Forensic Entomology contains 31 chapters written by 68 scientists from around the world. Although chapters in the first half of the book were written principally by entomologists, the second half of the book has chapters written by statisticians, soil scientists, population ecologists, parasitologists, and microbiologists, to name just a few. The book is separated into 5 sections:

Parts I–IV: These sections detail the history, accomplishments, and challenges of forensic entomology by geographical regions further separated into countries in Australasia, Europe, Africa, and the Americas.

Part V: These sections include chapters regarding experimental design, inferential statistics and computer design, Bayesian statistics, and predictive modeling. There are also chapters regarding decomposition microbiology, soil chemistry, molecular biology, engineering, behavioral and community ecology, and a chapter about use of surface hydrocarbons for identifying age and species of forensically important arthropods. The last 3 chapters discuss standard practices, international collaborations, and current global trends as related to the forensic sciences discussed in the book.

I found each of the chapters to be well written. The editors succeeded in compiling much of the history, current state, and future of forensic entomology and its related fields for this book. As would be expected, some chapters have less substance than others.

The editors acknowledged in the preface that contributing authors used different terms to describe a biological phenomenon. This is most apparent when the acronym PMI (postmortem interval) is used, which is defined as the time since death. The time since death is usually the primary question that law enforcement personnel want answered when they consult a forensic entomologist. Of course, the time since death may not be desired just of a human decedent. Forensic entomologists need to come to a consensus regarding standard practices and terminology, especially with this one basic term.

I liked the inclusion of forensically important species by country as I am interested in speaking with others who study the same species as I do. Many authors listed forensically important species in a handy table (or tables), whereas other authors mentioned their regional species in the text. A few authors provided no information at all about species found in their respective regions. For example, authors from Italy and Spain did not include species found in their countries, but included in the Italy chapter is a full-page figure of the Italian State Police and a figure detailing the structure of the Carabinieri. The Spain chapter has a figure of the hierarchic structure of departments involved in legal investigations. I do not see the usefulness of these figures as they pertain to forensic entomology, and feel that the figures were included as filler for these smaller chapters. To keep the first 18 chapters consistent, the editors should have requested that insects of forensic importance be presented in the same manner, preferably in table format.

There are 6 pages of color inserts. The first is a figure presenting publications about forensic entomology from throughout the world. This figure is small, low resolution, and should have been presented in landscape format. There is a small, blurry photo (but at least it is in landscape format) of the first North American Forensic Entomology Association (NAFEA) meeting held in Las Vegas in 2003. As the Eastern Association of Forensic Entomology (EAFE) is mentioned, perhaps a photo of this group should have been included in the book as well (or neither group photos)? Also in the inserts are 2 pages of color figures (if you call black-and-white a color figure) regarding publications by country. These should have been left out of the insert section. But these are minor issues and could easily be addressed in a 2nd edition.

The second half of the book contains chapters on newly emerging fields such as Bayesian statistics (specifically Bayesian Belief Networks or BBNs, Chapter 20). BBNs may be appropriate for use in determination of a PMI, but the author included many overly complex figures to illustrate its theoretical use for forensic entomology. The figures were difficult to read due to small font size in both the black-and-white and color inserts. The chapters on forensic decomposition microbiology (Chapters 21 and 22) are of great interest, but I found the 3 full pages of universal primers (Chapter 22) for genetic analysis of bacteria, archaea, and fungi not necessary for inclusion in this book. Chapter 23, the applications of soil chemistry that can be used in conjunction with forensic entomology to determine a PMI, is one of the best-written and most interesting sections in the book.

The chapter addressing experimental design, inferential statistic, and computer modeling (Chapter 19) is the most important chapter in the book. An earlier version by the same authors was published in the Journal of Medical Entomology in 2012 (49[1]: 1-10). The authors updated their analyses of peer-reviewed publications for inclusion in this book. In total, 103 publications were reviewed for this chapter. Sadly, the frequency of published studies with pseudoreplication has not changed over a period of 30 years. Only 19% of the publications reviewed had adequate experimental design and statistical analysis. This is a huge embarrassment for scientists in our field and needs to change, but the editors deserve praise for including this chapter in the book. I would require this chapter as a reading assignment for any graduate student hoping to study forensic entomology.

The other chapters discuss molecular biology, engineering (yes, there is an app for that), behavioral ecology, community ecology, use of surface hydrocarbons for identification and aging of specimens and determination of PMI, standard practices, international collaborations and training, and current global trends and frontiers; all are informative. The chapters in the second half of the book serve to bridge the field of forensic entomology to these other important fields of forensic sciences. Collaborations of scientists using many of the sciences discussed in the book would be useful, especially for validation of timelines.
This book was is not meant to be a textbook, as were the books written by Dorothy Gennard (Forensic Entomology: An Introduction) and David Rivers and Gregory Dahlem (The Science of Forensic Entomology), nor could it really be classified as a reference book, as I would describe Jason Byrd and James Castner’s Forensic Entomology: The Utility of Arthropods in Legal Investigations. Overall, I found Forensic Entomology: International Dimensions and Frontiers to be very informative. It is an overview of the state-of-the-art of forensic sciences related to medicolegal entomology. Anyone interested in studying forensic entomology could glean a great deal (the good and the bad) from reading this book.

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Book reviews normally are written by authorities in the subject matter treated by the book. The perspectives of subject-matter authorities are valuable in discerning whether or not the subject is treated accurately, and if the treatment is up to date. But when the book is designed to be used as a textbook, perhaps a different perspective is equally valuable: the perspective of a novice. After all, most of the readership likely would consist of students who need some fundamental knowledge of the subject matter. Well, I’m not qualified as a toxicologist, or as a student, but my knowledge of toxicology is superficial, so I believe that my perspective is closer to that of novices (students) than to authorities (toxicologists). So this review will assess how understandable the material is to a novice who lacks a strong background in organic chemistry, but who needs to know something about the chemistry, mode of action, usefulness, and hazards associated with insecticides. In case you are wondering about the perspective of authorities on the topic, you should know that the 1st edition of this text was reviewed favorably by experts in the field (Siegfried 2009; Peterson 2011), so there is every reason to believe that the 2nd edition is also an authoritative treatment.

Anyone comfortable with the contents of the 1st edition will be pleased to see that the approach and layout of the 2nd edition are the same. Simon Yu opens with information on why insecticides are important, explains how insecticides are formulated, and gives information on the legal constraints of insecticide use. This is followed by the longest chapter, which is devoted to classification of insecticides. This chapter is largely based on the chemistry of the toxicants, though there is some element of chronological order to the treatment of insecticides, and the acaricides are handled separately from the “true” insecticides. Here he identifies what aspects of the chemistry make each group unique, the host range, toxicity, and in some cases the mode of action. Interestingly, the number of traditional insecticide classes has now been eclipsed by the new and diverse “miscellaneous” insecticide classes, making it challenging for students to grasp the chemical organization of these numerous bioactive molecules. Dr. Yu then discusses how toxicity is assessed, the uptake of the toxicants by target organisms, their mode of action, and metabolism. Reflecting the advent of new chemical classes of insecticides, the sections on mode of action and metabolism are expanded considerably in the 2nd edition. These chapters will likely be the most challenging to students, as they are more chemically oriented than the others. Dr. Yu devotes an entire chapter to differences in metabolism among species; another author might relegate this topic to the end of the metabolism chapter, but this is an area of particular expertise of the author, and he does a good job justifying why it is important. Yu closes with what I believe will be among the most interesting chapters to most students: a unit devoted to insecticide resistance, and another to insecticides in the environment. However, the chapter on toxicity assessment will eventually be of great value to students interested in careers in pest management, as will the chapters on uptake and resistance. Thus, Simon Yu brings together many valuable and diverse aspects of pesticide science, presenting much more than the chemistry of insect poisoning.

Nearly all of the material from the 1st edition is recycled into the 2nd, though as noted previously, the contents are expanded in some sections, mostly to reflect the addition of new insecticides and classes of insecticides. Although the book is well written and quite understandable, readability varies among the chapters. For example, the chapter devoted to classification is rather encyclopedic; it will be difficult for a student to digest and retain the information on target insects and LD₅₀ values for the hundreds of products mentioned, let alone the chemical structures. However, it is important to have this information included, even if it makes for difficult reading. On the other hand, I found the section on evaluation of toxicity to be very understandable, and am confident that most students will appreciate the importance and usefulness of this material.

The appearance of the 2nd edition of the book is slightly changed, and improved. All the figures have been redrafted and are much cleaner and crisper. Also, the section and subsection headings are bolder, making it easier to navigate the book. A considerable number of new references have been added, bringing the content up to date. As with all publications, there are some mistakes and typographical errors, though they are very minor and do not detract from the usefulness of the text. The only thing I think is missing is mention of the International Resistance Action Committee (IRAC), and perhaps an appendix with the common products, their most common trade names and manufacturers, and their IRAC classification. But, like insecticide application methodology, it may be beyond the scope of the book. Overall, this is a carefully crafted treatment of a difficult subject, and Simon Yu has successfully walked the fine line between too much and not enough detail. Importantly, he does an excellent job explaining why certain things are important to toxicologists, and what should be of interest to managers of insect pests. Also, he provides a holistic treatment that has something of interest for everyone, and it is presented in an easily comprehended manner. If you work with insecticides, and especially if you don’t, you need to read this book. There is a great deal of misinformation about pesticides in the world, but this book is a great source of enlightenment.

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