

Book review

GORB, E. & GORB, S. 2003: Seed dispersal by ants in a deciduous forest ecosystem: Mechanisms, strategies, adaptations. – Kluwer Academic Publishers, Dordrecht, 242 pp.

Mag. Dr. Birgit C. SCHLICK-STEINER (contact author) & Mag. Dr. Florian M. STEINER, Institute of Zoology, Department of Integrative Biology; Institute of Forest Entomology, Forest Pathology and Forest Protection, Department of Forest and Soil Sciences, University of Natural Resources and Applied Life Sciences Vienna, Gregor-Mendel-Str. 33, A-1180 Vienna, Austria. E-mail: h9304696@edv1.boku.ac.at

We all know that ants are important in the dispersal of seeds. More than 3,000 plant species use the help of ants to be planted, and within single ecosystems half the herbaceous plant species may take advantage of this strategy. But are we aware of the full complexity of the myrmecochorous syndrome? Has the impact of the ant community's species composition on the plant species composition via myrmecochory been adequately recognized? Or the influence of ant-ant competition on elaiosome consumption? Or why ants to some extent also transport seeds of non-myrmecochorous plants? These are only a few of the many aspects that the Ukrainian researcher couple Elena and Stanislav Gorb address in their book. We are introduced to the who is who of ant and plant partners in European temperate forests. We learn that big is beautiful in seed size but, counter-intuitively, not necessarily in elaiosome size. We are shown the differences in dispersal distance between facultative and obligate myrmecochores. And with respect to the current hypotheses of selective advantages of plant dispersal by ants, we are led to the conclusion that, in European temperate forests, different plant species may take advantage in different ways: getting into the nutrient-rich nest environment of the ants, profiting from reduced intraspecific competition or occupying a new habitat. Aspects studied for the very first time include seed flow and the transport of seeds by territorial ant species from their nests to the territory border after consumption of the elaiosome; this results in a hitherto unrecognised increase in seed dispersal.

Gorb & Gorb chose a single deciduous forest ecosystem for their studies, and this proves to be a major advantage. While a wealth of literature is available on this ant-plant mutualism from all over the world, its heterogeneity is a major obstacle to comparing and integrating these data. Here, we are provided with consistent data from one ecosystem, based on five field seasons and on laboratory studies. The couple's well-sorted tool box comprises various field methods such as marking individual ants and seeds, the analysis of the seed soil bank, the "cafeteria" experiment of offering seeds to ants, as well as anatomical analyses by light and electron microscopy and original computer simulations. The well-thought-out structure of the book, including a summary at the end of each section, a comprehensive index and a glossary, makes the presented data readily accessible to any biologist. Upon closer scrutiny we found two minor errors: in the glossary, anemochory is erroneously defined as seed dispersal by birds instead of wind, and *Leptothorax nylanderi* should be addressed as *L. crassispinus* (SEIFERT 1995, RADCHENKO 2000). Beyond such irritants, we found the book by Gorb & Gorb to be a very well-chosen combination of a primer on myrmecochory, hypothesis-driven case studies and a presentation of both open questions and tools to solve them. Nearly one hundred years after the milestone work on myrmecochory by SERNANDER (1906), this monograph will spread fresh seeds of fascination to myrmecologist, botanist and theoretical ecologist readers and will no doubt ignite follow-up research.

References

- RADCHENKO, A. 2000: What is "*Leptothorax nylanderi*" (Hymenoptera: Formicidae) in Russian and former Soviet literature? – *Annales Zoologici* 50: 43-45.
- SEIFERT, B. 1995: Two new Central European subspecies of *Leptothorax nylanderi* (FÖRSTER, 1850) and *Leptothorax sordidulus* MÜLLER, 1923 (Hymenoptera: Formicidae). – *Abhandlungen und Berichte des Naturkundemuseums Görlitz* 68: 1-18.
- SERNANDER, R. 1906: Entwurf einer Monographie der europäischen Myrmecochoren. – *Kungliga Svenska Vetenskapsacademiens Handlingar* 41: 1-410.