

# Present knowledge of Italian Neuropterida: history, distribution and current problems

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Fourteen families of Neuropterida, including 185 recorded taxa (species and subspecies) in 69 genera, occur in Italy. A review of the history of faunistical studies, an overview of territorial distribution, and notes on current problems are presented.

## 1. Introduction

Despite intensive studies in the past, and the availability of a good amount of data on the Neuropterida of Italy (more than over 330 publications), only a few recent works have attempted to summarize the information on faunistical distribution (Letardi 1994), or even simply to present a list of all recorded species (Bernardi Iori *et al.* 1995). The aim of this contribution is to highlight the present status of knowledge on the Neuropterida of Italy and the main taxonomic and faunistic problems on which to focus research in the future.

## 2. A brief history of studies on Italian Neuropterida

### 2.1. The 18th century

In 1733 Antonio Vallisneri, in a posthumous work, described the life-history of a Myrmeleontidae named "*Verme Formicario*" (*Myrmecoleon*) most likely coming from the northern Adriatic coast.

The first well-located record of an Italian Neuropterida was in Allioni's (1766) publication "*Manipulus Insectorum Tauriniensis*", with two lacewings (most likely *Chrysoperla* sp. and *Chrysoperla* (Linnaeus)) collected around Turin, North Italy. Allioni was also the collector of the ascalaphids on which Fabricius described *Libelloides italicus* (as *Ascalaphus italicus*). In 1774, Ginanni recorded *Euroleon nostras* (Fourcroy) in pine-wood around Ravenna (Northern Adriatic coast). Finally, in the last decade of the century, due to the studies of Domenico Cirillo and Vincenzo Petagna in southern Italy, and chiefly to the activities of Pietro Rossi in Central and northern Italy, the size of the known Neuropteridofauna rose to a couple of dozen taxa. Pietro Rossi, who was the first University Professor of Entomology in the world, described in his works (1790, 1792) two new species, *Hemerobius italicus* and *Myrmeleon flavicornis* (now *Italo-chrysa italica* and *Megistopus flavicornis*), with their "locus typicus" in two Italian sites (respectively Florence and Pisa). Rossi also first recorded a Megaloptera and a Raphidioptera for Italy.

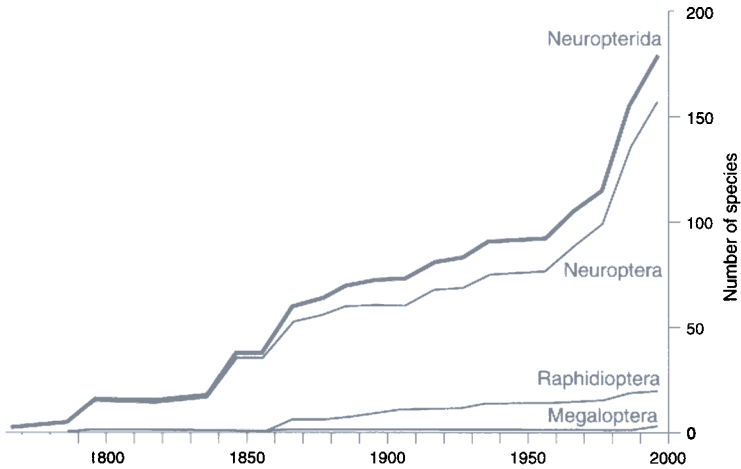


Fig. 1. Cumulative numbers of Neuropterida species and subspecies reported in Italy by year.

## 2.2. The 19th century

During the 19th century, the number of studies on Italian Neuropterida greatly increased. Besides some European, mostly German-speaking researchers (neuropterologists of world fame like W. G. Schneider, H. A. Hagen, J. H. Albarda, and others), there were a good number of keen local entomologists, some highly skilled, engaged in collecting and studying these insects. Among them, Achille Costa stood out for his importance. Together with his father Oronzio Gabriele and his brother Giuseppe, he studied large areas of central and southern Italy, describing several new species, some of them still valid at specific and even at generic level. With the works of A. Costa (1855, 1858, 1863), C. Tacchetti (1861) and other foreign entomologists, in the second half of the century the number of known Italian Neuropterida rose to 60 taxa.

## 2.3. The 20th century

During the first half of the 20th century, L. Navás, the most prolific author on Neuropterida, made great contributions to the knowledge of this group of insects for Italy (he also contributed to faunistic and taxonomic disorder, describing a lot of new species, actually considered probable synonyms or *nomina dubia*). From the middle of the century until now, the Italian neuropterologist scene has been dominated by the works of Maria Matilde Principi (1952, 1956, 1958, 1960, 1961, 1966),

forerunner in a field of practical interest such as biological pest control (she was one of the first Italian researchers to promote this practice among agronomists). She and her pupil R. A. Pantaleoni are co-authors of the recent checklist of Neuropteridofauna of Italy (Bernardi Iori *et al.* 1995), which actually represents the reference point for taxonomic and faunistic studies in Italy, together with the basic European Fauna of Aspöck *et al.* (1980) and a contemporaneous work of Monserrat (1980). The just-printed review of Aspöck and Hölzel (1996) on Neuropterida of the Mediterranean is also very useful for the understanding of the faunistic relationships of the Italian fauna inside this West-Palaearctic area. Numbers of Neuropterida known in Italy by year are shown in Fig. 1.

## 3. Distribution

The data on the distribution and zoogeographical characteristics of Italian species are drawn from over 330 publications included in a computer database. Unpublished data from my collection and other sources (private collections, R. A. Pantaleoni pers. comm.) are also considered. The Italian territory is divided according to the political boundaries of regions. These administrative territories are grouped in seven areas, zoogeographically quite homogeneous. They are:

- the north-eastern Alps
- the north-western and Central Alps
- northern Appennins

- central Appennins
- southern Appennins
- the Sicily and Sicilian islands, and
- the Sardinia and Sardinian islands.

The total number of taxa (species and subspecies) of Italian Neuropterida is 185; the numbers for the different areas are given in Fig. 2.

The zoogeographical categories in Table 1 follow Vigna Taglianti *et al.* (1992): they are grouped in chorotypes widespread in all or part of the Holarctic region (I), widespread only in Europe (II), widespread in the Mediterranean basin (III), and Afrotropical or Indomalayan chorotypes, but also occurring in Mediterranean countries (IV).

Mediterranean taxa are prevalent (31.5% of all Neuropterida), followed by European species (27%) and Siberian–European taxa (12.5%). A view of chorotypes of the four largest Neuroptera families in Italy (i.e. Coniopterygidae, Hemerobiidae, Chrysopidae and Myrmeleontidae) is given in Table 1.

Species of southern origin are prevalent. All Sialidae are of northern origin, while all Inocelliidae, Osmylidae, Nevrothidae, Berothidae, Mantispidae, Dilaridae, and Ascalaphidae are of southern origin. In Hemerobiidae, northern taxa are prevalent, while in Myrmeleontidae southern taxa prevail; in Coniopterygidae and Chrysopidae they are about equally frequent.

The unsatisfactory degree of knowledge about the distribution in some areas (see Section 4) does not allow a more definite analysis.

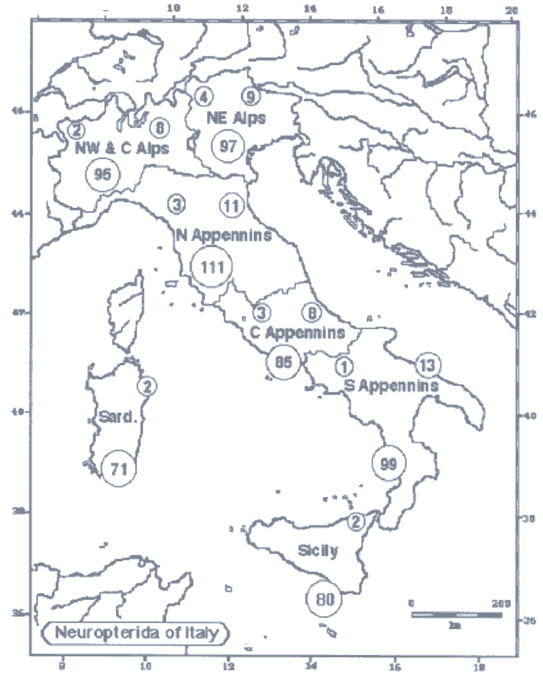


Fig. 2. Numbers of taxa (species and subspecies) of Italian Neuropterida in different zoogeographical areas. In each area the numbers denote: Megaloptera (top left), Raphidioptera (top right) and Neuroptera (bottom).

#### 4. Current problems

The study of Italian Neuropterida still presents problems to solve both taxonomically and faunistically: the two aspects are often strictly related.

Table 1. Chorotypes of Italian Megaloptera, Raphidioptera and Neuroptera (Coniopterygidae, Hemerobiidae, Chrysopidae and Myrmeleontidae in parentheses)

Chorotype	Meg.	Raph.	Neur.	(Con.)	(Hem.)	(Chr.)	(Myr.)
I Holarctic			11	(5)	(5)	(0)	(0)
Palearctic			2	(1)	(0)	(1)	(0)
Siberian–European			21	(2)	(9)	(7)	(3)
Euro-Mediterranean			13	(3)	(0)	(4)	(4)
II European	3	5	42	(5)	(19)	(13)	(3)
South-European		6	15	(2)	(7)	(2)	(1)
III Mediterranean		7	51	(3)	(2)	(15)	(18)
IV Afrotropical			4	(0)	(1)	(1)	(2)

From a faunistic point of view, the degree of exploration of different Italian regions is quite heterogeneous in two aspects: some families (e.g. Inocelliidae, Chrysopidae, Ascalaphidae and Myrmeleontidae) have been studied adequately throughout the whole of Italy, while others have been collected only in certain areas, frequently showing an unrealistic scattered distribution. Although a few geographic areas, like Appennins of Romagna (Pantaleoni 1990), Sardinia (Pantaleoni 1994), and some Alp and Prealp areas (Nicoli Aldini 1994), are well known, the degree of exploration of the whole of Italy is very unsatisfactory compared with other analogous Mediterranean areas — i.e. the Iberian and Balkan peninsulas (Popov 1992).

From a taxonomic point of view, besides the broader problems like taxonomic definition of the genera *Neuroleon*, *Dichochrysa* and *Chrysoperla*, other questions to solve are:

- the exact definition of *nomina dubia* *Raphidia ophiopsis* var. *flavilabris* Costa and *R. ophiopsis* var. *fusciventris* Costa (Costa 1855, Aspöck *et al.* 1991, R. A. Pantaleoni pers. comm.)
- faunistic study of the Italian distribution of *Raphidia ophiopsis* and *R. mediterranea* (R. A. Pantaleoni pers. comm.)
- critical evaluation of the southern population of *Subilla confinis* (Pantaleoni pers. comm.)
- exact definition of the taxonomical range of insular populations of *Xanthostigma corsica* (R. A. Pantaleoni pers. comm.)
- critical evaluation of the very old single record of *Isoscelipteron fulvum* Costa from Aspromonte, Calabria (Costa 1855, Aspöck & Aspöck 1980, R. A. Pantaleoni pers. comm.)
- a review of *Dilar* spp. (Letardi 1994, Aspöck & Aspöck 1995, Pantaleoni & Letardi 1996)
- a review of *Sympherobius* gr. *pygmaeus* (R. A. Pantaleoni pers. comm.)
- critical evaluation of *Megalomus* spp. (R. A. Pantaleoni pers. comm.)
- the exact definition of *nomina dubia* *Mucropalpus parvulus* Rambur and *Chrysopa bifidilinea* Costa in Sardinia (Costa 1884, Pantaleoni 1994, R. A. Pantaleoni pers. comm.)
- the exact definition of *Brinckochrysa* sp. of Peninsular Italy (Letardi & Pantaleoni 1996)
- critical evaluation of the *Dichochrysa flavifrons* and *D. prasinus* complexes (Bernardi Iori *et al.* 1995, Cianchi & Bullini 1996, R. A. Pantaleoni pers. comm.)
- the exact definition of taxon *Dichochrysa* sp. pr. *picteti* (Bernardi Iori *et al.* 1995, R. A. Pantaleoni pers. comm.)
- a review of *Creoleon* spp. (Pantaleoni & Lo Valvo 1995), and
- the exact definition of *Megistopus? mirabilis* of Central Italy (Letardi & Pantaleoni 1996).

Some of these questions are already answered, but there are no published data. Others — including a few possible new species to describe — are presently being evaluated. The problems outlined above emphasize the need for a better knowledge of the Italian Neuropterida. Unfortunately, there are few Italian entomologists (actually no more than half a dozen) really engaged in Neuropterology studies. The next challenge will be to include studies on Italian Neuropterida in larger projects, pointing out also the economic interest of these insects in biological control programmes.

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