



Pteroptyx maipo Ballantyne, a new species of bent-winged firefly (Coleoptera: Lampyridae) from Hong Kong, and its relevance to firefly biology and conservation

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Abstract

Pteroptyx maipo sp. nov. is the first record of the genus *Pteroptyx* Olivier from mainland China and Hong Kong and represents the most northerly record for this genus. The description includes all life stages: egg, larva, pupa and adult, and covers special structures such as the female bursa plates and male copulatory clamp. Details of habitat, male courtship flash patterns and male-female courtship behaviour are described. This species is the second in the genus *Pteroptyx* found to use a copulatory clamp, which functions to wedge the mating pair together. A complete clamp however does not appear necessary for successful insemination. Bursa plates hold the spermatophore partially projecting into a spermatophore-digesting gland. Other functions for the plates are investigated and discussed. The deflexed elytral apex appears after eclosion in the adult male. Mechanisms for the loss of ventrite 8 in the male abdomen are explored. A list of the 30 *Pteroptyx* species recognised here, with habitats, some morphological characteristics and a key to species of the Oriental *Pteroptyx* are provided.

Key words: *Pteroptyx maipo* Ballantyne, China, copulatory clamp, courtship behaviour, bursa plates

Introduction

Some species of the genus *Pteroptyx* Olivier, such as *Pteroptyx tener* Olivier at the Selangor River in Malaysia, and *P. malaccae* (Gorham) in Thailand, have considerable commercial value for tourism because of their spectacular synchronous flashing. Both of these well known species are associated with mangroves.

While *Pteroptyx* was previously unknown from China, here, we describe a new *Pteroptyx* inhabiting mangroves on the mainland area of Hong Kong. The presence of this firefly in these mangroves may provide opportunities for future tourism. The announcement of this new species by the Agriculture, Fisheries and Conservation Department in September 2010 immediately attracted the attention of local press media, and the general public (Lam 2010; Law 2010; Ma 2010).

Thirty species are recognised in the genus *Pteroptyx* Olivier (Table 1) following revisions by Ballantyne and McLean (1970), and Ballantyne (1987a, b; 2001). While the genus is easily recognised by the presence of the deflexed elytral apices in the male, its phylogenetic position is unresolved. Ballantyne and Lambkin (2009) grouped species of *Pteroptyx*, *Colophotia* Dejean, *Pyrophanes* Olivier along with several Australian and New Guinean *Luciola* Laporte together (their Figure 2 node 36). Their analysis split the two groups of *Pteroptyx* [the Oriental fauna with metafemoral comb (MFC) from the New Guinean and Australian fauna lacking the MFC] by those species of *Colophotia* and *Pyrophanes* included in this analysis. However, as that analysis did not resolve the placement of certain New Guinean and Australian *Luciola*, their placement is being readdressed with an expanded