

BOOK REVIEW

STÖCKMANN M., BIEDERMANN R., NICKEL H. & NIEDRINGHAUS R. 2013: THE NYMPHS OF THE PLANTHOPPERS AND LEAF-HOPPERS OF GERMANY. WABV, Bremen, 436 pp. ISBN: 978-393920-204-2. Price EUR 100.00, GBP 80.00, USD 124.99.

This pioneering book, which follows two recent guides to the Auchenorrhyncha fauna of Germany (Biedermann & Niedringhaus, 2004; Kunz et al., 2011), is the first atlas for the identification of immatures of Auchenorrhyncha. With its smart layout and lucid style this new guide will serve both experts and amateur entomologists. The ease of use has been given priority over paper economy: many of the drawings are reproduced at least twice, in both the generic and species sections, to prevent users having to flip back and forth between pages during identification, additionally facilitated by three ribbon markers of different colours.

In the keys to genera, each genus is illustrated with habitus images of all the species included. Conveniently arranged into rows these figures help one to appreciate the subtle differences between genera, which are hard to describe in words, but which one can perceive intuitively, as in the study of art.

The keys to families and genera are followed by image galleries, which present all the species in a particular taxonomic order. A page in this section is divided into three columns, each illustrating one species or left blank if the nymph is unknown. The bottom of each column contains the name and a brief summary of the appearance, biology, habitat (including host plants) as well as references to other published illustrations of the species. A special symbol with four states indicates whether a precise identification of the given species based on its external appearance is straightforward, possible, unlikely, or impossible.

The guide is supplemented with extensive and diverse reference material, including a list of the collecting data of all illustrated specimens. Also provided is a list of 114 species recorded in Germany as adults but with unknown immature stages. The guide includes illustrations of 516 species, including two not occurring in this country. The 228 genera represented cover nearly all those recorded in Germany (see, however, my second comment below). Such an admirable coverage is a testimony to the authors' extensive effort to collect, identify and rear nymphs. While uncomplicated in some Auchenorrhyncha, such as most cicadellids or delphacids, the task of associating nymphs with adults is painstakingly difficult when these live in different habitats, such as cixiids, achilids and cicadas. Equally admirable is the colossal work, over a thousand excellent black-and-white shaded habitus drawings and numerous supplementary morphological line drawings, contributed by Marlies Stöckmann, who is both an artist and Auchenorrhyncha expert!

A few regrettable flaws must be mentioned:

1. In Figure 4a, the border between the head and pronotum is omitted, the callout line "pronotum" actually points to the vertex,

and the "vertex" line to the frons. In the left part of Figure 4b (a delphacid nymph) the callout line "gena" points to the lorum, while the lorum is indicated only in the right part of the same figure (a cicadellid nymph).

2. The drawing of "*Myndus musivus* (Germ.)" actually depicts a species of either *Cixius* or *Tachycixius*, most likely the latter (judging from the size of the 5th instar-nymph). Perhaps the authors can be reproached here for not quite trusting studies on nymphs of the tribe Oecleini (containing the genera *Myndus* and *Trigonocranus*) that focus on taxa not occurring in Central Europe. Oecleine nymphs are characterized by abdominal wax fields interrupted by five interspaces, each with one sensory pit at its anterior end. This condition also occurs in *Myndus* (*Haplaxius*) *crudus* Van Duzee (Wilson & Tsai, 1982; Yang & Yeh, 1994; Emeljanov, 2001) and *Trigonocranus* (the guide reviewed here).

3. The section "Genera identification tables" lacks a title.

4. The paper by K. Šulc (1928), which provides illustrations of nymphs of *Reptalus* (as *Oliarus*) *panzeri* P. Löw and *Cixius nervosus* (L.) (abdomen), is not present in the bibliography.

In spite of these minor problems, the guide provides an indispensable tool, which can be used to identify nymphs of Auchenorrhyncha not only in Germany, but in much of the temperate Palearctic. I hope that it will inspire further studies of the usually neglected immature stages of this wonderful insect group.

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A.F. Emeljanov
Zoological Institute RAS, St. Petersburg