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Book reviews

A. F. G. DIXON: Insect Herbivore-Host Dynamics. Tree-Dwelling Aphids

Cambridge University Press, The Edinburgh Building, Cambridge, CB2 2RU, UK; 2005, 208 pp., 91 line figures 13 tables; ISBN-13: 978-0-521-80232-1 Price: £59.00, US$ 105.00. http://www.cambridge.org/

Aphids represent one of the most important insect group from both the ecological and economical viewpoints. Their herbivory has been studied for years but the complicated population dynamics is still not completely understood. As a result of long-term studies, the author as the prominent aphidologist presents his complex view on the selected deciduous tree dwelling aphids. He focuses especially to the relations of the sycamore aphid (*Drepanosiphum platanoidis*) and the sycamore (*Acer pseudoplatanus*) as a well worked out example of insect herbivore-host dynamics. Other examples are also used for illustrations of some phenomenons.

The book consists of 11 main chaperes: 1. Introduction, 2. Tree-dwelling aphids, 3. Trees as a habitat: relations of aphids to trees, 4. Trees as a habitat: relations of aphids to their natural enemies, 5. Carrying capacity of trees, 6. Aphid abundance, 7. Population dynamics, 8. Risky dispersal, 9. Seasonal sex allocation, 10. Aphids and tree fitness, 11. Rarity, conservation and global warming. Final parts (References, Species index and Subject index) help the reader in better orientation and give hints for further reading in the discussed area.

Changes of aphid abundance in time and space are influenced by a wide variety of factors. According to the author, the most important reasons for dramatic abundance fluctuations of the studied aphid species lie mainly in host tree properties (genetical differences in times of bud burst and leaf fall, seasonal changes in nutrition contents, living space for aphids on and between leaves etc.) in context with weather events. In contrast to the common opinions, the author did not find that the natural enemies could be a substantial factor regulating aphid abundance. The main reason for this is the higher generation time ratio especially of predators in comparison to their aphid preys. Moreover, effects of parasitoids can be decreased by hyperparasitoids and antagonistic influences from other natural enemies. There are also density dependent factors - intraspecific competition influencing population dynamics of aphids. Interesting phenomenon of summer migration of sycamore aphids author explains by three possible reasons: random extinction of local host populations, aphid kins competition and asynchronous fluctuations of aphid populations with the quality of hosts. Parthenogenetic reproduction with seasonal appearance of sexual environmentally induced forms are also discussed in relations to other factors. From the viewpoint of tree fitness, the author considers the studied aphids as one of determinants of sapling survivorship in competition. He also considers the other agents which can influence tree fitness through

aphids, e.g. ants. The last chapter deals with rare aphid species and their possible extinction in changing environment.

This work shows the way to understand the nature of interspecific interactions through investigations into all aspects of the researched problem. As a monograph issuing from long term observations and experiments it gives the reader not only the insight to the partial problem of the selected aphid species and their hosts but it serves also as a model for studying other ecological tasks.

M. SUVÁK

L. CHITTKA & J. D. THOMSON (eds.): Cognitive Ecology of Pollination. Animal Behaviour and Floral Evolution

Cambridge University Press, The Edinburgh Building, Cambridge, CB2 2RU, UK; 2005, 358 pp., 55 line figures 7 tables, ISBN-13: 978-0-521-78195-4 (hardback), 978-0-521-01840-1 (paperback). Price: £70.00, US$ 120.00 (hardback), £33.00, US$ 55.00 (paperback). http://www.cambridge.org/

In 16 chapters of this book, the adaptations of flowering plants to animal pollinators and vice-versa are discussed by 27 authors from 7 countries. They are reputable specialists for various aspects of pollination biology. The main attention is paid to hymenopteran pollinators, especially honey bees and bumble bees, but other insect groups (butterflies, flies, beetles), birds (hummingbirds) and mammals (bats) are also considered here from some points of view.

There are presented the results from series of experiments and studies aimed to recognize pollinators sensory abilities, memories, and behavioural mechanisms in processes of searching, preferring and using food sources from flowers. Along with this, the evolved flower traits were studied to explain patterns of flower choice in pollinators - flower constancy. Inter and intra-species variability of individual traits of both animal pollinators and flowering plants is discussed also in context of coevolutionary processes. Other environmental factors influencing pollination (e.g. predation risk) are also mentioned to indicate the complexity of the studied phenomenons.

The latest knowledge on pollinators behaviour and mutual adaptations with plants summarized in this unique work represent a valuable information for researchers, teachers, students and others interested in pollination ecology.

M. SUVÁK

V. RICO-GRAY & P. S. OLIVEIRA: The Ecology and Evolution of Ant-plant Interactions

The University of Chicago Press, 1427 East 60th Street, Chicago, IL 60637 U.S.A.; 2007, 320 pp., 55 line drawings, 27 tables; ISBN-13: 978-0-226-71347-2 (hardback), 978-0-226-71348-9 (paperback). Price: US$ 70.00 (hardback), US$ 29.00 (paperback). http://www.press.uchicago.edu/

Ants as omnipresent insects with high species diversity, high number of individuals and fascinating social organization have had multiple both direct and indirect effects on plants in ecosystems since Mesozoic Era. On the other hand, plants have evolved a wide variety of adaptations for living with ants. Though there are many studies dealing with partial phenomenons of ant-plant interactions in literature, the problem is very complex. The authors, as reputable myrmecologists with long term experiences, have tried to summarize the main aspects of ant-plant relations and to identify general patterns. Ilustrative examples are brought from various ecosystems throughout the wolrld, mainly from tropical and subtropical regions.

The book is divided into 12 main chapters dealing with the selected questions of ant-plant interactions:

In chapter 1. *Ant-Plant Interactions*, the coevolution of ants and plants is discussed on the base of paleontological data and actual theories. Chapter 2. *Antagonistic Interactions: Leaf-Cutting and Seed–Harvesting Ants* deals with two known groups of herbivorous ants. Next to the description of special adaptations of ants for grazing or seed predation, the authors notice that even this type of ant-plant relations have not to be always clearly antagonistic in wider context. These ideas are further developed in analyses of possible origin and evolution of ant-plant mutualism in chapters 3. *Mutualism from Antagonism: Ants as Primary Seed-Dispersers*, 4. *Mutualism from Opportunism: Ants as Secondary Seed-Dispersers* and 5. *Mutualism from Antagonism: Ants and Flowers*. Mutualistic interactions between ants and plants can be direct, such the ones described in chapter 6. *Antagonism and Mutualism: Direct Interactions* or mediated by other organisms (honeydew producing hemipterans or lepidopteran caterpillars) in chapter 7. *Antagonism and Mutualism: Indirect Interactions*. Special adaptations of some plant species for uptake of nutrients brought by ants are described in chapter 8. *Nutrition of Plants by Ant Mutualists: Life History of Ant-Fed Plants and Ant-Garden Systems*. The interesting question of the so-called ant-biomass paradox is discussed in chaper 9. Canopy-Dwelling Ants, Plant and Insect Exudates, and Ant Mosaics. It is related to the limited potential prey in tree canopies and the fact, that large ant biomass is mostly a result of stabile sources of plant exudates and honeydew produced by sap-sucking insects. These sources and interspecific competition form a spatial mosaic of ant species and their colonies there. This distribution and using sources is not static but it changes in time and space as described in chaper 10. *Variation in Ant-Plant Interactions*. Chapter 11. *Ant-Plant Interactions in Agriculcure* deals with ants as potential pests or, on the contrary, biological control agents against pests in crop production. Main ideas and research tasks for the future are resumed in chapter 12. *Overview and Perspectives*. Each chapter contains numerous references dealing with the themes, it is valuable tool for more detailed study.

The necessity of considering the multiple relations in time to understand the role of individual ant species in natural ecosystems or agroecosystems is specially accentuated in this book. Focusing only on the selected phenomenon in some ant-plant studies may lead to incorrect conclusions. According to the authors, one should take into account

many interspecific interactions to estimate the resulting impact of individual ant species to the fitness and future development of examined plants.

This book shows the reader the complexity of ant-plant interactions. It will be appreciated not only by professional myrmecologists but also by other entomologists and ecologists in general, students and all trying to understand the amazing natural processes related to this group of social insects.

M. SUVÁK

P. GUTTE: Flora der Stadt Leipzig einschließlich Markkleeberg [Flora of Leipzig city including Markkleeberg]

Weissdorn-Verlag Jena, Wöllnitzer Str. 53, D-07749 Jena, Germany (weissdorn-verlag@t-online.de); 2006, 278 pp., 56 colour photographs, ISBN: 3–936055–50–5. Price: 19.90 EUR. http://www.weissdorn-verlag.de/

In this book, small in size but rich in content, the author doccumented the occurrence of higher plants in the area of Leipzig city. During 40 years of collecting information on abiotic characteristics (soil, climate) and taxonomic analyse of individual species he found 2165 species and hybrids in various sites. In the book part Vegetation he describes the sites where the inventarization was carrying out. The heterogeneousness of the sites from dry and semiarid to humid and water ones (forest, meadow, banks of rivers and water pools, fields, uncultivated areas, parks, gardens) reflects the richness of urban flora. Very valuable information involves the history of floristical research considering the analysed area. Every taxon in the list has its scientific name, German name, synonym, site, abundance, degree of threat, history of occurrence, taxonomical subunits and comments. Rare neophytes are in the separate list. Information on individual taxons is short and eloquent. It is expressed by abbreviations which helps the reader in rapid and effective orientation in individual data sets. The autor collected large amount of literature with rich information on flora and vegetation of Leipzig city. 56 colour photographs of taxons and biotopes are in Apendix. The book is a good tool for students and teachers, employers of state nature protection and environmental authorities, institutes of land-use planning and persons interested in botany.

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