

# Preface

Forensic Entomology deals with the use of insects and other arthropods in medico legal investigations. We are sure that many people know this or a similar definition, maybe even already read a scientific or popular book dealing with this topic. So, do we really need another book on Forensic Entomology? The answer is 13, 29, 31, 38, and 61. These are not some golden bingo numbers, but an excerpt of the increasing amount of annual publications in the current decade dealing with Forensic Entomology. Comparing them with 89 articles which were published during the 1990s it illustrates the growing interest in this very special intersection of Forensic Science and Entomology and clearly underlines the statement: Yes, we need this book because Forensic Entomology is on the move with so many new things happening every year.

One of the most attractive features of Forensic Entomology is that it is multidisciplinary. There is almost no branch in natural science which cannot find its field of activity here. The chapters included in this book highlight this variety of researches and would like to give the impetus for future work, improving the development of Forensic Entomology, which is clearly needed by the scientific community. On its way to the courtrooms of the world this discipline needs a sound and serious scientific background to receive the acceptance it deserves.

This book does not ignore the forensic and entomological basics of the discipline, and gives an update in entomotoxicology, offering a survey about the decomposition of a cadaver (including a protocol for decomposing studies) and keys for identifying the difficult stages of immature insects. Especially the latter topic is an important one, as we believe that, despite the enormous progress made in bar-coding and identification of many taxa via DNA-analysis in recent years, one should not neglect the very basic skills - particularly because using these "easy lab-tools" could give you a speciously feeling of certainty.

Forensic Entomology and Blowflies are very often named in the same breath. We would like to attract the readers to some groups of animals which are neglected or even ignored such as, beetles and mites. Blowflies are much easier to handle in the lab than beetles, which could be the major reason why the majority of developmental studies are dealing with Diptera. If you have ever seen a cadaver infested by thousands of Silphidae or Dermestidae you soon realise that you must know more about them. Mites are not insects, nevertheless they belong traditionally to medical

entomology since its early beginnings. So we should recognize them as a part of forensic entomology as well, keeping in mind that the great Mégnin includes them in his famous *Faune des Cadavres* in the late nineteenth century. These arthropods are especially abundant in buildings, which leads to another gap in our knowledge: Indoor scenarios. Interestingly the majority of experiments analysing the insect succession on cadavers take place outside in the field. However we should not ignore that vast amount of corpses found every year indoors. No doubt, it's much easier to conduct experiments out in nature, but we need indoor data sets as well for a better understanding of crime scenes which are located in a building.

Working as a forensic entomologist means mainly working with terrestrial ecosystems, but people die in the sea as well, or their dead bodies are dropped there after a homicide. What happens to those corpses? How do the bodies decompose? And are any arthropods or insects involved in this process? You will know this soon. From deep in the sea to down in the ground: It is surprising that our knowledge of forensic entomology of the soil is so incomplete. Dealing with cases where the bodies were buried always creates a lot of difficulties. Is there a succession in the soil as well as on the surface? Are the species found on the body able to colonize the buried cadaver or did they colonize him before?

Despite all of the scientific possibilities to improve the quality of entomological reports for the court, there are always pitfalls which cannot always be avoided. This book highlights certain caveats, bearing in mind that we are dealing with biological systems which do not always work in the same predictable manner. Due to the variability, we need statistics and probabilities in our expertises, which information is also covered in this book.

A topic such as climate change would not be expected in a book about Forensic Entomology, but the truth is simple: Climate change is everywhere and it will also influence a topic like the use of insects in forensic investigations. Last but not least we dedicate an own chapter to the field of myiasis, which is a well known subject for a veterinary. Insects also infest living humans and feed on them. A forensic entomologist should understand this process because it could bias his work, and at the same time he might be asked to estimate the time of negligence.

Curious? Then join us on our journey through the world of Forensic Entomology, but take care: after reading this book you may find you like this subject so much that perhaps you can find your own field of activity there: It is an exciting field of research.

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