

Neuropterida of the Asinara Island (NW Sardinia, Italy)

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It had been impossible to conduct any detailed entomological survey on the Island of Asinara (North-West Sardinia, Italy) for a long time. This first became possible when, in 1997, the island was no longer used as a prison and the National Park of the Asinara was founded. After just over a year's research from September 2003 to October 2004, the list of collected Neuroptera, from the previously recorded 3 species, has reached about 20, *Chrysopa dorsalis* Burmeister, 1839 (new to Sardinia), *Dichochrysa iberica* (Navás, 1903), and *Hemerobius stigma* Stephens, 1836 (quite rare and stenotopic in Sardinia) were recognized on the coastal *Juniperus* formation of Cala Arena. The finding of a small population of *Chr. dorsalis* is of particular interest as the adult specimens have similar chromatic habitus to *Chrysopa regalis*, Navás, 1915, of the Iberian Peninsula.

Key words – Chrysopidae, Hemerobiidae, Coniopterygidae, Myrmeleontidae, Ascalaphidae.

Introduction

In 1885, the few inhabitants of Asinara, shepherds and fishermen, were forced to leave their homes and lands and transfer to the newly built village of Stintino. The island was turned into a penal colony and sanitarium. Consequently Asinara, the largest of the small islands surrounding Sardinia, was not freely accessible to the public until December 1997, when it became a National Park (Gutierrez *et al.*, 1998).

Even today, it is still complicated to carry out any detailed entomological survey on Asinara due to difficulties in moving round and logistic problems on the island. Entomological field trips are expensive and difficult even for Sardinian researchers.

On the other hand, Asinara is not exceptionally attractive from a naturalistic point of view. The island is paying for its disastrous environmental management in the past with the unsustainable burden of

domestic and feral live-stock. Scrub vegetation shows signs of degradation all over. There is only one remaining tiny wooded area, a holm-oak grove in the north of the island (Elighe Mannu). Very few areas are uncontaminated and most of those are on the coast.

Asinara's entomological fauna is still practically unknown (Pantaleoni *et al.*, 1998). A recent checklist of the insects, built on published data, lists only 558 taxa (Nuvoli *et al.*, 2007) of which only 3 belong to Neuropterida.

However, as we have been able to go to Asinara with some frequency, we have been able to collect a small number of Neuropterida specimens belonging to twenty species.

Material and methods

We were able to have access to Asinara (Fig. 1) only on one extraordinary occasion in 1995, during a very short excursion in 2001 and with bi-monthly frequency throughout a year from September 2003 to October 2004.

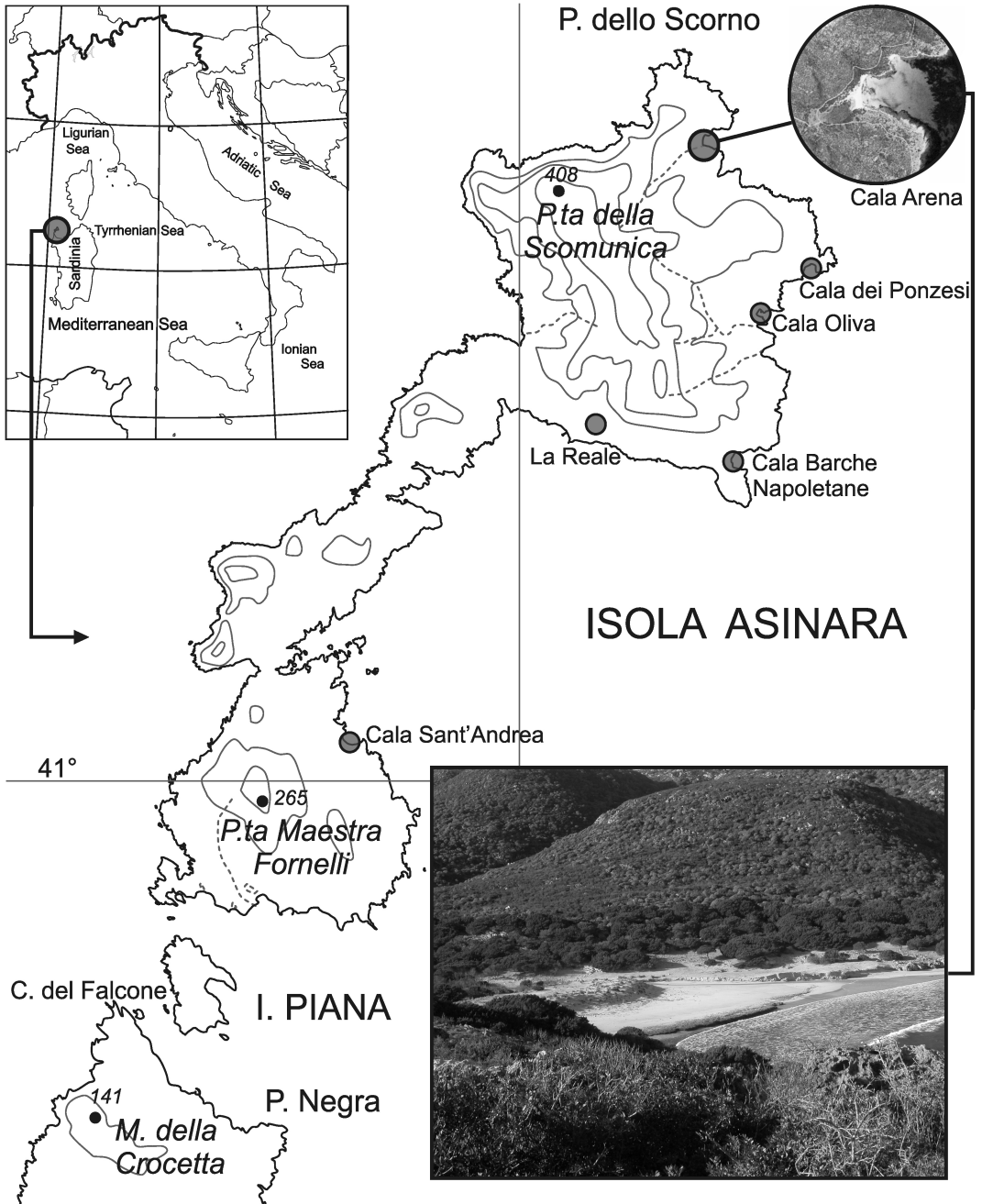


Fig. 1 – Map of Asinara with indications of its geographical position, collection localities, Cala Arena's aerial and landscape photos.

Unfortunately each time it was possible to visit only very few localities spending few hours on Neuropterida collection.

All the collected specimens are conserved in alcohol and preserved in Pantaleoni's collection.

List

Chrysopidae

Chrysopa dorsalis Burmeister, 1839

Cala Arena 1-2 VII 2004 4♂♂ 6♀♀ on *Juniperus*

The Asinara population includes specimens which have the typical characteristics of the species and others whose characteristics are like those of *Chrysopa regalis* Navás, 1915: the broad lines on the vertex becoming rather pale and thin and sometimes ending before they reach the posterior margin of the head; legs scarcely marked blackish; subcosta black at the base for only a fifth/half of the length of the wing; decoloration of the central part of the black stripe that almost covers the dorsal surface of the abdomen. The males tend to be darker than the females (Fig. 2).

Chrysopa formosa Brauer, 1850

Cala Barche Napoletane 15 V 2004 1♂; Cala Oliva

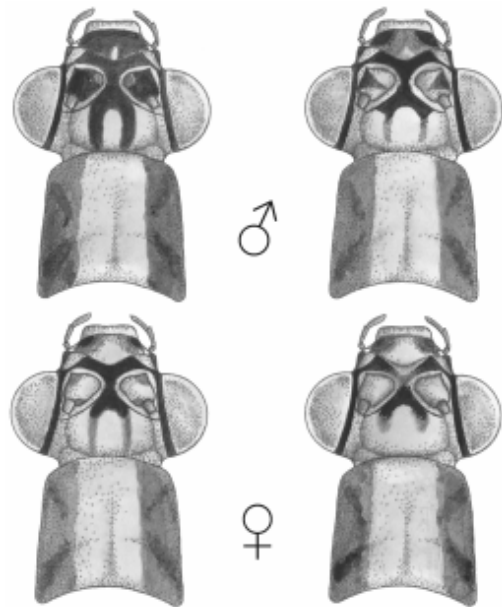


Fig. 2 – Head and prothorax of *Chrysopa dorsalis* from Asinara: darker (left) and paler (right) specimen; above males and below females. (Original draws by M. Mattei).

26 IX 2003 3♂♂ 4♀♀, 1 VII 2004 1♂ 2♀♀, 27 VII 2004 1♀

Dichochrysa clathrata (Schneider, 1845)

Cala Arena 19 VII 1995 1♂

Dichochrysa genei (Rambur, 1842)

Species recognised generically on "Asinara" by Navás (1928: 76).

Dichochrysa iberica (Navás, 1903)

Cala Arena 19 VII 1995 1♂ on *Juniperus*

Dichochrysa sp. pr. picteti (McLachlan, 1880)

Cala Arena 19 VII 1995 2♂♂ 5♀♀; Cala Oliva 26 IX 2003 2♀♀

Chrysoperla pallida

Henry, Brooks, Duelli & Johnson, 2002

Chrysoperla lucasina (Lacroix, 1912)

Chrysoperla agilis

Henry, Brooks, Duelli & Johnson, 2003

Cala Arena, Cala dei Ponzesi, Cala Oliva, Cala Sant'Andrea frequently in 2003 and 2004, many adults

We are not able to discriminate all the collected *Chrysoperla* specimens with certainty. However, on the basis of the songs observed in some male specimens, we can state that at least the three species listed above are present on Asinara.

Navás (1928: 76) recognised this species-group on "Asinara" under the name *Chrysopa vulgaris* Schneider, 1851.

Hemerobiidae

Hemerobius stigma Stephens, 1836

Cala Arena 19 VII 1995 1♂ on *Juniperus*

Coniopterygidae

Conwentzia psociformis (Curtis, 1834)

Cala dei Ponzesi 26 IX 2003 3♂♂, 28 VII 2004 on *Pistacia lentiscus* 4♂♂ 7♀♀, idem from cocoons 2♂♂

Semidalis aleyrodiformis (Stephens, 1836)

Cala dei Ponzesi 26 IX 2003 1♂, 28 VII 2004 on *Pistacia lentiscus* 1♂ 1♀

Semidalis pseudouncinata Meinander, 1963

Cala Arena 26 IX 2003 4♂♂ 5♀♀, 1-2 VII 2004 6♂♂ 6♀♀ on *Juniperus*

Myrmeleontidae

Synclisis baetica (Rambur, 1842)

Cala Arena, Cala dei Ponzesi, Cala Sant'Andrea frequently in 2003 and 2004, many larvae

Myrmeleon gerlindae Hölzel, 1974

La Reale 26 V 2001 1 larva (emerg. 1♂ VII 2002)

Myrmeleon inconspicuus Rambur, 1842
Cala Arena, Cala dei Ponzesi, Cala Sant'Andrea frequently in 2003 and 2004, many larvae

Macronemurus appendiculatus (Latreille, 1807)
Cala Arena 1-2 VII 2004 1♀

Distoleon tetragrammicus (Fabricius, 1798)
Cala Arena 1-2 VII 2004 1♀

Creoleon corsicus (Hagen, 1860)
Cala Arena 1-2 VII 2004 2♂♂

Ascalaphidae

Libelloides corsicus (Rambur, 1842)
Cala Arena 1-2 VII 2004 2♂♂ 5♀♀; Cala dei Ponzesi 28 VII 2004 1♀

Species recognised by A. Costa (1883: 17, 54-55) from the "collina che domina Cala d'Olivo" [hills over Cala d'Olivo].

Discussion and conclusions

Except three (to which we will refer later) all the species recognized from Asinara are common and widespread throughout Sardinia (Pantaleoni, unpublished data). Also *M. gerlindae*, of which we have only generic records in two lists (Pantaleoni, 1994; [Bernardi] lori *et al.*, 1995), is in fact largely widespread on the main island (Pantaleoni, unpublished data).

On the other hand the absence of *Myrmeleon hyalinus* Olivier, 1811, from all of the beaches we have been able to study, is interesting. This species has been replaced by *M. inconspicuus* even in the micro-environments where it usually occurs in Sardinia: under bushes and trees on, or beyond, sand dunes (Pantaleoni, unpublished data).

One of the most interesting environments on Asinara is without doubt Cala Arena with its uncontaminated beach crowned by a well-preserved system of dunes surrounded by *Juniperus* formations of great importance (Fig. 1).

On the junipers we have found some Neuroptera normally linked to conifers. As well as the common *S. pseudouncinata* we have collected three species that are quite rare and stenotopic in Sardinia: *Chr. dorsalis*, *D. iberica* and *H. stigma*.

D. iberica was recorded only in the classical locality of Sorso, on the southern edge of the Gulf of Asinara (Grandi, 1957; Pantaleoni & Letardi, 1998), and for another unnamed locality on the oriental Sardinian coast (Aspöck *et al.*, 1980: II, 324). Very few further localities still remain unpublished (Pantaleoni, unpublished data). In Sardinia this species appears strictly confined to coastal *Juniperus* formation.

H. stigma was recognized in only two localities of northern Sardinia (Aspöck *et al.*, 1980: II, 297). *Chr. dorsalis* appears absolutely new to Sardinia, in fact the previous doubtful records are discussed and rejected by Pantaleoni (1999).

Both species are strictly allied to *Pinus* trees, particularly the Chrisopid, and their occurrence on *Juniperus*, if not surprising, is rather unusual.

In the case of *Chr. dorsalis*, not only the habitat is anomalous, but also the previous described adult habitus.

To the best of our knowledge (with few specimens of *Chr. regalis* examined by us) it is surely risky to advance any hypotheses. Nevertheless, in our opinion we have found a deeply isolated population of *Chr. dorsalis* that has been able to evolve its own peculiar ecological and chromatic traits. Also taking into consideration the rather unclear species rank of *Chr. regalis* (Aspöck *et al.*, 2001: 83), any relation with this taxon does not seem to be justifiable on a biogeographical basis.

Inevitably the list of the Neuropterida from Asinara will grow longer in the near future, after it has become easier to access and move around the island.

The finding of three species on Asinara which are rare or absent from Sardinia is due to the naturalistic value of the Cala Arena environment. We hope that this absolutely remarkable state of conservation will be taken into account in the management of the National Park.

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poi anteriormente all'antenna, formare quivi il robusto condilo di articolazione dorsale della mandibola, e spegnersi dopo aver dato luogo ad un rinforzo abbracciante parzialmente la base del tubercolo portante

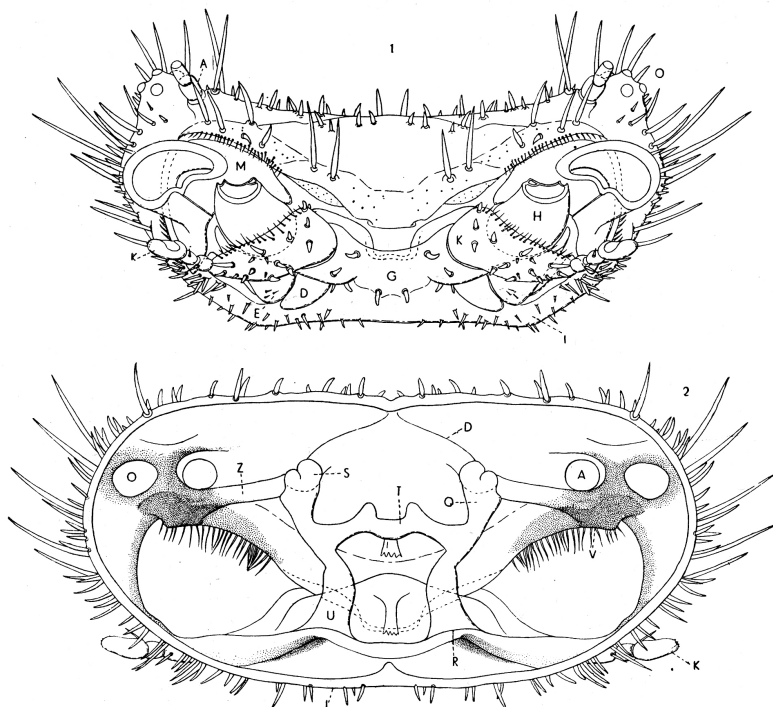


FIG. VI.

Myrmeleon inconspicuus Ramb. - Larva matura. — 1. Capo visto oralmente, con antenne, mandibole e lobi mascellari (i quali nel preparato si sono spostati dalla posizione fisiologica) troncati subprossimalmente. Le parti che normalmente combaciano e si incastrano tra di loro, determinando la chiusura fisiologica della bocca, appaiono allontanate l'una dall'altra: *A*, antenne; *D*, cardine delle mascelle; *E*, stipite delle mascelle; *G*, labbro inferiore; *H*, lobi mascellari; *K*, palpi labiali; *I*, regione ipostomale; *M*, mandibole; *O*, ocelli. - 2. Porzione anteriore del cranio, tagliata secondo un piano trasversale e veduta dall'interno: *A*, aree di articolazione delle antenne; *D*, suture divergenti; *K*, palpi labiali; *I*, ipostoma; *O*, cavità corrispondenti alle prominenze tubercoliformi portanti gli ocelli; *Q*, bracci anteriori del tentorio; *R*, aree di invaginazione dei bracci posteriori del tentorio; *S*, aree di invaginazione dei bracci anteriori del tentorio; *T*, formazione che unisce i bracci del tentorio di destra con quelli di sinistra; *U*, bracci posteriori del tentorio; *V*, condilo per l'articolazione dorsale delle mandibole; *Z*, apodemi antennali.

gli ocelli (fig. VI, 2). Il cranio è provvisto di numerosissime setole distribuite pressoché uniformemente su tutta la sua superficie. Di tali setole quelle inserite lateralmente ed anteriormente si presentano discretamente