

BOOK REVIEW

NICKEL H.: THE LEAFHOPPERS AND PLANTHOPPERS OF GERMANY (HEMIPTERA, AUCHENORRHYNCHA). PATTERNS AND STRATEGIES IN A HIGHLY DIVERSE GROUP OF PHYTOPHAGOUS INSECTS. Pensoft Series Faunistica No. 28. Pensoft Publishers, Sofia-Moscow wt Goecke & Evers, Keltern, 2003, 460 pp. ISSN 1312-0174. Hardcover. Price USD 67.00.

This is a remarkable book, which summarizes for the first time the knowledge on the life history and ecology of leafhoppers and planthoppers in Central Europe. Because of their abundance and species richness, Auchenorrhyncha are one of the most important groups of consumers in most central-european terrestrial ecosystems. They feed almost exclusively on plant sap, with only a few species known to feed on the mycelium of fungi. Most species suck sap from phloem tissues, many from leaf mesophyll and an important but smaller group from xylem vessels. Some species are important pests of agriculture, damaging plants directly or by transmission of microbial diseases. Many parasitoids and predators, specialists and generalists, feed on Auchenorrhyncha, and other insects and microconsumers feed on the honeydew they produce. The role of Auchenorrhyncha in ecosystems is still little understood. This book helps to fill at least some of the gaps in this field.

The positive qualities of Nickel's book stem from his effort to base it on a careful taxonomic assessment of insect and plant species, and an abundance of field observations and material. Since 1990, the author has determined more than 250,000 specimens of leafhoppers and planthoppers from more than 500 sites. He gathered much additional information by personal and literary communication with other specialists. Herbert Nickel himself is one of the most renowned experts on taxonomy and ecology of Auchenorrhyncha in Central Europe. This book is a landmark for studies on the ecology of this phytophagous group of insects in this area.

The book has eight chapters and an appendix, plus an alphabetical index to Auchenorrhyncha and plant taxa, and acknowledgements. Following a brief characterization of the study area, the author reviews the main literature on the ecology of Auchenorrhyncha, compares the state of knowledge of the Auchenorrhyncha fauna in different parts of Germany and lists the collections he studied and the places of their deposition. He discusses the methods used for sampling Auchenorrhyncha and the literature on the identification of European species, including recent papers.

Nickel emphasizes the topics studied by him in detail: ecology of individual Auchenorrhyncha species (217 pages) and their host plant relations (115 pages). In chapter four he reports the distribution in Germany and sometimes also in adjacent countries (especially Switzerland and Austria), and further the

phenology, annual number of generations, life history, altitudinal range, and main literary resources for each of the 620 species in Germany. He reviews another 9 species of dubious occurrence in the study area, but omits others, still not recorded from Germany but potentially occurring there as they are known from adjacent countries (e.g. *Wagneriala franzi*). The nomenclature he uses is widely accepted by German specialists. In two cases (*Edwardsiana ulmiphagus* and *Fruticidia* instead of *Fruticoidia*) it differs from common practice. The chapter concludes with an evaluation of the short-term changes in the German leafhopper and planthopper fauna, such as declines, range expansions and the introductions of species.

Chapter five deals with the utilization of plant resources. A short introduction reports host shifts, differences of utilization of plant parts by the different developmental stages, and geographic differences. Following pages describe Auchenorrhyncha guilds on different plant species, species groups and families of Pteridophyta, Gymnospermae and especially Angiospermae. Nickel presents the topic in great detail in many tables, ordered by plant and Auchenorrhyncha species and accompanied by an exhaustive text. He further comments on the stratification of Auchenorrhyncha in terrestrial ecosystems and evaluates the use of different plant tissues for feeding, including fungi. The last part on pests of cultivated plants is too short and lacks information on some species known to be vectors of phytoplasmas.

Chapter six summarizes the life history strategies of leafhoppers and planthoppers. It is comprehensive, heterogenous and relatively short (28 pages). The diet width of Auchenorrhyncha is described using well-arranged figures and tables. Most of monophagous species are confined to highly apparent plants. The relation between Auchenorrhyncha and plant diversity indicates that species-rich plant groups have more herbivore specialists than species-poor groups. The role of nitrogen in Auchenorrhyncha ecology is briefly discussed, as well as plant defence and the little studied interspecific competition. In the section on "Dispersal" the author reports on the role of wing length, of brachyptery and macroptery in the utilization of a three-dimensional habitat, on the specific conditions in alpine habitats, migration and colonisation of new habitats. There are general remarks on voltinism and dormancy in Auchenorrhyncha in the last part of chapter six.

Finally, the book contains a clear summary of all the topics and an extensive list of references (44 pages).

The book is a good read, written in a clear and concise English. Not only is it a reliable basis for any future study on the biology of leafhoppers and planthoppers, but also for a similar synthesis of the ecology of other insect groups. I recommend it fully.

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