

***Southern African Moths & their Caterpillars* by Hermann Staude, Mike Picker and Charles Griffiths, 2023**

Struik Nature/Penguin Random House South Africa. ISBN 978 1 77584 795 (Print), ISBN 978 177584 796 0 (ePub). Paper back ZAR 550; Pelagic Publishing (UK) ISBN 99781784273477. Paper back £ 39.99. 464 pp.

The fauna and flora of southern Africa has always been of great interest to early natural historians including C. Linnaeus, J.C. Fabricius, P. Cramer, and C. Stoll, each describing a substantial number of insects, including moths, in the late 1700's from this region. Subsequently, many other scientists have contributed to our knowledge of southern African moths. At a local level A.J.T. Janse who started his studies on southern African moths in 1915, initiated a comprehensive series *The Moths of South Africa* (1932–1964) and published a range of taxonomic studies on smaller groups of moths. Subsequently, other specialists, besides curating the vast Lepidoptera collection in the Transvaal (now Ditsong) Museum, continued research on moths: L. Vári, M.J. Scoble, both specialising in leaf miner moths, and M. Krüger on looper and noctuid moths. However, most of these studies were of little interest to the general naturalist as the majority of these publications were considered too technical, besides often being out of reach or print.

Some popular works on southern African moths have been produced since the mid-sixties. These include E.C.G. Pinhey's on hawkmoths (1962), emperor moths (1972) and a general presentation of moths (1975) of southern Africa. All these publications show pinned museum specimens and preserved caterpillars, bearing little resemblance to living examples of these insects. Other books, focussing on emperor moths and their caterpillars, were published by R.G. Oberprieler (1995) *The Emperor Moths of Namibia*, and M.R. Cooper & M.D. Cooper (2002) *The Emperor Moths of Kwazulu-Natal*. More recently, an impressive tome by R.E.J. Lampe (2010), *Saturniidae of the world*, features emperor moths and their immature stages. Many of the moths dealt with in this book occur in southern Africa.

In the past few decades many paperbacks, each presenting a selected overview of southern African plants, animals and invertebrates such as spiders, scorpions, dragonflies, butterflies or other insects, but nothing relating to moths, have appeared. Many popular guides dealing with butterflies are available, but as butterflies form only a small fraction of the total number of our Lepidoptera (butterflies and moths), the need for a similar informative source on moths was obvious. This shortcoming has now been addressed with the publication of *Southern African Moths & Their Caterpillars*, concentrating on insects often shunned by the broader public. The book contents in the form of excellent depictions of moths and their caterpillars, accompanied by a brief, but informative text, will surely dispel that negative notion. Moreover, the illustrations show that moths and their caterpillars are on par, if not more impressive, in colour and posture than butterflies and their caterpillars.

Its congener, *Insects of South Africa*, now in its third print, by Mike Picker, Charles Griffiths and Alan Weaving, has clearly served to introduce the general public to our great insect diversity. In *Southern African moths & their caterpillars* Hermann Staude, our leading expert on southern African moths, has teamed up with Mike Picker and Charles Griffiths, to initiate, edit and publish this book. Although the three authors have mostly contributed to the book's contents, many photographs of moths and their caterpillars have been supplied by enthusiastic members of the Caterpillar Rearing Group, a division of the Lepidopterists' Society of Africa. The described moth species of southern Africa has increased from a 3 607 listed species in A.J.T. Janse's (1917) Checklist to at present more than 11 000 described species, with further discoveries and descriptions of new species being added on a regular basis. In this book, a sample of 1 500 species of this vast group represents a well-balanced, selected overview of moth species, thus serving as a very useful introductory guide to this group of insects.

The front cover of the book is attractive and eye-catching, depicting one of our larger and showy emperor moths and a colourful caterpillar against a leafy background. The back cover is equally adorned with some splendid examples of moths and a caterpillar (and photographs of and short notes on the editorial team). Both, front and back, covers serve to entice closer inspection of the book and its contents.

The front page features a moth in a resting posture. On the following pages *Contents* list various moth families in an evolutionary sequence, starting with the primitive moths and ending with those more advanced. An extensive *Acknowledgements* list the contributions made by many individuals to this book. The *Preface* refers to some modern overviews of specific groups of moths. This section ends with the prime aim of the present work: to provide a rather comprehensive introduction to the moth fauna of southern Africa.

The *Introduction* features a short cladogram showing the evolutionary development of the Lepidoptera and includes a short discussion of the earliest moths and their long-time association

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DATES

Received: 11 December 2023

Accepted: 14 December 2023

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with plants. The cladogram, grouping natural clades of butterflies and moths, outlines the great diversity of moth families. In *Diversity of moths* reference is made to their presence on all five continents; the authors omit to mention some specialized moths present on some subantarctic islands. Although most moths and or their caterpillars feed on plants, other sources of food are also utilized. The total number of southern African moths comprise about 11 000 described species, surpassing by far the mere 800 butterfly species known in this region. *Wing features* discusses size and shape, colour patterns and some special features of wings, with notes on body covering. *Life cycle* briefly outlines the development from egg to caterpillar to adult moths but, unfortunately, the authors fail to discuss the pupal stage nor the presence of a cocoon, a characteristic feature of many moths. *Mating* describes their complicated mating behaviour and time of flight, some moths being day-active, others active at dusk or dawn, but most being night-active. *Egg laying and the egg phase* outlines the mode of oviposition, number of eggs, mode of depositing and hatching periods. *The caterpillar (larval) phase* discusses hatching behaviour, overall body shape, feeding preferences and duration. The adult phase describes feeding or non-feeding of moths, followed by *Adult emergence and seasonality* relating seasonal and geographical appearance of moths to rainfall and other environmental conditions.

Defence adaptations discusses methods of defence against natural enemies. In caterpillars defence mechanisms include concealment amongst foliage, day-time inactivity, living underground or within plant material. Physical and chemical deterrents are frequent. Some species of caterpillars live in communal sheltered structures or in groups to avoid predation. Most moths are masters at camouflage, mimicking leaves, bark, broken twigs, wasps or even bird droppings. Many contain toxic body juices, deterring natural enemies. Some moths, in response to bat predation, have evolved evasive flight patterns or sound emission in response to bat sonar. Some moth species feign death after disturbance or attack. *Regional distributional patterns* indicate that, with present information, some species range over extensive or restricted geographical regions, usually in response to availability of food for adult moths and their caterpillars. The distribution of major vegetation types is often a good indicator of the expected presence of certain species. *Ecological importance* deals with the effect of mass feeding by caterpillars on natural vegetation, thereby retaining the characteristic appearance of vegetation. Sometimes, in the absence of their natural enemies, major defoliation by caterpillars of specific trees or crops take place, often needing the application of insecticides with adverse effects to ecosystems. In *Conservation status* the Lepidopterist Society of Africa, supported by SANBI, based on observations made by their members, aims to determine the conservation status of southern African lepidopterous species (the SALCA project). Determination of the conservation status of individual moths, based on 262 000 submitted records, is at present evaluated. The day-flying cycad moth (p. 184) is, judged by international (IUCN) criteria, regarded as Critically Endangered. Not mentioned is the Silver-spotted Ghost Moth (p. 18), a proclaimed protected species in the Western Cape.

On page 13 readers are invited to get involved in the conservation of moths by joining the Lepidopterists' Society of Africa and its specialist Caterpillar Rearing Group project

(<https://lepsocafrika.org>). The Society has an international membership and includes professional as well as amateur lepidopterists.

About this book explains the arrangement of the guide, giving for each individual species, scientific detail and features of family, subfamily, genus, species and vernacular names. The authors have mainly followed the sequence of moth families as given in Vári, Kroon and Krüger (2002), updated status changes at family or subfamily level, included the relict family Acanthopterotidae, and listed some species names in more appropriate genera. This is followed by a brief description, including size, of each adult moth, some biological facts relating to the caterpillar and its foodplant, habitat and a map featuring presently known distribution of the species in southern Africa. All photographs are of high quality, in full true colour and shows adult moth or caterpillar in their natural poses. Where appropriate, initials of a contributing photographer (bottom, left) are given. All caterpillars pictured are near or fully-grown. What is missing is an indication of the size or length of the caterpillar.

The book concludes with a *List of photographers*, a brief *Further Reading* of some recent relevant publications and websites, an alphabetic *Index to scientific names* and an *Index to common names*.

Early in 1962, I, with Dr Vári (my moth mentor), met Dr Janse, then in his mid-eighties. Learning of my interest in moths, he remarked that "every moth tells a story". That remark is amply demonstrated by the content and illustrations in this book. The more I peruse this book, the more I appreciate the tremendous effort and time that has gone into its production. The book is the culmination of many years of preparation and dedication by the authors and other contributors to assemble an informative and long-awaited source of information of a representative array of southern African moths. The initiative, sourcing, assembling, arrangement of text and photographs, selection and identifying moths, caterpillars and their food plants, the rearing of caterpillars, photographic expertise of subjects in natural poses and settings all testify to the perseverance and enthusiasm of all contributors.

This book is intended for all interested in the biodiversity of our wonderful wildlife and forms an excellent introduction to our diverse and extensive moth fauna; to the moth specialist this book is a must. This book fulfils a long-time need for an information source of southern African moths and every natural history educational centre should have a copy in their library. In my opinion, at its weight, it is not a field guide but rather an introductory reference to be consulted at leisure. Ideally, after photographing the moth or caterpillar in the field, the book can be consulted to identify the moth or caterpillar. If needed, the photographer is invited to submit the photos for an expert opinion, at the same time adding to the data base as to locality or identity of the foodplant of the caterpillar.

The authors, contributors, publishing houses and support of the Mapula Trust, respectively, are congratulated on producing Southern African Moths & their caterpillars. This informative and long-awaited source on our regional moths is well-worth its reasonable price tag. In time this book will surely be reprinted and revised, hopefully in a larger format. As only a mere 15% of moth species are dealt with at present, it is obvious that more volumes are to follow, even in the form of supplements.

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