

Editorial-Entomology, Ornithology & Herpetology: Current Research

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Editorial

Neuropterida

My personal main field of studies, researches and entomological activities are one of so-called minor hexapods orders, remaining lineages of holometabolous insects which dominate terrestrial ecosystems; the bulk of this species richness belongs to clades within the four megadiverse groups Coleoptera, Lepidoptera, Hymenoptera, and Diptera. But when considering their evolutionary history, Neuropterida could never be considered “minor”.

What we consider at present the Neuropterida as a whole are today largely relict but not primitive. In fact, most lineages of Holometabola diverged early in the Carboniferous or latest Devonian with the ancestral lineage of Neuropterida+Coleopterida emerging after divergence from the lineages leading to Panorpida and Hymenoptera.

Modern genera and species are nonetheless relict in that the phylogenetic diversity, biological and morphological disparity, and breadth of distribution across the clade have decreased over geological time.

A very small number of entomologists dedicate themselves to neuropterological studies. A comprehensive collection of what have been published during the last centuries about Neuropterida could be inquired into [1] but several regional resources could be found on Web [2] e.g. implemented and updated twice a year by me gathers what it is known about Italian Neuropterida. At present, there are no scientific journals devoted to these insects: most of taxonomical work about Neuropterida are now published on Zootaxa [3] of which I'm, since the last two years, subject editor [4]. For a more amateur approach, twice a year I edit a newsletter-called Lacewing News-sent by email to an entomologist mailing list, or available from some web scientific repository like Academia.edu or ResearchGate.net [5].

A wide field of possible researches is available for new researchers interested in Neuropterida: in Taxonomy taphonomy studies are on the wave crest; personally, I devote myself mainly to faunal studies but some aspects of physiologically studies related to pre-and post-copulatory sexual selection (eg mate detection; sex pheromone; male-male competition; female monopolisation (mate guarding behaviour); modes of sperm transfer; mating structures; spermatophore structure and function; nuptial gift) are in my personal opinion topics of possible major developments of knowledge.

In general, I agree with [6] concerning future prospects about Neuropterida researches:

1. Expanded phylogenetic efforts are needed throughout the families of Neuropterida, particularly Coniopterygidae, Sisyridae, Berothidae, and Ascalaphidae, as well as studies that move beyond the usual passé character systems.

2. Widely ignored characters need to be more richly explored, including ethological variation and internal anatomy, such as the plethora of glandular systems and associated semiochemicals.

3. Using transcriptomes, the underlying genetic architecture for particular phenotypes needs to be identified, bolstering the genotype-phenotype link, clarifying putative homologies, and building an evo-devo perspective toward lacewing evolution.

4. The rapidly growing body of fossil evidence needs to be more integrated into large-scale analysis not only within families, but at the higher level across and among the orders.

So I can similarly conclude saying that “The discoveries of new species, living or fossil, or hitherto unknown life stages or natural histories, provide a constant source of data from which to expand future analyses. These either corroborate or refute-we hope for the former-prior estimates of relationship and the classifications they underpin, and through this iterative process, the science progresses. In time, our own account may be found wanting in certain respects, although we take some assurance in the convergence of multiple sources on a common theme. Regardless, neuropterology is today a robust field, and we look forward to the discoveries awaiting the latest generation romanced by diaphanous wings of lace [6].”

References

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