



Parasites in social insects: from sparse beginnings to a key issue

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Twenty years ago, research was mostly focussed on social parasitism, whilst infectious diseases were largely neglected. The interest was renewed with the publication of the book, and has since lead to very active research in many quarters. As the field has progressed, the results made it increasingly clear that (the non-social, infectious) parasites might affect almost any aspect of the biology of social insects. Examples include variation in social organisation, life history, behavioural changes, chemical secretions, or even extended parental care by immune priming. At the same time, our knowledge on the natural history of parasites in social insects has increased enormously, and the more recent discovery of the role of the microbiota has added a further, exciting dimension to the discussion. Not the least, parasites as major threats to the wellbeing of highly valued social insects, such as honeybees, have caused a lot of attention. Currently, research in this field has a strong focus on ‘-omics’ and yields unprecedented insights into the underlying genetic structure of host-parasite interactions, their evolution, and the potential for management interventions. Not surprisingly, many more questions remain. Major elements of the interaction of parasites with social insects are still not well understood and poorly researched, for some, the right questions have not yet been formulated. Among these elements, one could mention the epidemiological dimension of how and why parasites spread within or among colonies and populations, whether and how parasite strategies are different for this unique environment, what elements of social evolution were particularly critical or a consequence of parasitism, what special ‘-omics’ characteristics distinguishes social insects from other organisms, and so forth. This keynote will go through some of these major points and hopefully add to, and aid stimulating the general discussion in the field.