous belt.

The subgenus **Xeroconiopteryx** which lives on low vegetation mainly in rather dry environments is represented by four species in the more arid parts of the Midwest.

**Parasemidalis**. The only European species **P. fuscipennis** occurs in the U.S. from Florida and Michigan to California as well as in Mexico.

**Conwentzia** is mostly recognized by its reduced hind wings; of 11 species all but one have reduced hind wings. In California and Mexico **C. barretti** with long hind wings is very common. Another brachypterous species also occurs on the west coast, but furthermore both European species are recorded from North America: **C. pineticola** is common in the eastern U.S. while **C. psociformis** has been recorded several times, most probably introduced for biological control. Some recent finds indicate that it has managed to spread and now lives in nature.

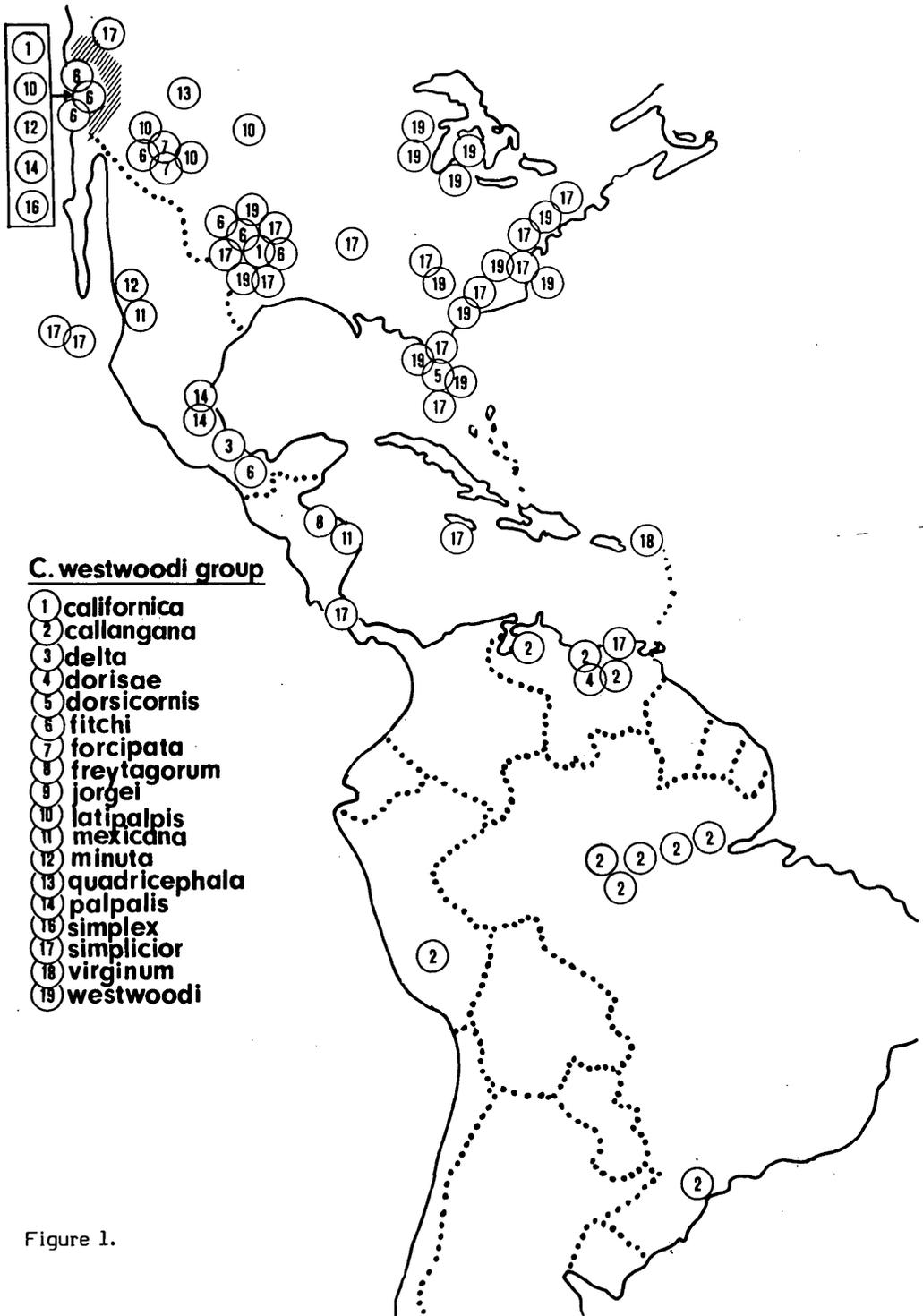


Figure 1.

Among **Semidalis**, ten species are recorded from North America. The genus is distributed world-wide and from America 35 species are listed. Among them **S. vicina** is interesting because it is common in the U.S. east of the Mississippi but was recorded in the early 1970ies in various Mediterranean countries. Is it possibly introduced from America?

Unrepresented among the European genera are only **Hemisemidalis** and **Nimboa**, both distributed mainly in Asia and Africa, and in the genus **Coniopteryx** the subgenera **Holo-** and **Metaconiopteryx**. There are seven species with a holarctic distribution; of eight species recorded from Canada, five species are holarctic.

31 of the 46 species in North America belong to definite holarctic generic taxa. The remaining 15 species belong to the monotypic **Bidesmia** from New Mexico, and to **Neoconis** and **Coniopteryx** s. str. **Bidesmia** was described by JOHNSON in 1976 and shall be grouped in the vicinity of **Helicoconis**, and can thus be grouped with the holarctic element although now put into a genus of its own. The genus **Neoconis** is definitely a Gondwanian genus (MEINANDER 1979). Within the subgenus **Coniopteryx**, the holarctic **C. tineiformis** has already been mentioned. This subgenus, which has a world-wide distribution, is in North America also represented by the American **C. westwoodi** group with 11 species in the U.S.

The **Coniopteryx westwoodi** group with 18 species is defined by several characters in the male which are not only found in the genitalia: hook on frons, transverse row of setae dorsally of this hook, two setae on first flagellar segment, broadened third and fourth segment of palpi, transverse bifurcate plate at the bottom of the hypandrium and the shape of the parameres. The group has its distributional centre in SW U.S.A. (7 species in California) and Central America. (Fig. 1) Three species occur in eastern U.S.A.; **C. westwoodi** is found from Florida to New Jersey, and from Michigan and Wisconsin to Texas. **C. simplicior** has a wider distribution, having been recorded from New York and Florida to Arkansas and Texas but also from Jamaica, Costa Rica, Mexico and Venezuela. A variation in the genitalia of the extra U.S.A. specimens, however, may indicate that several species are involved. **C. callangana** has wide distribution in South America and is recorded from Venezuela and Peru down to Southern Brazil.

There are some species of **Coniopteryx** s. str. which cannot be grouped within the **C. westwoodi**-group: **C. dominicana** from Dominica, **C. gordica** and **C. paranana** from the Amazonas.

## THE NON-HOLARCTIC ELEMENT

If we consider all the **Coniopteryx** s. str. belonging to the holarctic element, in North America there remains only the genus **Neoconis** (Fig. 2) which is widespread with 15 species from California to Paraguay. I have shown (1979) that the sister group of **Neoconis** is most probably **Pampoconis**, another South American genus, and that their common sister group is formed by the two genera **Paraconis** and **Cryptoscenea** which occur in Australia and Southeast Asia. Both **Neoconis** and **Pampoconis** should thus be of Gondwanian element.

This distribution of **Pampoconis** (Fig. 3) is restricted to Southern Chile and SW Argentina, from where there are several records of the four described species.

Another small endemic South American genus is **Incasemidalis** belonging to the Coniopteryginae. There are three species, all from rather high altitudes in the Andes (Fig. 4) and all three known only by a single specimen. The dominant coniopterygid group in South America is the subgenus **Scotoconiopteryx**, with 28 described species and many new ones being found all the time. The genus seems to have its distributional centre in the rain forests, with 19 species recorded only from the Amazonas and four species from the Central American isthmus. (Fig. 5)

Figure 2.

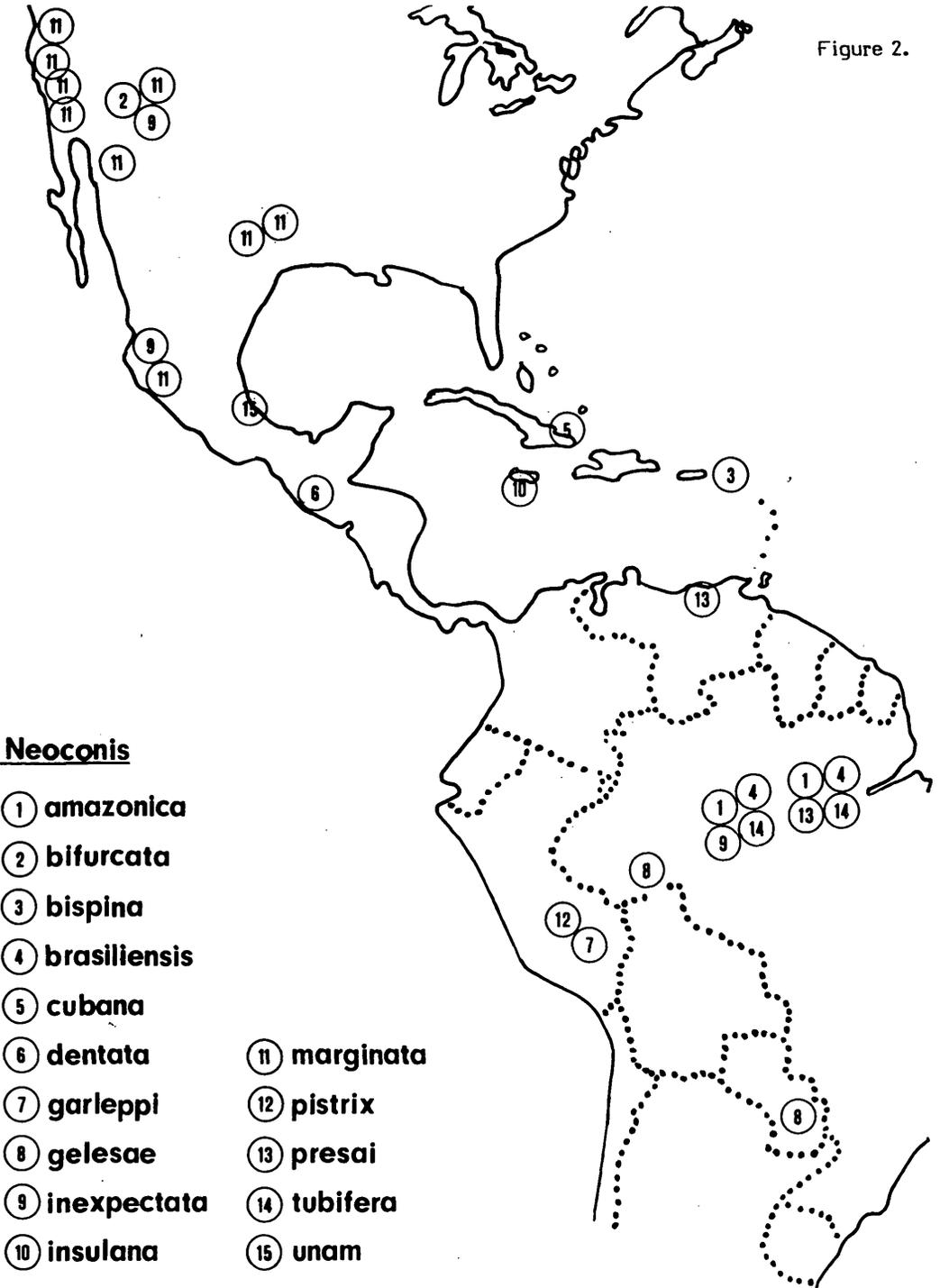




Figure 3.



Figure 4.

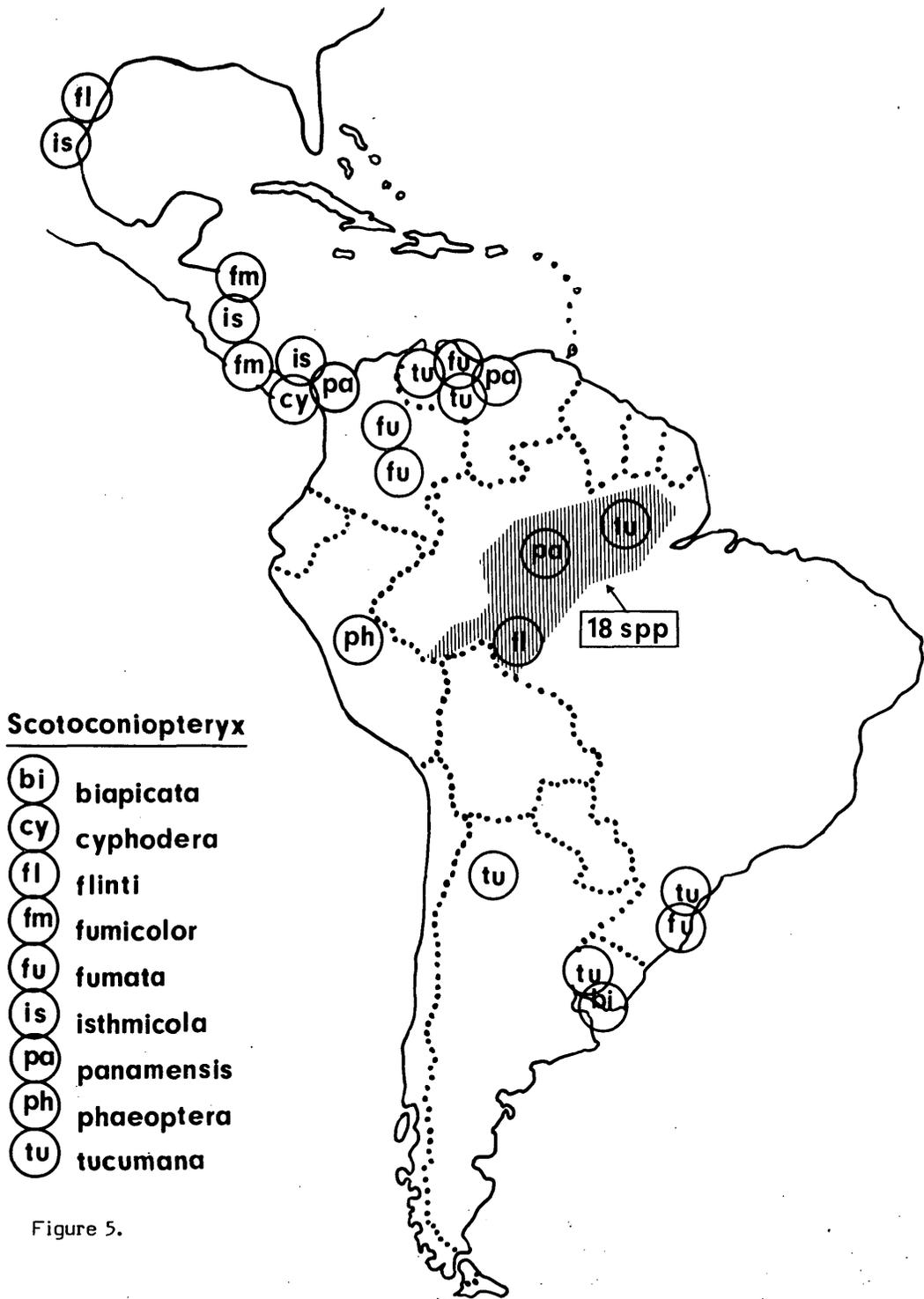


Figure 5.

## GENUS SEMIDALIS

A particularly difficult problem is the world-wide genus **Semidalis**. There are 35 species listed from America, many of them distinct and with a wide distribution. There are, however, also some complexes of species in which there is a rather big variation in the genital sclerites, the only species character which is somewhat reliable in this genus.

We need much more material before it is possible to decide how many species are included in these groups, and it is likely that many of the described species will prove to be synonymous. In my revision (1972) I indicate a variation in **S. aleyrodiformis** which is related to its geographical distribution and seems to be reminiscent of a cline.

## CHECK-LIST OF THE AMERICAN SPECIES

### Subfamily ALEUROPTERYGINAE

#### **Aleuropteryx** Löw, 1885

- **arceuthobii** Meinander, 1975a:28 - U.S.A.
- **cupressi** Meinander, 1974c:218 - U.S.A.
- **juniperi** Ohm, 1968 - U.S.A., Europe, N. Africa.
- **longipennis** Meinander, 1974c:218 - Mexico.
- **maculipennis** Meinander, 1972 - U.S.A.
- **punctata** Meinander, 1974c:220 - Mexico.
- **simillima** Meinander, 1972 - U.S.A.
- **unicolor** Meinander, 1972 - U.S.A., Mexico.
- **vulgaris** Meinander, 1972 - U.S.A.

#### **Helicoconis** Enderlein, 1905

- **californica** Meinander, 1972 - U.S.A.
- **lutea** (Wallengren, 1871) - Alaska, Canada, U.S.A., Europe, Siberia.
- **similis** Meinander, 1972 - Canada, U.S.A.
- **walshi** (Banks, 1906) - Canada, U.S.A.

#### **Neoconis** Enderlein, 1929

- **amazonica** Meinander, 1983:180 - Brazil.
- **bispina** Meinander, 1972 - Virgin Ids.
- **bifurcata** Meinander, 1974c:223 - U.S.A.
- **brasiliensis** Meinander, 1980:130 - Brazil.
- **cubana** (Banks, 1938) - Cuba.
- **dentata** Meinander, 1972 - Guatemala, Costa Rica.
- **garleppi** (Enderlein, 1906) - Peru.
- **gelesae** Monserrat, 1981a:155 - Brazil, Paraguay.
- **inexpectata** Meinander, 1972 - U.S.A., Mexico.
- **insulana** (Meinander, 1974d:98) - Jamaica.
- **marginata** Meinander, 1972 - U.S.A., Mexico.
- **tubifera** Meinander, 1980:131 - Brazil.
- **pistrix** (Enderlein, 1906) - Peru.
- **presai** Monserrat, 1983:138 - Venezuela, Brazil.
- **unam** Monserrat, 1985 - Mexico.

#### **Pampoconis** Meinander, 1972

- **dentifera** Meinander, 1973:24 - Chile, Argentina.
- **latipennis** Meinander, 1972 - Chile, Argentina.
- **punctipennis** Meinander, 1973:25 - Chile.
- **uncinata** Meinander, 1973:25 - Chile.

**Bidesmia** Johnson, 1976

- **morrisoni** Johnson, 1976:193 - U.S.A.

Subfamily **CONIOPTERYGINAE**

**Coniopteryx** Curtis, 1864

subgenus **Xeroconiopteryx** Meinander, 1972

- **canadensis** Meinander, 1972 - Canada, U.S.A.
- **diversicornis** Meinander, 1972 - U.S.A., Mexico.
- **meinanderi** Johnson, 1980b:186 - U.S.A.
- **texana** Meinander, 1972 - U.S.A.

subgenus **Scotoconiopteryx** Meinander, 1972

- **amazonica** Meinander, 1980:134 - Brazil.
- **ariasi** Meinander, 1980:135 - Brazil.
- **biapicata** Meinander, 1983:182 - Uruguay.
- **bilinquata** Meinander in litt - Brazil.
- **bicornis** Meinander, 1982:193 - Brazil.
- **brasiliensis** Meinander, 1983:182 - Brazil.
- **canopia** Meinander, 1982:194 - Brazil.
- **confluens** Meinander, 1983:183 - Brazil.
- **cucuminicola** Meinander, 1982:194 - Brazil.
- **cyphodera** Johnson, 1978:163 - Panama.
- **flinti** Meinander, 1975a:30 - Mexico.
- **fumata** Enderlein, 1907 - Colombia, Venezuela, Brazil.
- **funicolor** Meinander, 1972 - Honduras, Costa Rica.
- **furcata** Meinander, 1983:184 - Brazil.
- **indivisa** Meinander, 1980:137 - Brazil.
- **isthmicola** Meinander, 1972 - Mexico, Honduras, Panama.
- **panamensis** Meinander, 1974d:100 - Panama, Venezuela, Brazil.
- **paraensis** Meinander in litt. - Brazil.
- **pennyi** Meinander, 1980:137 - Brazil.
- **phaeoptera** (Enderlein, 1906) - Peru.
- **quadricornis** Meinander, 1982:199 - Brazil.
- **rafaeli** Meinander in litt. - Brazil.
- **rondonienseis** Meinander, 1982:201 - Brazil.
- **silvicola** Meinander, 1982:201 - Brazil.
- **sinuata** Meinander, 1983:185 - Brazil.
- **torquata** Meinander, 1980:140 - Venezuela, Brazil.
- **trispina** Meinander, 1983:186 - Brazil.
- **tucumana** Navas, 1930 - Venezuela, Brazil, Argentina, Uruguay.

subgenus **Coniopteryx** Curtis, 1864

species group **tineiformis**

- **tineiformis** Curtis, 1834 - Alaska, Canada, U.S.A. Europe, Asia Minor.

species group **westwoodi**

- **californica** Meinander, 1974c:225 - U.S.A.
- **callangana** Enderlein, 1906 - Mexico, Venezuela, Peru, Brazil, ?Argentina.
- **delta** Johnson, 1980b:181 - Mexico.
- **dorisae** Monserrat, 1983a:141 - Venezuela.
- **dorsicornis** Johnson, 1980b:183 - U.S.A.
- **fitchi** Bankš, 1895 - U.S.A., Mexico.
- **forcipata** Johnson, 1980b:185 - U.S.A.
- **freytagorum** Johnson, 1978:163 - Honduras.
- **jorgei** Meinander, 1982:203 - Brazil.
- **latipalpis** Meinander, 1972 - U.S.A.

- **mexicana** Meinander, 1974c:226 - Mexico, Honduras.
- **minuta** Meinander, 1972 - U.S.A., Mexico.
- **palpalis** Meinander, 1972 - U.S.A., Mexico.
- **quadricephala** Johnson, 1980b:188 - U.S.A.
- **simplex** Meinander, 1974c:228 - U.S.A.
- **simplicior** Meinander, 1972 - U.S.A., Jamaica, Mexico, Costa Rica, Venezuela.
- **virginum** Meinander in litt. - Virgin Islands.
- **westwoodi** (Fitch, 1856) - U.S.A.

species group **dominicana**

- **dominicana** Meinander, 1974d:101 - Dominica.
- **gordica** Meinander, 1983:187 - Brazil.
- **paranana** Meinander in litt - Brazil.

species with undescribed male genitalia

- **angustipennis** Enderlein, 1906. - Argentina, Paraguay.
- **haitiensis** Smith, 1931 - ? Cuba, Haiti.
- **obscura** Navás, 1934 - Mexico.

**Parasemidalis** Enderlein, 1905

- **fuscipennis** (Reuter, 1894) - U.S.A., Mexico, Europe.

**Incasemidalis**, 1972

- **columbiensis** Meinander, 1972 - Columbia.
- **meinanderi**, Adams, 1973a:253 - Chile.
- **peruviensis**, Meinander, 1972 - Peru.

**Conwentzia** Enderlein, 1905

- **barretti** (Banks, 1899) - U.S.A., Mexico.
- **californica** Meinander, 1972 - U.S.A., Mexico.
- **pineticola** Enderlein, 1905 - Canada, U.S.A., Europe, N. Asia, N. Africa.
- **psociformis** (Curtis, 1834) - Canada, U.S.A., Europe, SW Asia, N. Africa.

**Semidalis** Enderlein, 1905

- **absurdiceps** (Enderlein, 1908) - Bolivia.
- **amazonensis** Meinander, 1980:142 - Brazil.
- **angusta** (Banks, 1906) - U.S.A.
- **arnaudi** Meinander, 1972 - Mexico.
- **bituberculata** Meinander in litt. - U.S.A.
- **boliviensis** (Enderlein, 1905) - Mexico, Venezuela, Bolivia.
- **brasiliensis** Meinander, 1974d:103 - Brazil.
- **byersi** Meinander, 1972 - Mexico.
- **deserta** Meinander, 1974c:230 - U.S.A.
- **ecuadoriana** Meinander, 1983:189 - Ecuador.
- **faulkneri** Meinander in litt. - Mexico.
- **flinti** Meinander, 1972 - U.S.A., Mexico.
- **frommeri** Meinander, 1974c:231 - U.S.A. Mexico.
- **hidalgoana** Meinander, 1975a:31 - Mexico.
- **inconspicua** Meinander, 1972 - U.S.A.
- **intermedia** Monserrat, 1983-149 - Venezuela.
- **isabelae** Monserrat, 1981a:158 - Paraguay.
- **kolbei** Enderlein, 1906 - Chile, Argentina.
- **lolae** Monserrat, 1983 - Venezuela.
- **manausensis** Meinander, 1980:144 - Brazil.
- **marginalis** (Banks, 1930) - Cuba.
- **mexicana** Meinander, 1972 - Mexico.
- **nivosa** Enderlein, 1906 - Peru.

- **normani** Meinander, 1982:205 - Brazil.
- **panamensis** Meinander, 1974d:103 - Panama.
- **peruviensis** Meinander, 1974d:105 - Peru.
- **problematica** Monserrat, 1985a:219 - Mexico.
- **rondoniense** Meinander, 1982:206 - Brazil.
- **serrata** Meinander, 1983:190 - Brazil.
- **soleri** Monserrat, 1985a:216 - Mexico.
- **sonorana** Meinander, 1975a:32 - Mexico.
- **tricornis** Johnson, 1980b:191 - U.S.A., Mexico.
- **vicina** (Hagen, 1861) - Canada, U.S.A., Europe, N. Africa.
- **wallacei** Meinander, 1972 - U.S.A.
- **xerophila** Meinander in litt. - U.S.A.

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