

## Book reviews ● Buchbesprechungen ● Analyses

### **BÁEZ, Marcos: Mariposas de Canarias.**

15 × 21 cm, VI + 216 pp., 63 + 323 colour figures, paperback. Published by Editorial Rueda, S. L., Alcorcón (Madrid), 1998. ISBN 84-7207-110-3. To be ordered from Editorial Rueda, S. L., Porto Cristo 13, E-28924 Alcorcón (Madrid). Tel. 0091 619.27.79 – 619.25.64. Fax 0091 610.28.55.

Thirteen years after the publication of a field guide on the dragonflies of the Canary Islands, the present work deals with one of the best known and most popular insect groups of the Archipelago, the Lepidoptera. While these islands have, naturally, an impoverished fauna as far as the species number is concerned, the percentage of endemics is comparatively one of the highest of any region of the Western Palaearctic. At a time when considerable threats are imposed on nature in the Canaries, it is of great importance to document its biodiversity in order to demonstrate its high value and, ultimately, to ensure its long-term conservation. As far as the Lepidoptera are concerned, no less than about 200 out of the 600 species known from the Canaries are endemic to the Archipelago!

After a brief introductory section (pp. 1–13), dealing with topics like the origin of the Lepidoptera, their place in the ecosystems, variability and polymorphism, development and metamorphosis, larval morphology and diversity, the descriptive part starts with a brief overview of all known Lepidoptera families of the islands, for most of which a living specimen of one or two characteristic species is figured. The next section (pp. 36–201) makes up most of the remainder of the book. 303 species (nearly 50 %) of Canarian Lepidoptera are treated individually and set specimens are figured. All, or the very most of, the species of butterflies, sphingids, noctuids, geometrids and arctiids are shown, while a selection only (the most common or conspicuous, as well as the endemic species) of the “micro’s” are dealt with. For each species, a brief description is presented, followed by a review of its distribution and status in the Canary Islands, and of its bionomics (habitat, phenology, larval host plants). A selective bibliography (only 31 entries), a systematic list of (all) Lepidoptera species known by then from the Archipelago, and an index of resp. its Lepidoptera and plant taxa close this pretty little book.

Taking into account what it is — a field guide and not an exhaustive monograph — this book is highly recommended to the lepidopterist travelling to the Canary Islands.

*Alain OLIVIER*

**KUDRNA, Otakar: Die Tagfalterfauna der Rhön.**

14.5 × 20.5 cm, 166 pp., *Oedippus* 15: 1–158. 48 colour photographs, 2 + 110 maps, paperback. Published by Gesellschaft für Schmetterlingsschutz e.V., Dr. Otakar Kudrna, Brombergstraße 6, D-97424 Schweinfurt, Germany. Tel/fax: 0049 0 9721 805200; e-mail: kudrna.meb@t-online.de, 1998. ISSN 1436-5804. To be ordered from the publisher. Price: DEM 35.

Until about 15 years ago, the butterfly fauna of the valley of the Rhön — a hilly area situated in Central Germany, in the northwestern part of Bavaria and the adjacent border regions of Thuringia and Hesse — was insufficiently known, despite the fact that, with 109 indigenous species being known there at present, it is one of the lepidopterologically richest parts of Germany. There are various reasons to this: no heavy industry or high population density, high climatic and ecological diversity, resulting in a great variety of habitat types with many characteristic stenoeicous butterfly species, a generally not too intensive land use. Some species are represented here by very strong populations for Central European standards. Six butterfly species — *Parnassius mnemosyne*, *Maculinea arion*, *M. nausithous*, *M. teleius*, *Euphydryas aurinia* and *Coenonympha hero* — that are listed in the annexes of the EU Habitat Directive (FFH) 94/43/EEC, are currently still extant in the Rhön, while two other ones (*Euphydryas maturna*, *Lasiommata achine*) have already become extinct in the Rhön, as have indeed 13 out of the 121 species that have been found in the district since about 1900. Ironically, mistaken management of nature reserves, implemented by the nature conservation authorities responsible, has been one of the causes of extinction, as the author illustrates by a series of examples. The successful re-establishment of the extinct *Colias palaeno* is documented.

Every single species is treated in the special part, with data on distribution, bionomics and conservation status. Intensive studies, carried out from 1984 until 1997, have resulted in the distribution atlas, which forms the second subdivision of the special part of the present study.

A conservation plan, aimed at the securing of strong (often not immediately threatened) populations of the most valuable species, is proposed. Species specific conservation measures (i.e. habitat management as it is practised for instance in Great Britain) are proposed for 18 priority species and their most important habitats. The great importance of monitoring of butterfly species and conservation measures is stressed. Conservation measures are also proposed for butterfly communities in the 26 most important sites. The localities have been selected after the principle of “critical faunas” and should enable the conservation of almost the whole species spectrum of the Rhön. Guidelines for habitat management for butterflies are outlined. Generously supported monitoring, surveillance and research without bureaucratic hindrance (e.g. the general ban on butterfly collecting in Germany!) of the field work and laboratory research are preconditions of success.

The study ends with a references list (77 entries) and an index. It will be of great interest for nature lovers concerned with butterflies. Many of the proposed measures for the protection of species and habitats can, with slight modifications perhaps, be applied to other taxa and areas. Therefore, it is also highly recommended literature to nature conservation authorities, that will hopefully pay more attention to invertebrates in general, and to butterflies, that are excellent bioindicators, especially. It is further of interest to both amateur and professional entomologists, both for its content and for the methodology behind it.

Alain OLIVIER

**TSHIKOLOVETS, Vadim V.: The Butterflies of Turkmenistan.**

21 × 30 cm, 237 pp., 24 colour plates with 1047 figures, 10 black-and-white plates with 66 figures, 4 + 157 maps, bound in coloured dust jacket. Published by the Author, Kiev, Brno, 30.XI.1998. ISBN 966-02-0511-2. To be ordered from: Willy De Prins, Diksmuidelaan 176, B-2600 Antwerpen, Belgium. Tel. 00323 322.02.35; e-mail: [willy.deprins@village.uunet.be](mailto:willy.deprins@village.uunet.be) (Western Europe) or from Vadim V. Tshikolovets, Zoological Museum, B. Khmel'nitsky str. 15, Kiev-MSP, UA-01601, Ukraine; e-mail: [vadimchik@glul.apc.org](mailto:vadimchik@glul.apc.org) (Eastern Europe). Price: BEF. 2,600 excl. postage.

One year and a half after the publication of his "Butterflies of Pamir", the author has produced the present work, dealing with the butterflies of Turkmenistan. In the Introduction, the history, geography, geomorphology, climate, vegetation and animal life of the present-day republic are reviewed, followed by a history of the study of butterflies in Turkmenistan and the obligatory Acknowledgements section. Then a list of localities is presented, with the names in use before 1991. The name is followed by a note, establishing whether it refers to a town, village, gorge, river, mountain (range) or nature reserve, and a code consisting of one letter (A to J) followed by one number (1 to 12), corresponding to squares on a map. This makes it easy to locate any locality mentioned in this work. An Abbreviations section applies to the museum collections referred to. Then follows a checklist of the species-group taxa said to occur within the boundaries of present-day Turkmenistan, with the exception of Kugitang in the extreme east, that belongs to the Pamiro-Alai. This region, covering a very small area, will be treated in a future book on the butterflies of Uzbekistan. The checklist includes 176 species-group taxa (actually 174 species, of which two — *Satyrus amasinus* and *Melitaea didyma* — include two subspecies each). The main body of the work, "A survey of Turkmenistan butterflies" (pp. 35–154) covers each taxon in detail. The species name (genus, species, author and date of publication) is followed by its range. Then comes the subspecies name (followed, when figured, by the reference to the illustrations on the corresponding plates at the end of the book) and the reference to the primary sources, i.e. the original literature reference (original combination and publication) and a list of the extant type material



and its depository. When it applies, the synonymy is given (again with complete references to the primary sources). Then comes an exhaustive list of all literature records for Turkmenistan, eventually followed by new records, resulting either from the author's own collecting activities in this country, which he visited three times (in 1986, 1989 and 1990) or from data gathered in several museum collections. The distribution in Turkmenistan, flight period and habitat (including altitudinal range) are briefly quoted and for almost each and every taxon a distribution map is presented. In some cases, when judged appropriate, some comments are given, mostly about the taxonomic status. Then comes the Plates section, including 24 colour plates, totalling 1,047 figures, on which most taxa can be located. On the whole they are of a very good quality. With the exception of plates 3 and 24, that show all known Papilionidae as well as some unmistakable species of other families like *Danaus chrysippus*, *Libythea celtis*, *Limenitis reducta*, *Nymphalis polychloros*, *Vanessa atalanta*, *V. cardui*, *Aglais urticae* and *Anaphaeis aurota* only on the upperside, all taxa are figured on the upperside on one plate, followed by their undersides on the next one. The next ten plates show line drawings of male genitalia of selected species-group taxa. On pp. 214–215 is a list of species considered erroneously recorded from Turkmenistan. The book ends with a References list (no less than 298 entries!) and an Index to (genus- and species-group) taxa.

This is the first illustrated guide to the butterfly fauna of Turkmenistan, a fauna of interest to all students of both West-Palaearctic and Central Asian taxa. Indeed, here the southern desert fauna of the Middle East and Iran comes in contact with the Central Asian desert fauna. On the Kopet Dagh mountain range one can find, beside some endemics, several European and Central Asian species flying together. For certain species characteristic for Asia Minor, the Kopet Dagh mountains constitute the extreme eastern limit of their range, while it is also the westernmost outpost of several taxa belonging to the Central Asian and Afghan-Pakistani fauna. Therefore this work is very welcome to every student of these faunas. While the book contains a wealth of information, some important shortcomings have unfortunately to be dealt with as well. To the reviewer, the main one is the inclusion in the main section of no less than 23 species-group taxa (i.e. about 13 %!) that have nothing to do there. The nominal taxa *Spialia geron struvei*, *Muschampia poggei* *poggei*, *Pyrgus carthami carthami*, *Pelopidas thrax thrax*, *Pieris bowdeni* *bowdeni*, *Satyrrium hyrcanica hyrcanica*, *S. lunulatum lunulatum*, *Neolycaena iliensis iliensis*, *Callophrys suaveola suaveola*, *Tomares callimachus callimachus*, *Plebeius ferganus ferganus*, *P. caeruleus caeruleus*, *Lasiommata maera maera*, *Hyponphele naricina naricina*, *H. wagneri wagneri*, *Hipparchia stulta stulta*, *Pseudochazara mamurra schahrudensis*, *Chazara persephone transiens*, *C. staudingeri staudingeri*, *Melitaea didyma neera* and *Argynnis adippe adippe* are included solely based on some unconfirmed literature quotations, with no extant collection material known to the author. The inclusion of *Polyommatus elbursicus elbursicus* is based on the misidentification by the author of a specimen of *P. transcaspicus*, figured in a publication by Carbonell and

correctly ascribed to that taxon by that author! *Polyommatus mofidii mofidii* is included solely because of its presence on the Iranian side of the Kopet Dag! *Pelopidas thrax thrax* is a Palaearctic species that can only survive in the Western Palaearctic along the Mediterranean and Aegean coast of Turkey and on the Greek island of Sámos: evidently, the quotations by Christoph and Heyne relate to *Eogenes alcides*! It would have been better if the author had, on pp. 214–215, named that section “A list of unconfirmed and erroneous records of species-group taxa for Turkmenistan” and had included all forementioned taxa therein. The “loss” of taxa in the main section could have been compensated for by the inclusion of the butterfly fauna of the Kugitang region (five nominal species-group taxa, cf. p. 215). On the other hand, *Favonius quercus quercus* and *Satyrium acaudatum acaudatum* are included only “conditionally”, although unmistakable collection material (which the author figures on plate 8) exists. The nominal taxa *Coenonympha leander transcaspica* and *Satyrus amasinus kyros*, though perhaps described after mislabelled specimens, have their place in this section as their type locality is quoted as from within the boundaries of present-day Turkmenistan. *Colias alfacariensis* is included as “*Colias sareptensis sareptensis*”: during a visit to the Museum für Naturkunde der Humboldt-Universität zu Berlin in November 1998, the reviewer has examined the syntypes of the latter taxon and noticed that they are nothing else but yellow *Colias erate* specimens! Some further minor mistakes have been noted as well: for instance, *Pontia callidice* (p. 67) does not occur in the Balkan Peninsula. *Hesperia comma* starts flying only well into July and not in May (p. 50): the relevant data, taken from literature, certainly apply to the nominal taxon listed as “*Ochlodes sylvanus faunus*”. An explanation for the choice of that name, considering the current nomenclatural debate, would have been desirable, as it would have been, for instance, for the choice of the subspecies names *Pieris brassicae ottonis*, *P. napi pseudorapae* and *Aporia crataegi pellucida*. Data on the bionomics of each taxon are very limited. While the English used in the Introduction is quite good, the comments about the nomenclatural status of some taxa are sometimes really poor (e.g. on p. 110; elsewhere read “worn” instead of “overflown”, “temperate Asia” instead of “moderate Asia”); the more, typographical errors appear all too often throughout the text. Sometimes, a literature reference was not re-checked thoroughly (e.g. on p. 19: Staudinger (1901: XXX)).

All these details clearly give the impression that this book, for some reason, was hastily edited and published.

Despite all these critical remarks, the author has to be congratulated for this highly informative and comprehensive book, that fills an important gap in our knowledge of the butterfly fauna of this region. No serious student of Palaearctic butterflies should miss it. It is hoped, however, that the minor drawbacks reported in the present review will not be evident anymore in the announced book on the butterflies of Uzbekistan.

Alain OLIVIER

**MAES, Dirk & VAN DYCK, Hans: Dagvlinders in Vlaanderen. Ecologie, verspreiding en behoud.**

17 × 25 cm, 480 pp., 29 text figures, 32 tables, 124 maps (unnumbered), 50 diagrams (unnumbered), 112 colour photographs (unnumbered), hardback. Published by Stichting Leefmilieu vzw/KBC in association with Instituut voor Natuurbehoud and Vlaamse Vlinderwerkgroep vzw, Antwerpen, 10.IV.1999. ISBN 90-76429-02-2. To be ordered from: Stichting Leefmilieu vzw/KBC, Kipdorp 11, B-2000 Antwerpen. Tel. 0032 3 231.64.48 – fax 0032 3 232.63.98; e-mail: [leefmilieu@village.uunet.be](mailto:leefmilieu@village.uunet.be). Price: BEF. 1,250.

The butterfly fauna of Northwestern and Central Europe is in a more and more precarious situation. At the same time it is among the best studied invertebrate groups in the world. For nearly each species, we have now rather detailed information on its ecology, biology, status and distribution and over the last decennium a series of books and distribution atlases appeared, dealing with the butterfly faunas of Northwestern Europe in general (the well-known “Ecologische Atlas van de Dagvlinders van Noordwest-Europa” by Fritz A. Bink in 1992), as well as with several countries or regions specifically (the British Isles, the Netherlands, Denmark, Switzerland, Baden-Wurtemberg, Austria, Poland). A book on the butterflies of Germany is in preparation. The present book deals with the butterflies of Flanders (i.e. the northern half of Belgium) and has been written by two professional scientists who work respectively at the Nature Conservation Institute of the Flemish Community and at the University of Antwerp. As a result of hard work over the last decennium, aided by intensive inventarisation and monitoring activities by a working-group of enthusiastic and benevolous collaborators, the Vlaamse Vlinderwerkgroep vzw, the authors have produced the present excellent work. As its subtitle states, the book consists of three main parts: ecology, distribution and conservation.

The book starts, however, with a separate chapter, a general introduction, documenting the scope of the present book and its aims, a history of research on butterflies in Flanders and the Butterfly project *in se*: the data (from collections, literature, field observations, monitoring) and their handling, the resulting distribution maps, rarity formerly and presently, coverage of inventarisation activities. Then comes the first main part. This is a very exhaustive treatise of the various aspects, integrating in a masterly way all data compiled from the growing body of — both foreign and national or regional — publications on various aspects of butterfly bionomics, along with own new data (e.g. as a result of the junior author’s research on *Pararge aegeria*). Environmental influences on the occurrence of butterflies are reviewed, weather and climate, including its seasonality, for instance, as well as the responses of butterflies to these, both physiologically (e.g. thermoregulation) and phenologically (adjustments of the flight period of the adult and of the feeding period of the larvae), or in their (micro-)habitat use. Further, adult and larval food are briefly considered, followed by the topics mating (with the various strategies, i.e. perching, patrolling, leks, etc.), egg-laying, larval feeding habits,



ant-associations in Lycaenidae, enemies (predators, parasites and parasitoids, diseases). The relationships and responses of butterflies to the various landscape and vegetation types also receive wide attention, and so does their invaluable role as bioindicators. Their symbolic value is also emphasized in its various aspects (collection or decorative objects, pictorial objects in art, on post stamps) as well as their possible role in education and conservation and the large sympathy they enjoy by the larger public. Distribution patterns, mobility and population structure (open vs. closed) are topics that also receive large attention. Methods to study these subjects (inventarisation, MRR, etc.) are also dealt with. Dispersal in its various forms is then treated and the results of various studies on butterfly mobility are considered, along with their potential value in colonisation and gene exchange between populations. A whole chapter is then devoted to population dynamics and the first part ends with another chapter on butterfly populations in fragmented landscapes. The results of fragmentation (habitat loss, edge effects, isolation along with its effect on mobility) are reviewed, after which the metapopulation concept and its great significance for conservation are emphasized and, finally, the role of barriers and corridors in the modern agricultural landscape.

The second part, dealing with the distribution of butterflies in Flanders, is by far the largest one. First, a review of the butterflies of Flanders is presented: they are divided in several categories, each of which is briefly defined: indigenous, migrant, vagrant, stray, adventive. The scientific (latin names) and their order of presentation follow the well-known "The Lepidoptera of Europe. A distributional checklist", edited by Karsholt & Razowski (1996). Then comes a checklist of the 88 butterfly species that have been observed in Flanders so far. Their scientific name is followed by their vernacular name. Of these taxa, 64 are indigenous, 4 are regular migrants, 19 are strays and one (*Polyommatus damon*) is considered adventive. 17 more taxa have further been reported from Flanders, either dubiously (no extant collection specimens exist) or, most probably, as a result of wrong identification: they are briefly reviewed but not considered anymore in the remainder of the book. The detailed treatment of each single species makes up the bulk of the book (pp. 152–366). Especially the indigenous species and the regular migrants are dealt with most comprehensively. Their vernacular and latin (scientific) name is presented, followed by the most commonly used (both vernacular and scientific) synonyms. Then their ecology is dealt with, comprising a brief characterization of the habitat, flight period, mobility and a treatise on their biology and larval host plants. After a brief discussion of its range in Europe, the distribution of each species in Flanders is treated in detail, aided by a distribution map before 1991 and — when the butterfly is not extinct yet — since 1991. Changes in the distribution during the 20<sup>th</sup> Century are illustrated by means of a diagram, hence it is easy to discern whether the species has progressed or declined. A separate section deals with its legal conservation status in Flanders, in Belgium and in Europe, the specific threats and the suggested conservation measures to maintain or improve its status. For extinct and Red List species, the possible relevance of re-introduction

is briefly discussed. Additional literature references applying to each single species are mentioned as a last item. The adult of each of these taxa is figured by means of a beautiful colour photograph of a living specimen, often in either basking or resting position. The strays and adventives are dealt with more briefly and only one is figured in the relevant section. The three last chapters of the second part deal respectively with an analysis of the status of the butterfly fauna of Flanders (changes in species number and composition, both generally and in relation to each of the main ecological regions and habitat types, rarity classes, a Red List of the butterflies of Flanders), the reasons of the general decline of this fauna (catching and collecting, habitat fragmentation and loss, fertilizers, dessication, acidification, herbicides and pesticides, climat change) and a brief mention of the status of the butterfly faunas in Wallonia (southern half of Belgium), in Belgium, in The Netherlands, in Germany, in Great Britain, in Europe and worldwide. A checklist of the butterflies of Belgium can also be found in this section. The situation of the butterfly fauna of Flanders is alarming: 16 species have become extinct during the 20<sup>th</sup> Century, 17 species have experienced a significant decline, 20 species have more or less maintained a status quo and 11 species have progressed. Species that used to be rare have become very rare or extinct, while species that used to be common have become very common ("banalization" of the fauna). This trend also applies to the butterfly fauna of the British isles or to the herpetofauna of Flanders.

The third and last part deals with conservation, with an emphasis on strategies for the conservation and restoration of the butterfly fauna of Flanders, including the use and application of the Red List, the role of governmental bodies, legislation and action plans, and priorities and education. This extremely well-documented book ends with a very comprehensive references list (no less than 828 entries!), an appendix listing all contributors to the project as well as the consulted collections and literary sources, an appendix listing the vernacular, the scientific and the English names of the butterfly species of Flanders, a glossary, an index and a brief presentation of the conservation bodies, both governmental and non-governmental.

The use of the Dutch language, fully justified in the present context, as it is conceived for use mainly by a Flemish readership and governmental and conservation bodies, will of necessity somewhat restrict the international interest of this excellent work and the reviewer would have preferred the inclusion of a checklist of all plant species, of which only the vernacular name is used throughout, with both the vernacular and scientific name. Nevertheless, it deserves to be distributed more widely than in Flanders and The Netherlands alone and people acquainted with German or any Scandinavian language should not experience too many difficulties in reading it. It is very well readable, very well structured and hence methodologically also an example. It is to be hoped that the existence of such a tool will now serve as a stimulus for the implementation of a real conservation policy and, ultimately, an improvement of the quality of the environment in which we live ourselves,



both in Flanders and abroad. Nature conservators, sensibilized landowners, decisionmakers, as well as all lepidopterists and nature lovers should read this book.

*Alain OLIVIER*

**NAUMANN, Clas M., TARMANN, Gerhard M. & TREMEWAN, W. Gerald: The Western Palaearctic Zygaenidae (Lepidoptera).**

17 × 24 cm, 304 pp., 178 text figures, 4 tables, 12 colour plates (with 375 figures), 115 maps (unnumbered), hardback. Published by Apollo Books, Stenstrup, January 1999. ISBN 87-88757-15-3. To be ordered from: Apollo Books Aps., Kirkeby Sand 19, DK-5771 Stenstrup, Denmark. Tel. 0045 62 26.37.37 – fax 0045 62 26.37.80. Price: DK 600 excl. postage.

This long-awaited book is the condensed result of a lifelong study of the western Palaearctic representatives of this fascinating family by three of the foremost specialists on the group. It is beautifully introduced by a nice foreword by Miriam Rothschild, followed by one by the authors. The general part (pp. 13–95) treats topics such as systematics and phylogeny, Zygaenid life cycles, structures and functions (including a generalized description of larval morphology and chaetotaxy, pupae and cocoons, adult internal morphology, senses and orientation, nutrition), genetics and individual variation (with special attention to some phenomena like polymorphism in *Zygaena*), zoogeography (geographical variation, distribution patterns), fossil records, ecology and behaviour (habitat preferences, host plants, cyanogenesis, defensive and reproductive biology, flower-insect relationships, reproductive strategies, mimicry and behaviour, predation and diapause, parasitoids), the role of Zygaenids as indicator species both in dispersal studies and in conservation, breeding, collecting techniques and an interesting review of history of research on the Zygaenidae, a list of vernacular names of Zygaenidae and a selected references list (96 entries). This general part is highly interesting throughout and some parts, like e.g. polymorphism, cyanogenesis, reproductive strategies and diapause, were most fascinating reading to the reviewer. First class black-and-white illustrations (including a.o. line drawings and remarkable SEM-photographs of endo- and exomorphological structures, and portraits of some famous deceased authorities on Zygaenidae) contribute much to the high quality of the whole.

The systematic part (pp. 97–290) starts with a checklist of the western Palaearctic Zygaenidae (at species level). The area covered here includes the whole of Europe with the Ural Mts., North Africa (the Maghreb countries plus the mediterranean coastal areas of Libya and Egypt including the Sinai), Jordan, Israel, Lebanon, Syria, the whole of Turkey, Transcaucasia and the Caucasus. Iran and Iraq however are not, or only marginally, considered. After a brief diagnosis of the family Zygaenidae and a key to its subfamilies, the first subfamily to be treated in detail is the Procrinae: after a characterization and diagnosis and a key to its genera, with a diagnosis of the relevant genus to which it belongs, each species is treated in detail. After

its scientific name, author(s) and year of description and a reference to the plate on which the imago is figured, a brief description follows in the following order: forewing length — male — male genitalia (with reference to the text figure on which they are depicted) — female — female genitalia (with reference to the text figure on which they are depicted) — similar species (with their resp. diagnostic features) — individual variation — geographical variation (with a list of subspecies (including a reference to the plate on which the imago is figured), their characteristics and distribution) — distribution — ecology — behaviour — egg — larva — larval foodplants — pupa and cocoon. For each species, a distribution map is presented. Separate identification keys are presented for western Palaearctic *Rhagades*, male *Jordanita*, female *Jordanita*, male *Adscita* (*Adscita*) and female *Adscita* (*Adscita*). On pp. 160–185, excellent line drawings of resp. the male and female genitalia of all the species are presented. The subfamily Chalcosiinae, represented in the western Palaearctic by only one genus (*Aglaope*) and two species (*infausta* and *labasi*), is treated similarly but without illustration of the genitalia. The subfamily Zygaeninae, consisting of one genus (*Zygaena*) with three subgenera (*Mesembrynus*, *Agrumenia* and *Zygaena*), each with a brief diagnosis, and one general key to its western Palaearctic species, is treated similarly, but genitalia are (partly) figured only occasionally for identification purposes, in critical cases (e.g. *Zygaena purpuralis* group, *Z. transalpina* group, *Z. filipendulae* group). Colour plates 1 to 6 show set specimens of all species of Procridinae (1 and 2), Chalcosiinae (2) and Zygaeninae (3 to 6), plates 7 and 8 show living specimens of several taxa, either in resting posture or in copula, plate 9 shows some interesting behavioural features (e.g. extruded pheromone gland of a 'calling' female *Zygaena*, extruded male coremata of a *Zygaena*) as well as some parasitoids and predators, plate 10 shows some larvae and one cocoon and, finally, plates 11 and 12 offer a selection of habitats. The book ends with an appendix on the recently described *Jordanita* (*Jordanita*) *fazekasi* and an index.

With the present work, it should be possible to identify without too many difficulties, each and every species of (adult) western Palaearctic Zygaenid. The only serious criticism the reviewer would make, is the total absence of any reference to primary sources (both type specimens and literary source). Any lepidopterist, also the non-specialist, with any interest in this beautiful and, in more than one respect, highly interesting butterfly family, can simply not do without the present work. The authors deserve our warmest congratulations.

Alain OLIVIER

EFETOV, Konstantin A. & TARMANN, Gerhard M.: Forester Moths. The genera *Theresimima* Strand, 1917, *Rhagades* Wallengren, 1863, *Jordanita* Verity, 1946, and *Adscita* Retzius, 1783 (Lepidoptera: Zygaenidae, Procridinae). 17 × 24 cm, 192 pp., 415 text figures (241 in colour, on 12 unnumbered plates), 4 tables, hardback. Published by Apollo Books, Stenstrup, 1999. ISBN

87-88757-23-4. To be ordered from: Apollo Books Aps., Kirkeby Sand 19, DK-5771 Stenstrup, Denmark. Tel. 0045 62 26.37.37 – fax 0045 62 26.37.80. Price: DK 460 excl. postage.

A few months after the book on western Palaearctic Zygaenidae by Naumann, Tarmann & Tremewan, Apollo Books have published the present work which, as will be shown, is largely complementary to the first-mentioned one. It treats all the 63 Procridinae species occurring in Europe, North Africa and the western and central parts of Asia, i.e. the western and central Palaearctic.

After an introduction, followed by a “definition” of the Procridinae, some significant diagnostic characters of the Procridinae are discussed, i.e. chaetotaxy of first instar larvae, chromosome numbers of several species belonging to different (sub-)genera and some peculiarities of both the proboscis and the fore tibia, after which some character combinations are treated. Subsequently, possible phylogenetic relationships are discussed, with a separate heading for *Theresimima*, *Rhagades* and *Jordanita* and *Adscita*. Next, a checklist of species-group taxa (species, subspecies and their synonyms, some of these newly) in these genera is presented. Then comes the systematic catalogue. For each species-group taxon, the genus and species name, followed by the author(s) and year of description, is quoted, immediately followed by a reference to the different figures on which the taxon is figured (male and female genitalia, adult male and female, early stages). Then a reference to the primary sources is stated in full, i.e. original combination, publication, depository of type (holotype or lectotype). Synonyms are listed and the type locality is documented. When a lectotype is newly designated (for 17 taxa in the present work), labels are listed fully. The range and host plants are also mentioned, the latter with reference to the literary source when known already. Two new subgenera, *Tremewania* and *Procrita*, are described. A next chapter consists of several keys to genera, to subgenera and to species, sometimes including different keys to males and females, with figures of features such as wing venation, forelegs, distal end of male antennae, forewing scales and pupae. A separate chapter consists only of (excellent) line drawings of resp. male and female genitalia, executed by the late Vyacheslav V. Kislovsky (1974–1998), who also produced the majority of the other line drawings. In a next chapter, the immatures and life histories of six species of *Jordanita* and *Adscita* are described. Then comes a series of new records of parasitoids, followed by the acknowledgements section. After this, colour illustrations of adult moths, early stages, host plants and biotopes are presented. Five colour plates (figs. 175–307) show paintings of set specimens, followed by seven colour plates consisting of photographs of lectotypes, early stages, adults and biotopes. The book ends with a comprehensive list of references (344 entries) and indices, resp. of Lepidoptera names, authors and larval host plants.

The present book is an attempt to summarize new data and to enable the identification of all known species of the group. No distribution maps are included, but in the Introduction it is stated that a distribution atlas is planned at a later date. Data on nomenclature and taxonomy, along with a larger



geographic coverage and hence additional species, make this book a welcome addition to the work of Naumann, Tarmann & Tremewan. For students of Zygaenidae in general, and of Procridinae specifically, this is an absolute must.

*Alain OLIVIER*

**KRISTENSEN, N. P. (ed.): Lepidoptera, Moths and Butterflies. Volume 1: Evolution, Systematics, and Biogeography.** Part 35 in M. Fischer (Ed.): Handbook of Zoology. Volume IV Arthropoda: Insecta. 21 × 29.7 cm, 494 p., numerous figures, hardback. Published by de Gruyter, Berlin, New York, 1999. ISBN 3-11-015704-7. To be ordered from: Walter de Gruyter & Co., Genthiner Str. 13, P.O. Box 303421, D-10728, Berlin, or from Walter de Gruyter Inc., 200 Saw Mill River Road, Hawthorne, NY 10532, USA. Price: DEM 398 plus postage.

While it was still possible to write treatises on insect groups in the past (e.g. the Diptera volume in 1972 by W. Hennig) in this ambitious series "Handbook of Zoology" founded by W. Kükenthal, this is no longer possible in such large insect orders as the Lepidoptera. Furthermore, the editorial principles and standards have changed considerably to ensure that the series can continue to fulfill its intended role in the biological reference literature. Therefore, the editor has gathered a team of 29 specialists, who are responsible for the texts of the separate chapters. Much original research work was carried out to put the present state of knowledge at the most recent level and many texts which were completed for the first deadline in 1997 have been changed since that year in order to reflect the most recent state of the art. Many contributions had to be shortened because of publisher's demands and some even have been published elsewhere in full length while the present book just contains a summary of these.

Two Lepidoptera volumes are planned. The plans for a third volume on ecology and behaviour were abandoned because it was considered more appropriate to publish such a volume not focusing on the order of Lepidoptera alone. Nevertheless, several topics on Lepidopteran ecology and behaviour are included in the present volume and in the forthcoming second volume at relevant places. This first volume concentrates on systematics, evolution and biogeography, while in the second one the emphasis will be put on morphology and physiology. The present volume consists of 21 chapters.

Chapter 1. "Historical Introduction". Because Lepidoptera are very conspicuous insects, they have been the subject of many publications before the Linnean landmark of 1758. In this chapter a very brief outline is given of these pre-Linnean publications, as well as of those in the Linnean period, while the emphasis lays on the 19<sup>th</sup> Century achievements in Lepidopteran studies.

Chapter 2. "Phylogeny and Palaeontology". The monophyly of the Lepidoptera has been established by an impressive series of synapomorphies, separating this order from its sister group Trichoptera, the two groups forming the higher

rank taxon Amphiesmenoptera. This chapter first treats the ground plan and intrinsic phylogeny of the Lepidoptera. Subsequently the palaeontological contributions to the knowledge of Lepidoptera evolution are surveyed. A tentative phylogenetic tree of all extant superfamilies is given, indicating the species richness of all groups. The chapter further contains pictures of fossil Lepidoptera, preserved in amber or stone.

Chapter 3, "Classification and Keys to Higher Taxa". The systematic chapters in this Handbook are all written on the basis of "Henigian" phylogenetic principles. Therefore, all taxa which are identified as likely poly- or paraphyletic have been rejected, or they are accepted merely as preliminary groupings, pending further analysis. Many disagreements were encountered during the preparations of the texts for those systematic chapters, many authors having different views on the ways in which phylogenetic study results should be transformed into a written classification. While in several publications the Linnean categories have been discussed and rejected as useful tools for present-day classifications, they have been retained in the present book. This chapter contains a key to identify the different superfamilies, using adult characters, and a key to families, using larval characters.

Chapters 4–19. In these chapters a systematic treatment is given of all extinct and extant Lepidoptera. The chapters are divided as follows: The Non-Glossatan Moths (Micropterigoidea, Agathiphagoidea, and Heterobathmoidea), The Homoneuros Glossata (Eriocranioidea, Acanthopteroctetoidea, Lophocoronoidea, Neopseustoidea, Mnesarchaeoidea, and Hepialoidea), The Monotrysian Heteroneura (Nepticuloidea, Incurvarioidea, Palaephatoidea, and Tischerioidea), The Tineoidea and Gracillarioidea, The Yponomeutoidea, The Gelechioidea, The Zygaenoidea, The Cossoid/Sesioid Assemblage (Sesioidea and Cossoidea), The Tortricidae, The Smaller Microlepidoptera-Grade Superfamilies (Galaticeoidea, Simaethistoidea, Choreutoidea, Urodoidea, Chrekensteinoidea, Epermenioidea, Alucitoidea, Pterophoroidea, Copromorphoidea, Immoidea, Hyblaeoidea, Thyridoidea, and Whalleyanoidea), The Pyraloidea, The Axoidea and Calliduloidea, The Butterflies: Hedyloidea, Hesperioidea and Papilionoidea, The Drepanoid/Geometrid Assemblage (Drepanoidea and Geometroidea), The Bombycoidea and Their Relatives (Mimallonoidea, Lasiocampoidea, and Bombycoidea), and The Noctuoidea. All these chapters contain information on their morphology and systematics and are well illustrated with diagrams of morphological structures, pictures of set adult specimens and caterpillars. Also still unresolved problems are mentioned throughout. Keys to families and subfamilies are included where appropriate. Every chapter ends with a reference list to further reading.

Chapter 20. "Evolution of Larval Food Preferences in Lepidoptera". Because the majority of lepidopteran larvae live at the expense of living seed plants, it has been thought that evolution within the Lepidoptera is closely related to that of plants. On the other hand, non-phytophagous habits are found primarily in basal lineages of Lepidoptera, suggesting that these might have had non-phytophagous ancestors. In this chapter the evidence for and against these contrasting views of feeding habit evolution are summarised.

Chapter 21. "Biogeography of the Lepidoptera". The combination of high diversity in Lepidoptera (being one of the four major insect groups) and a detailed information on geographical coverage available in numerous museum collections, mean that Lepidoptera are very well suited as a subject of biogeographical studies. It is observed indeed that Lepidoptera studies are prominent in many areas of biogeographical research. This chapter gives an account of the past studies in this area and also puts forward some hypothesis emerged from recent discussions amongst biogeographers.

The book ends with an index of scientific Lepidoptera names. It is extremely well edited, and it contains a wealth of information in condensed form, brought together by the contemporary world's leading specialists. It is a pity, however, that in a present-day publication of such an importance no colour illustrations are used to depict such colourful insects as the Lepidoptera, especially when one takes into account its rather high price. Because of this economical barrier, many of the relevant information contained in this book will not find its way to the broad public of serious students of Lepidoptera who have not easy access to university or museum libraries. It is hoped, however, that the second volume will be published in due course.

Willy DE PRINS

**SCOBLE, Malcolm J. (Herausgeber): Geometrid Moths of the World. A Catalogue.**

21 × 29 cm, 1400 S., hardback, 2 Bände mit einer CD-ROM. CSIRO Publishing und — für Europa — Apollo Books, 1999. ISBN 87-88757-29-3. Bestellungen an: Apollo Books Aps., Kirkeby Sand 19, DK-5771 Stenstrup, Denmark. Preis: DKK 1.990/US\$ 295, ohne Versand.

Angeichts der rapide fortschreitenden Bedrohung der Biodiversität durch Umweltschäden versteht sich der Katalog als ein Schritt in Richtung auf die Erarbeitung einer "Passagierliste" für unser Raumschiff Erde. Die Zielgruppe für einen verlässlichen Katalog aller bekannten Arten der Geometriden, die mit den Pyraliden und den Noctuiden die drei größten Schmetterlingsgruppen der Welt darstellen, ist daher auch umfassend: "Entomologen, Systematiker, Evolutionsbiologen, Ökologen".

Ausgehend von dem legendären "card index" im Natural History Museum, London, will der Katalog die — teilweise noch unveröffentlichte — taxonomische Information zu allen nomenklatorisch verfügbaren (im Sinne des Code von 1985) Namen der Geometridenarten der Welt zusammenfassen und rasch und einfach zugänglich machen. Zu diesem Zweck sind ca. 35.000 Artnamen in ihrer originalen Schreibweise (was zutreffend begründet wird) alphabetisch den — ebenfalls alphabetisch gereihten — Gattungen zugeordnet und mit Autor, Jahr, Fundstelle der Urbeschreibung, ursprünglichem Genus, Typenverbleib und Angaben zu Typus/Typen einschließlich Typengeographie und — soweit bekannt — schließlich auch den Futterpflanzen aufgelistet.



Synonyme und Homonyme sind bei den validen Artnamen angegeben. Bei den Gattungsnamen werden Autor, Jahr, Fundstelle und die Subfamilie genannt. Diese Fülle an Daten läßt wohl kaum einen Wunsch offen.

Stichprobenartige Recherchen ergaben, daß der Katalog tatsächlich vollständig ist: Man kann getrost davon ausgehen, daß mehr als 99,9 % der bis 1998 publizierten, verfügbaren Namen enthalten sind! In beinahe täglicher Benutzung des Kataloges über zwei Monate hinweg konnten nur in den seltensten Fällen Schreibfehler ausgemacht werden, z.B. *Photoscotosia "elegantissima"* (S. 746 und Index) statt "*elegantissima*"!

Welchem hohen Zuverlässigkeitsanspruch der Katalog genügt, läßt sich schon daran ermesen, daß für alle ca. 35.000 Artnamen die Urbeschreibungen eingesehen wurden. Das heißt nicht, daß Experten bei gründlicher Nachsuche nicht noch einzelne Fehler entdecken könnten. So ist *Eupithecia luteostrigata deverrata* Chrétien (S. 359) synonym und homonym mit *Eupithecia deverrata* Dietze (S. 338), da sich beide Namen auf Material derselben Zucht stützen (Herbulot pers. Mitt.). Die Arten *obliqua* B.-Bak., *sudanica* Herb., *viridans* Prt. und *xanthostephana* Prt. sind in die Gattung *Thelycera* (S. 933) einzureihen, nicht in *Mixocera* (S. 612) wie schon Prout (in Seitz 16 (1930): 45) bemerkte.

Es handelt sich hier aber um seltene Ausnahmen, was bei einem solchen Monumentalwerk freilich insgesamt nicht ins Gewicht fällt. In welchen Intervallen und in welcher Form Berichtigungen und künftige Ergänzungen nachgereicht werden, ist wohl noch nicht entschieden.

Daß die Fundstellen zitierfähig wiedergegeben sind und die geographischen Angaben aktuell ergänzt wurden, ist praxisfreundlich. Der Benutzer wird es den Verlegern außerdem sehr danken, daß ein vollständiger Namensindex jedem der beiden Bände beigegeben wurde. Auf der CD-ROM finden sich eine Liste der validen Namen mit Autor (ohne Jahr, ohne aktuelle oder ursprüngliche Gattung) sowie 59 attraktive Farbbilder von Geometriden.

Verdienstvollerweise enthält der 2. Band einen Anhang mit einer systematischen Reihung der Genera entsprechend der Anordnung in der weltweiten Sammlung des Natural History Museums, London. Dies läßt auf einen weiteren Effekt dieses meisterlichen Katalogwerkes in der Sammlungspraxis hoffen: Fast alle großen Museen haben mehr oder weniger bedeutende Mengen an Geometriden außerpaläarktischer Herkunft, die aber wegen der nicht vollendeten Bearbeitung im *Lepidopterorum Catalogus* und im "Seitz" nur in seltenen Fällen systematisch "aufgestellt" wurden. Mit dem Katalog haben die Kuratoren endlich eine Grundlage für die Zu- und Einordnung ihrer Bestände, die dann — ganz im Sinne der Katalogverfasser — der Bearbeitung und Forschung zugänglicher werden als bisher. Packen Sie's an!

Der Katalog setzt auf höchstem Niveau Maßstäbe für Inhalt und Aufbereitung globaler taxonomischer Information und ist tatsächlich, wie es im Vorwort heißt, "a benchmark". Die Leistung des namhaften Bearbeiterteams (Mark

S. Parsons, Martin R. Honey, Linda M. Pitkin, Brian R. Pitkin) um Dr. Malcolm J. Scoble, den Geometridenspezialisten im Natural History Museum, ist aller Anerkennung wert. Kritisches? Allenfalls, daß ein Werk dieses Schlages, das man mit so viel Gewinn und Sympathie zur Hand nimmt, schon einen farbenfrohen Einband verdient hätte!

Axel HAUSMANN & Manfred SOMMERER

**HUEMER, Peter & KARSHOLT, Ole: Microlepidoptera of Europe, Volume 3, Gelechiidae I (Gelechiinae: Teleiodini, Gelechiini).**

24 × 17 cm, 356 pp., 47 text figures, 14 colour plates (depicting 321 specimens), 114 black-and-white plates (depicting 151 male genitalia and 151 female genitalia), hardback. Published by Apollo Books, Stenstrup, January 1999. ISBN 87-88757-15-3. To be ordered from: Apollo Books Aps., Kirkeby Sand 19, DK-5771 Stenstrup, Denmark. Tel. 0045 62 26.37.37 – fax 0045 62 26.37.80. Price: DK 500 excl. postage.

While some families of the so-called Microlepidoptera are treated in numerous publications, others hardly receive any attention of the authors. Descriptions of new taxa, records on the distribution, flight period and biology are scattered all over the entomological literature. This applies very well to the Gelechiidae. Apart from some taxonomic treatments of single genera (e. g. *Mirificarma*, *Teleiopsis*), no general review of the family as a whole has ever been published for the European fauna. The main reasons for this may be the inconspicuous external appearance of the adults and the difficulties encountered while identifying the specimens.

This book aims to fill part of this gap and will be followed (soon?) by three more volumes treating part of the Gelechiidae. In this first part 151 species are recognised, belonging to the tribes Teleiodini and Gelechiini. Ten new species are described: *Stenolechiodes macrolepiellus* (Greece), *Teleiodes albidorsella* (Spain), *Carpatolechia intermediella* (Spain), *Pseudotelphusa occidentella* (Morocco, Portugal, Spain, southern France), *Xenolechia pseudovulgella* (Greece, Turkey), *Xenolechia lindae* (Greece), *Altenia elsneriella* (Croatia, Macedonia, Greece, Cyprus), *Mirificarma pederskouei* (Spain), *Aroga balcanicola* (Macedonia, Greece, Iran), and *Neofriseria baungaardiella* (Greece, Spain). Sixteen new synonymies are established, while two taxa are recalled from synonymy. Sixteen new combinations are introduced. Lectotypes are designated for fifteen taxa.

The book starts with introductory chapters about collecting methods, genitalia preparation, the morphology of the Gelechiidae and their systematics and classification, and a key to the subfamilies of European Gelechiidae. The systematic part starts with a key to the European genera of Teleiodini and Gelechiini, based on male and female genitalial structures, and a check-list of the species treated in this part with full synonymy. The same complete synonymy can be found in the systematic treatment of every species, but here

including the original combination and with complete references to the source of description. The text of each species furthermore includes a short diagnosis, some words about the variation and reference to similar species with which the taxon can be confused. There are short descriptions of male and female genitalia and data on the distribution in Europe, the biology (in many cases only including a reference to the larval food plant, or lacking at all!), and the flight period. In most cases also a short paragraph is added containing additional remarks on taxonomy, synonymy and so on. The text is accompanied by 47 text-figures, mainly illustrating the eighth abdominal segment of the male, which in many cases gives good taxonomic characters. This part of the book concludes with a taxon of which the systematic position is unclear, and with a distribution catalogue similar to that of the recently published account of the European Lepidoptera.

All species are illustrated on 14 colour plates depicting 321 neatly set specimens, in most cases allowing identification without further examination of morphological characters, also because the specimens are enlarged (the exact scale is missing). These plates are of excellent quality and printed with much care. Because the species are numbered throughout the book and these numbers are mentioned under each figure and in the accompanying text about the origin and whereabouts of the specimens, it is very easy to use these plates in combination with the relevant parts in the main text and with the corresponding plates of male and female genitalia. The latter follow immediately after the colour plates and contain photographs of the genitalia preparations. Also these plates are of excellent quality and easy to use.

The book ends with a list of references and three alphabetical indices: to the entomological genus names, to the entomological species names and to the host plants. This very well edited and produced book will be welcomed by many European students of Microlepidoptera who finally have a tool to identify part of their Gelechiidae. It is hoped that the next three volumes will follow soon.

*Willy DE PRINS*



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Autor(en)/Author(s): de Prins Willy

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