

BOOK REVIEW

Cannings, Robert A. 2002. The systematics of *Lasiopogon* (Diptera: Asilidae). Royal British Columbia Museum, Victoria, British Columbia, Canada. 353 pp. ISBN 0-7726-4636-8.

The robber flies (Insecta: Diptera: Asilidae) are a diverse family of true flies, with the number of described species in the world approaching that of the number of bird species. Yet most people, familiar at least in passing with robins, sparrows, and Kentucky Fried Chicken, are completely unaware of these fascinating insects.

Dr. Robert Cannings is familiar with robber flies and has created a superb monograph of part of one genus, *Lasiopogon*. This monograph is a sturdy, hardbound volume that resulted from years of study of this group of flies limited to the Holarctic region. Dr. Cannings gives a wonderful summary of the biology and natural history of the family as a whole. It will serve as a jumping-off point for students of these flies for years to come because of its bibliographic thoroughness. He tackles the plethora of morphological terms used in past descriptions and settles on standard terminology for obvious and obscure body parts that can serve as a basis for future detailed studies of robber fly morphology.

The study of this apparently monophyletic genus *Lasiopogon*, resting as it does in a phylogenetic morasse of interesting genera, serves as a model for elucidating and clarifying relationships among genera and problematic subfamilies. The approach of this monograph is to consider the broad taxonomic categories to which *Lasiopogon* belongs and methodically dissect these categories into less inclusive groups using the standard phylogenetic tools of outgroup comparison and parsimony. As the author immersed himself in this monumental work, he clearly realized that a complete and easy end was not to be reached. Instead, he con-

centrated his most detailed work on a section of the flies limited largely to the Nearctic region.

Initially, Dr. Cannings assumed it to be a relatively straight-forward revision. He knew that there were many described species and assumed that few new species would be encountered in this relatively well-collected family of flies. He clearly states he was wrong in this assumption. He estimates that roughly half of the species he encountered were undescribed and new to science. He found these specimens in collections from 84 museums scattered throughout the northern hemisphere. He describes 14 new species in his *opaculus* section to add to the 15 previously named species. This is roughly a 50% new species rate in a group thought to be quite adequately described for a part of the world thought to have been well documented! He notes that this section comprises approximately 25% of *Lasiopogon* worldwide. Assuming an equal rate of new species to be described elsewhere (actually a conservative estimate based on sparse collecting in central Asia and eastern Europe), one can see that the described fauna of 51 species is probably closer to 100. In fact, as Dr. Cannings sorted through and meticulously dissected the taxonomically diagnostic terminalia of many of these flies, he set aside 49 as new species awaiting description! Oh, such a wonderfully diverse world is that of insect taxonomy! One might have hoped for a complete, detailed revision and description of all species in the genus, but alas, life is short, and artificial deadlines by seen and unseen masters impose their need to publish at milestones. Nevertheless, an appropriate milestone has been reached. Dr. Cannings codifies the morphological terms that can be used to advantage in years to come and outlines a clear methodology for preparing and dissecting specimens.

The volume is full of clear line drawings to be used in identification. For these aspects he

is to be commended. These sections of the book will have value for years to come and will set a standard not only for future work in the genus, but also for all detailed taxonomic studies of flies in general. He continues with a well-presented, yet complex hypothesis of phylogenetic relationships among genera, sections, groups, and species groups. He is apologetic for the lack of resolution this analysis gives (no apology needed; simply a few nodes have trichotomies!). He considers these phylogenetic relationships in a somewhat rambling biogeographic section that might have benefited from additional analysis using nested-clade, Brooks

Parsimony, or some other biogeographic analysis techniques. Dr. Cannings was clearly tentative in pushing the phylogenies in this fashion because he knew that so many species are yet to be described and so many areas are yet to be collected thoroughly! But the trail is blazed and the gauntlet is dropped for those who follow. This is a great scientific treatment.

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