

Preface

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Some years ago, when I started my studies as an acarologist, I realised that mites were being overlooked in several disciplines of applied biology; particularly interesting was the absence of the study of mites in forensic settings.

Most crimino-legal investigations that explore trace evidence and analyse post-mortem intervals >48 h after death include the study of arthropods, mostly insects found in and around a body or at the scene of a crime. Mites are actually almost never missing from a scene, they are present and likely ubiquitous; however, their occurrence is difficult to detect because of their micrometrical size. In addition to the size problem, the appreciation of the Acari is not as wide and enthusiastic as the appreciation of insects, for example, and only a very few times in the history of forensic science, acarologists have been asked to join the investigation of a crime. The main goal of this special issue on forensic acarology is to stimulate the collaboration of forensic entomologists, scientific police and acarologists.

In 2006, with Henk Braig (Bangor University, Wales, UK) and supported by the Leverhulme Trust, we started a new project in this area: “Forensic acarology: Mites as high-resolution indicators for time of death and place of decomposition”. This project is still ongoing in collaboration with Dr. Anne Baker (Natural History Museum, London, UK) and Prof. Bryan Turner (King’s College, London, UK). Initially, we were particularly interested in the study of mites associated with indoor carcasses in temperate regions, where insects might be rare and almost absent during wintertime. More recently, we started additional lines of research, such as developing protocols to collect mites from clothing and furniture and characterising the individual human acarofauna. Using population genetics and morphological and molecular techniques, the analysis of dispersal and movement of the human acarofauna among individuals and between individuals and objects might be of great advantage in cases where other traces, such as DNA samples or fibres, are not available or useful but where human mites have been transferred.

In parallel with the development of these projects, we started collecting and reviewing the literature related to the subject. The idea of compiling the scattered information on

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forensic acarology was one of the aims of a workshop on forensic acarology that took place during the 12th International Congress of Acarology in 2006, in Amsterdam (The Netherlands). Since then, contributions have been made and workshops held on forensic acarology during the yearly meetings of the European Association for Forensic Entomology (EAFE) in Bari (Italy), Brussels (Belgium), Kolymbari (Greece) and Uppsala (Sweden).

This issue compiles articles that should provide a prelude to the literature on forensic acarology and that may form a firm foundation for its further development. The introductory article aims to stimulate interest in forensic acarology and to entice the reader into pursuing the various aspects of the following papers. Bryan Turner begins by asking whether forensic entomology might offer a suitable template for forensic acarology. Lee Goff lays the ground for forensic studies presenting and illustrating the various stages of decomposition in exposed cadavers. This is followed by a new analysis of the acarological evidence provided in the first historical case of forensic acarology, involving a mummified newborn girl, originally investigated by Pierre Mégnin in 1878. Henk Braig and Alejandra Perotti review more than 100 years of literature on the occurrence of mites on carcasses. Why and how phoretic mites are in intimate association with the ephemeral habitats of corpses and carcasses is addressed by Alejandra Perotti and Henk Braig. Barry O'Connor examines the importance of astigmatid mites in a variety of forensic settings, presenting his own and unpublished findings. An overview of occurrence and diversity of house dust mites in our human/domestic environment, including public buildings is presented by Krzysztof Solarz. Cliff Desch, one of the two world experts on follicular mites (*Demodidae*), explains that even the pores of our skin can hold important forensic information in the form of follicular mites. An archaeological perspective of forensic taphonomy is introduced by Anne Baker, who describes Acari associated with coprolites and mummies and the use of mites at archaeological sites as indicators of past human activity. Finally, Heather Proctor investigates the possible contribution of freshwater mites in forensic investigations.

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