Journal of the Lepidopterists' Society
63(2), 2009, 128–129

FIELD GUIDE TO THE BUTTERFLIES OF THE SAN FRANCISCO BAY AND SACRAMENTO VALLEY REGIONS.By A.M. Shapiro & T.D. Manolis. 351 pages, 31 color plates; Hardcover (US$50) ISBN 978-0-520-24469-6, Softcover (US$18.95) ISBN: 978-0-520-24957-8. University California Press. Publication date: 2007.

Among academic cognoscenti Art Shapiro represents the stuff of legend. But perhaps most familiar are his significant scientific works that have their core in the study of butterflies. In a voice that is uniquely his own, he has often breathed the vital spark of life into marginal or disregarded topics, or the work of little known authors, and in doing so, managed to provide important insights into the ecology and evolution of butterflies. In that same voice he has also, upon occasion, held up shoddy work in the glaring public spotlight. Given his consistent history of eclectic scholarly work one comes to expect important and interesting things from him. In this field guide, however, it seems to me that Shapiro has done something extraordinary. Rather than follow charted bureaucratic procedures, technologies, and list of topics that are *de rigueur* in a great many butterfly books, this one charts new territory by being breathtakingly simple and direct. It is written to inform a lay audience how to see butterflies in nature, look beyond the object, and appreciate complex natural history and habitat associations—butterfly biology, as it should be. And this book does so with such disarming ease that trained biologists can understand its importance, and learn from reading it.

The workhorse of any field guide is the collection of identification plates. This is the first place one goes to start learning. It is where one compares a real butterfly with a photograph or illustration. Logically, identification plates should be good, but they often disappoint. The plates painted by Timothy Manolis are a mixture of traditional flat winged illustrations with more dynamic portraits of butterflies flying, or at rest in the field. They are extremely good, and represent an intelligent mix of art with a naturalist's eye to practicality. In combination with the notes on the facing pages, identifying most butterflies treated in this field guide should be a rewarding experience. To test this idea I recommend using this book ruthlessly, and put the binding through grueling field tests under any and all weather conditions.

Butterfly field guides can be many things. When assessing a new one I am inexorably drawn to the species accounts to see what the author has to say. Consider *Danaus plexippus*; perhaps the best-known butterfly species in the world. What biologist who works on butterflies hasn't been asked about their biology? I'll bet that most of us have given an abbreviated version of…, migration, unpalatability, mimicry, yada-yada-yada. Well, the entry in this book shows how a ponderous amount of scientific information on the monarch butterfly can be condensed succinctly into a few short pages. Even my own mother could read it, understand it, and then prod me with non-trivial questions—for hours. Let's take another well-known species, *Parnassius clodius*. Here its distribution and natural history is considered crisply in succinct words, but the account also includes some wonderful lagniappe on mating behaviors and the sphragis that are meant to entice researchers. Nice to see new life breathed into the well-known species. But what about rare species with identity problems like *Polygonia oreas*? Well, learn all about it on p. 188. But be advised that, "This species is, or isn't conspecific with *P. progne*, depending on this weeks reading of goat entrails". What a dexterous way of pointing out taxonomic squabbles and territories among the experts. But after allusions to goats, Shapiro gets serious by noting that this is "another poorly understood species of cool, moist forest", and provides his own field observations, thereby directly asking for more evidence, not just opinion. Like anyone reading the account, I found myself thinking about working in these mysterious cool, moist Californian forests to get some answers. In sum, it seems that each and every one of the species accounts are logical, informative, easy to use, and very well written.

The topical subjects an author chooses to write about form an important part of any field guide, and Shapiro does not disappoint. It is likely that more words have been expended on taxonomic classification in the butterfly literature than any other topic. Indeed, this is among the first things the incipient student of butterflies learns about and feels is important, and Shapiro suggests (p.69) that according to the book of Genesis, taxonomy is the world's oldest profession. Do I detect a hint of Shapirian double entendre? He then gives account of the historical development of taxonomy and classification, ranging from Linnaeus through cladistics, all the while maintaining his central theme that phylogeny is important to understanding butterfly evolution and ecology. Although it has been said many times before, we are reminded (p. 71) that, "Butterfly taxonomy is a mess". Those five words encapsulate what

I call, '*butterflyology*' (Hey, it's time someone coined the term). *Butterflyology* may be defined as the perennial squabbling jihad fueling the constant flux of scientific and/or common names, often at the expense of what is really interesting or important. Using a low-key, elegant approach Shapiro describes the tempest of the name game, pointing out how stability in the taxonomic system of genera, species, subspecies, forms or just common names seems particularly elusive in butterflies. He also gives examples of how illogical logic fuels the constantly changing sets of names, and why various rules, legislation and mood swings are necessary to put names on the butterflies treated in his field guide. Without a suspicion of goat entrails Shapiro miraculously clarifies this dynamically obfuscated topic, and even employs fuzzy logic (p. 82) to make a thoughtful gumbo of butterfly names. Pass the hot sauce, please.

And what about the frightening, compounded techno phrase, 'molecular phylogeography'? What does it mean? How does it fit into the layman's life, '*butterflyology*', or that of the professional biologist? And why is it important anyway? All is revealed in three paragraphs (pp. 11–12), and it leaves one satisfied that it is important. And those paragraphs makes one ponder the long history of earth and butterflies, and wonder about those mysterious missing mimics of *Battus philenor* in California. Food for thought indeed.

To the potential reader I suggest dipping into all topics, chapters and species accounts in this field guide, and to do so frequently. There is nothing facile here. This is sophisticated work written by someone who is a master of the subject. This book is about the ecological and evolutionary dynamics of butterflies, the effects of civilization, habitat, and climate change on them through the history of California. Art Shapiro inspires everyone to get involved with butterflies, and get to work. Beyond that I think this is a tremendous book, and one that should be on the bookshelf of anyone who can read.

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Received for publication 2 March 2009; revised and accepted 1 May 2009.