

## Recent Progress in the Taxonomy of South American Neuroptera

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The Neotropical Region contains 15 or 16 families of Neuroptera, depending on what taxonomic level the Brucheiseridae are placed. This region contains some very primitive forms, and links in some families to the Australian fauna are strong. However, the taxonomic study of this region has been very minimal until quite recently. In great part this is due to the after-effects of the many years Padre Longinos Navás dominated the systematic study of Neuroptera of this region. Between 1908 and 1936 he described 582 species and subspecies from the Neotropical Region in 148 articles. The brief descriptions, poor illustrations, lack of adequate depository for many type specimens and a tendency to give great emphasis to small variations, all conspired to create an extremely confusing taxonomic situation in this region. For about 25 years after the death of Padre Navás very little comprehensive work was done on the South American fauna. However, through the combined efforts of several conscientious researchers the fauna of this region is beginning to be much better organized. Let me go through the South American families briefly, pointing out the recent progress in each.

**1. CORYDALIDAE** – In 1973 Dr. Oliver Flint, Jr. described the Corydalidae of Chile. This paper includes all of the Chauliodinae from South America. The Corydalidae includes only two genera, *Chloronia* and *Corydalis*. Dr. Flint and I have a manuscript ready, revising *Chloronia*, while Michael Glorioso is actively revising *Corydalis*, and Dr. Geijkes has a new species from Surinam.

**2. SIALIDAE** – The article by Dr. Flint on Megaloptera of Chile includes a good description of *Sialis chilensis*. Four other species of *Protosialis* have been described from South America on the basis of single females. These species are still very poorly known.

**3. ASCALAPHIDAE** – The last comprehensive works on South American Ascalaphidae were produced by Weele (1910) and Navás in 1913. In 1945 Williner produced a paper on the Ascalaphidae of Argentina. More recently, Timothy New in 1971 described the repagula for six genera of Amazonian ascalaphids, and C. S. Henry in 1976 has given us more information on larval taxonomy of American Ascalaphidae.

**4. BEROETHIDAE** – Only three species of Beroethidae are known from South America – these from Chile and Argentina. Ellis MacLeod and Phillip Adams reviewed what is known of these insects in 1967.

**5. BRUCHEISERIDAE** – This little known group was originally described by Navás 1927 and virtually forgotten until Edgar Riek described a new species from Chile in 1975, at the same time reviewing the affinities, or lack of affinities for these small, strange neuropterans. There are presently only two species known from Argentina and Chile. Phillip Adams has recently found another primitive species in Chile and suggested that this group is actually a primitive group of Coniopterygidae.

**6. CHRYSOPIDAE** – The green lacewings have long been in a horrible mess, with many homonomies and untold numbers of synonymies. However, finally good progress is being made, especially by Phillip Adams. In 1978 he published a synopsis of subfamilies, tribes, and genera currently recognized in the New World. This classification recognizes two subfamilies: Nothochrysininae and Chrysopinae. A 1967 article by the same author has reviewed current knowledge of Mesochrysininae (now extinct) and Nothochrysininae. Dr. Adams has further divided the Chrysopinae into four American tribes: Apochrysinini, Belonopterygini, Leucochry-

sini, and Chrysopini. Dr. D. E. Kimmins in 1952 reviewed our taxonomic knowledge of Apochrysinini, and I believe Dr. Adams is completing a revision of some parts of the Belonopterygini. However, much more still remains to be done on the Chrysopini and Leucochrysinini.

**7. CONIOPTERYGIDAE** – Dr. Meinander's 1972 world revision of the Coniopterygidae has given us a much strengthened knowledge of this fauna in South America. Drs. Adams and Meinander have subsequently added six more species from the South American fauna, and I have at this symposium received a paper describing nine new Amazonian species.

**8. DILARIDAE** – Phillip Adams in 1970 revised the New World Dilaridae, placing all of them in *Nallachus* of the subfamily Nallachiinae. His revision recognized 11 South American species, and no others have since been described.

**9. HEMEROBIIDAE** – In 1960 Waro Nakahara revised the classification of Hemeroibiidae, based almost entirely on male genitalia. Unfortunately, many of the South American genera were excluded for lack of material. In 1965 he added a few more species' names to the South American fauna, but essentially the Hemeroibiidae of this region remain little studied and virtually unknown.

**10. MANTISPIDAE** – The basic classification for this family remains the classification erected by Enderlein 1910. Subsequently, the names *Nobrega NAVÁS* and *Paramantispa WILLINER* and *KORMILEV* have been added to the list of South American genera. Williner and Kormilev in 1959 revised the Mantispidae of Argentina and Handschin in 1960 revised South American species of *Paramantispa*, *Entanoneura* and *Climaciella*. Parker and Stange (1965) reviewed the Platymantispini, a tribe found exclusively in the New World. However, much work still needs to be done to clarify the classification of many South American genera, especially *Mantispa*. Kevin Lambkin in Australia is working on a revision of the higher classification of this family, and has informed me that *Mantispa* must necessarily be divided into several genera. In South America, the genera *Nobrega*, *Entanoneura* and *Necyla* are all closely related to *Mantispa* and differential characters have been hard to find. Even with the better classification system of Lambkin's, the complexity of species in South America will require much more study.

**11. MYRMELEONTIDAE** – This family, which rivals the Chrysopidae in number of described forms, is now being better organized within the region. L. A. Stange set the basic higher classification in 1970. He recognizes in the New World three subfamilies: Acanthaclisinae, Palparinae and Myrmeleontinae. Palparinae includes only one New World genus, *Dimares*. Acanthaclisinae is a small group needing relatively little revisory work. Myrmeleontinae contains five New World tribes: Dendroleontini, Brachynemurini, Myrmeleontini, Porrerini and Glenurini. Dr. Stange has revised the New World Glenurini in 1970, and the Dendroleontini in 1976. The Porrerini is a small tribe, consisting of only one genus. The Brachynemurini and Myrmeleontini are very large groups that have not been revised for this region. Much more work needs to be done.

**12. NEMOPTERIDAE** – This is a very small family in South America, with only three species known from Argentina and Chile. The most recent work was a paper by Orfila in 1954. Dr. Stange has informed me that he has a new species from Argentina that is being described now, but I have not yet seen the published results.

**13. OSMYLIDAE** – Most of the recognized subfamilies of Osmylidae were erected by Krüger in 1913. Three subfamilies are found in South America: Protosmylinae, Stenosmylinae and Kempyninae. Adams in 1969 erected a new genus and species from Chile, and in 1971 added a new species from Argentina and Chile. Thus, we have ten species in five genera presently recognized. The five species of *Isostenosmylus* were revised by Kimmins in 1940. There is much variation in morphology among individuals, but it appears that more species remain to be described. A good summation of all species, with variations noted is needed.

**14. POLYSTOECHOTIDAE** – Only four species of this New World family exist, two of them in Chile. Navás described *Polystoechotes gazullai* in 1924 and *Fontecilla graphicus* in 1932. Both are poorly known and better descriptions are needed.

**15. SISYRIDAE** – The New World Sisyridae were revised by Parfin and Gurney in 1956. They recognized two genera, *Sisyra* and *Climacia*, with *Sisyra* confined to northern South America and *Climacia* found throughout the region. No other species have subsequently been described.

**16. STILBOPTERYGIDAE** – Edgar Riek in 1976 has presented evidence for the separation of this group from both the Ascalaphidae and Myrmeleontidae. Only one species is known from coastal Brazil, *Albardia furcata*.

Much of this literature is not readily available, especially in Latin America. Most entomologists working in Latin America have no way of identifying Neuroptera below family level, and must of necessity leave collections unidentified. I feel that it is *my* main role to synthesize what is already known and published into a form that will allow other entomologists to quickly and easily identify South American material.

I have been collecting Neuroptera throughout the Brazilian Amazon Basin for four years, and have started a series of ten articles covering each of the ten families found in the region. Parts I to IV have been submitted to *Acta Amazonica*, and should appear within the next year. Part I covers Sisyridae. Five species of *Sisyra* and three species of *Climacia* are described, including three new species. Part 2 covers the three species of Dilaridae known from the region, all new to science. Part 3 covers eight genera and 19 species of Amazonian Ascalaphidae, including new species of *Ameropterus*, *Ascalobyas* and *Neohaploglenius*. Part 4 covers a single new species of *Protosialis* encountered in Amazonia. I am presently working on parts covering the five species of Hemerobiidae, 24 species of Mantispidae and six species of Corydalidae known from this region. I hope to have these parts finished this next year. Dr. Meinander has graciously agreed to describe our species of Amazonian Coniopterygidae. Hopefully, these and a part covering Myrmeleontidae can be completed in the next couple of years.

In order to complete these parts, it has been necessary to review the higher classification of both Ascalaphidae and Mantispidae. I have found *Episperches* to be a synonym of *Amoeba*. The generic name *Byas* is preoccupied not once, but twice, and a new name, *Ascalobyas*, has been proposed. Finally, I found a new species and two known species of *Haploglenius* showing characters quite apart from other members of the genus, and even more similar to *Amoeba*. These three species I put in a new genus, *Neohaploglenius*.

In Mantispidae I have found a direct correlation between wing length, form of the third radial cell, and number of radial veins. This puts the generic names *Entanoneura* and *Necyla* under suspicion of only being size variants of *Mantispa*. However, I have chosen to retain these names for the present. The characters used for separation of *Nobrega* are of very dubious value, and I think that the genus will be synonymized. The generic name *Anchieta* was created by Navás in 1909, but synonymized by both Enderlein in 1910 and Banks in 1913. However, I have found several differentiating characters, and thus resurrected the name *Anchieta*.

There is still much that needs to be done on the taxonomy of South American Neuroptera, but if the present trend continues, we should expect to have an organized, if not complete, classification for this region in about 20 years time.

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