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Feature Article

First Record in China of the Firefly Genus *Pteroptyx*（齊爍螢屬）

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漁護署甲蟲工作小組最近在香港濕地公園找到一種齊爍螢屬(*Pteroptyx*)的螢火蟲，這是首次在中國發現該屬的螢火蟲，而初步鑑定更顯示該螢火蟲是全球首次發現的品種。本文介紹該螢火蟲的鑑定特徵、生境和交配行為特點。

Introduction

The Beetle Working Group of the Agriculture, Fisheries and Conservation Department (AFCD) was formed in July 2009. It aims to collect baseline information on beetles (Order Coleoptera 鞘翅目), including fireflies, in Hong Kong. The Working Group recently found an unidentified firefly species in Hong Kong Wetland Park (HKWP) (Fig. 1). Subsequent taxonomic studies revealed that this firefly species belongs to the genus *Pteroptyx* (齊爍螢屬), making it the first record of this genus in China.

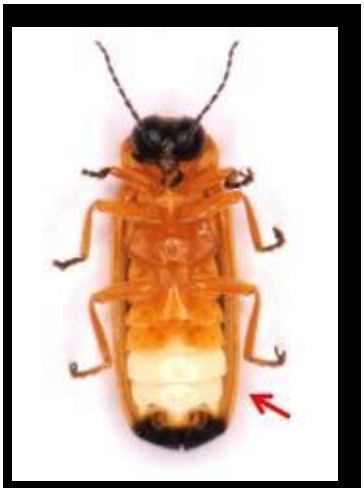

Fig 1. Male *Pteroptyx* firefly found in HKWP, with the arrow showing the trilobed terminal abdominal ventrite.

Morphology and Taxonomy

This firefly species has a body length of about 8-10 mm. It has yellow pronotum (前胸背板) and elytra (鞘翅) with dark brown apices. It has a total of six visible sterna (腹板) (known as "ventrites" 節腹面) in the abdomen, and the light organ of the male is located at the last two ventrites in the abdomen (Fig. 1), indicating that this firefly species is a member of the subfamily Luciolinae (絲螢亞科) (Jeng et al., 2007). The female firefly resembles the male but it has only one single segment of light organ at the second last ventrite in the abdomen (Fig. 2).

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Fig 2. Female *Pteroptyx* firefly found in HKWP, with the arrow showing only one segment of light organ compared with two in the male.

There are two key characteristics of this firefly species that lead to its identification as the genus *Pteroptyx*. The male has conspicuous deflexed elytral apices (Fig. 3), which is the most distinctive feature of the male members of the genus *Pteroptyx* (*Ptero* = wing, *ptyx* = fold) (Ballantyne & McLean, 1970; Wing et al., 1983; Ballantyne, 2001). These hooked wing covers serve as a clamp enabling the male to hold the female during mating, while at the same time keeping other males away from the receptive female. Another distinctive feature differentiating *Pteroptyx* from other genera of the subfamily Luciolinae is the presence of the trilobed terminal abdominal ventrite (Fig. 1).

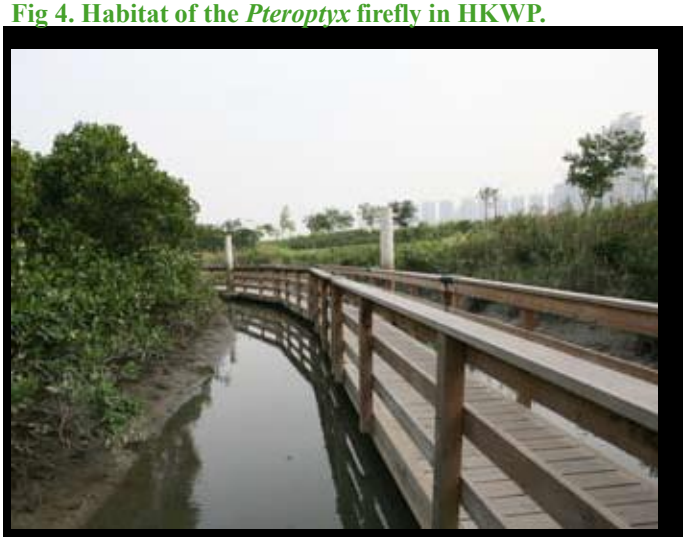
Fig 3. The deflexed elytral apices (arrow) of the male *Pteroptyx* firefly.

Detailed identification of this *Pteroptyx* species, including microscopic examination of the species-specific male genitalia, against established taxonomy frameworks has revealed no matching with any known *Pteroptyx* species so far. While further studies and descriptions are needed to ascertain the identity of the firefly, it is believed that this firefly is a species new to science (Ballantyne and Fu, per. com.).

Habitat and Behaviour

The Genus *Pteroptyx* is primarily a mangrove-dependent firefly group, and members of the genus rely on different parts of the mangrove ecosystem throughout their life cycle (Nallakumar, 2002; Nada et al., 2008). Adults of the unidentified *Pteroptyx* species, including males and females, were first discovered in October 2009 in the mangroves at HKWP (Fig. 4). Thereafter, we regularly recorded it from March to August 2010. Penetrated by an intertidal channel with brackish muddy soil on its banks, its habitat is dominated by the mangrove plant species *Acanthus ilicifolius*, *Aegiceras corniculatum* and *Kandelia obovata*.

Fig 4. Habitat of the *Pteroptyx* firefly in HKWP.



Fireflies produce flashes as a mean of communication between males and females for courtship. We observed that shortly after dusk, males of this *Pteroptyx* species begin flashing and flying above the mangroves and nearby vegetation to search for a mate. The females usually perch on leaves and stems of the vegetation waiting for the males. During mating, the elytra of the male is positioned under those of the female (Fig. 5). After copulation, the females lay their eggs on moist mud or soil, where food source is available for the *Pteroptyx* larvae (Nada et al., 2008).

Fig 5. Mating pair of *Pteroptyx* fireflies.

Further Studies

We are now further examining the adult specimens to ascertain the taxonomic status of this firefly. Unidentified firefly larvae have also been collected from the mangroves in HKWP where the *Pteroptyx* species were found. These larvae were observed feeding on small gastropods (Fig. 6). Studies are now under way to investigate whether these larvae belong to the *Pteroptyx* species. A baseline survey of the *Pteroptyx* firefly in similar mangrove habitats in Hong Kong is being carried out. We have also found the larvae of an unidentified aquatic firefly species in a freshwater marsh (Fig. 7). The larvae live in water throughout the larval stage, breathe through eight pairs of bifurcate gills and feed on aquatic gastropods. Taxonomical and ecological studies of this aquatic firefly species are also being conducted.

Fig 6. Unidentified larva found underneath mangrove plants at HKWP.

Fig 7. Unidentified aquatic firefly larva found in a freshwater marsh.

Acknowledgements

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