

ORTHOPTERA OF THE VACANT LOTS IN BEDOK SOUTH

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INTRODUCTION

An inventory of common species of Orthoptera found in the wasteland vegetation in Bedok South is presented here. The wasteland vegetation sites are located along Bedok South Avenue 1 to the west of Temasek Junior College and along New Upper Changi Road to the south of the Tanah Merah MRT Station. With very few researchers currently working on Orthoptera in Singapore, much of the research cited in this paper, may unfortunately be outdated (Willemse, 1930; Chopard, 1931; Murphy, 1973) or may be more relevant to the orthopteran fauna of neighbouring countries (Bailey, 1979; Otte & Alexander, 1983; Kim & Kim, 2002; Rentz et al., 2003; Wang & Shi, 2005; Yin & Wang, 2005). Perhaps the most concerted effort to study the diversity of the Orthoptera in Singapore in recent times was conducted by Prof. D. H. Murphy in the 1970s (Chan, 1991). Nevertheless, surveys and collections were carried out mainly in the Bukit Timah and the Central Catchment Nature Reserves. These show that the understanding of the order Orthoptera in Singapore is limited. As a result, there is a risk that orthopteran species of Singapore may disappear before their existence can be documented. This is especially so where the wasteland sites under investigation in this paper are “living on borrowed time and awaiting development” (Corlett, 1992). Hence, the objectives of this paper are to highlight the existence of the diversity of the Orthoptera, even in relatively small and isolated wastelands in an urban heartland of Bedok South and to monitor and update the diversity status of the Orthoptera in Singapore.

METHODS

From Mar.2009 to Jan.2010, visits were made along Bedok South Avenue 1 and along New Upper Changi Road. At least one adult specimen of each species was collected. All collections were carried out at night unless otherwise stated. Specimens were euthanized by placing them in a freezer then examined with a stereozoom microscope. External traits were used for diagnosis and morphometric features were measured using a 0.05 mm vernier caliper, whenever possible. Close up photographs of specimens were taken using a Canon EOS 500D digital SLR camera with compact-macro lens EF 20 mm at f/2.5. Shi Fu-Ming, Khalid Mahmood, and Sigfrid Ingrisch kindly identified the orthopterans.

In the figure legends, the following abbreviation is used, SL = total dorsal length from the tip of head to the tip of wing or end of hind tarsus, whichever is longest.

OBSERVATIONS AND DISCUSSION

The following species were observed or collected:

Pyrgomorphidae: Pyrgomorphinae

Atractomorpha crenulata (Fabricius, 1793) (Figs. 1a, b)

Acrididae: Oxyinae

Pseudoxya diminuta (Walker, 1871) (Figs. 2a, b)

Oxya japonica japonica (Thunberg, 1824) (Figs. 3a, b, c, d, e)

Acrididae: Catantopinae

Stenocatantops splendens (Thunberg, 1815) (Fig. 4)

Xenocatantops humilis (Serville, 1839) (Fig. 5)

Apalacris varicornis (Walker, 1870) (Figs. 6a, b)

Acrididae: Acridinae

Aiolopus thalassinus tamulus (Fabricius, 1798) (Figs. 7a, b, c)

Phlaeoba antennata (Brunner von Wattenwyl, 1893) (Fig. 8)



Fig. 1. *Atractomorpha crenulata* (Fabricius, 1793). a. Female. Collected along Bedok South Avenue 1 on 15 Jun.2009. SL = 34.15 mm. b. Male. Collected along Bedok South Avenue 1 on 15 Jun.2009. SL = 33.45 mm.



Fig. 2. *Pseudoxya diminuta* (Walker, 1871). a. Male. Collected along Bedok South Avenue 1 on 18 Jul.2009. SL = 26.50 mm. b. Male. Collected along Bedok South Avenue 1 on 21 Oct.2009. SL = 28.55 mm.



Fig. 3. *Oxya japonica japonica* (Thunberg, 1824). a. Male. Collected along Bedok South Avenue 1 on 15 Jun.2009. SL = 29.85 mm. b. Female. Collected along Bedok South Avenue 1 on 15 Jun.2009. SL = 41.60 mm. c. Female. Collected along Bedok South Avenue 1 on 15 Jun.2009. SL = 42.80 mm. d. Female. Collected along Bedok South Avenue 1 on 11 Jul.2009. SL = 41.40 mm. e. Male. Collected along Bedok South Avenue 1 on 18 Jul.2009. SL = 35.95 mm.



Fig. 4. *Stenocatantops splendens* (Thunberg, 1815) female. Collected along Bedok South Avenue 1 on 20 Nov.2009. SL = 49.65 mm.



Fig. 5. *Xenocatantops humilis* (Serville, 1839) male. Collected along New Upper Changi Road on 10 Jan.2010. SL = 34.15 mm.



Fig. 6a. *Apalacris varicornis* (Walker, 1870) female. Collected along New Upper Changi Road on 13 Dec.2009. SL = 36.30 mm.



Fig. 6b. *Apalacris varicornis* (Walker, 1870) male. Collected along New Upper Changi Road on 18 Dec.2009. SL = 27.15 mm.

Acrididae: Oedipodinae

Trilophidia annulata (Thunberg, 1815) (Fig. 9)

Gastrimargus marmoratus (Thunberg, 1815) (Fig. 10)

Tettigoniidae: Conocephalinae

Conocephalus maculatus (Le Guillou, 1841) (Figs. 11a, b)

Euconocephalus spp. (Figs. 12a, b, c)

Oxylakis sp. (Fig. 13)

Tettigoniidae: Listroselidinae

Hexacentrus unicolor (Serville, 1831) (Figs. 14a, b)

Gryllidae: Euscyrinae

Paticus sp. (Fig. 15)

Euscyrtus concinnus (de Haan, 1842) (Fig. 16)

Gryllidae: Gryllinae

Teleogryllus sp. (Fig. 17)

Gryllodes sp. (Fig. 18)

Eighteen common species of Orthoptera from 18 genera were recorded, of which 10 species of grasshoppers, four species of katydids and four species of crickets were recorded overall in the Bedok South sites. Along Bedok South Avenue 1, seven species of Orthoptera from seven genera were recorded. These consist of four species of grasshoppers, two species of katydids and a species of cricket. Along New Upper Changi Road, 14 species of Orthoptera from 14 genera were recorded. These consist of six species of grasshoppers, four species of katydids and four species of crickets.

This shows that the diversity of the Orthoptera may still be considered relatively high despite the small area and high level of human disturbance. This in turns may indicate a healthy biodiversity existing in the wasteland vegetation. Moreover, from observations made during various field trips, more species of Orthoptera were observed in the wastelands which were not collected and examined in this paper. This suggests the need for further study and survey of the wastelands. This paper attempts to offer the people of Singapore a means to become “wealthier in understanding, richer in awareness, and more privileged in their appreciation of the land and its creatures” (Rentz et al., 2003: viii).

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Fig. 7. *Aiolopus thalassinus tamulus* (Fabricius, 1798). a. Female. Collected along New Upper Changi Road on 5 Sep.2009. SL = 35.80 mm. b. Male. Collected along New Upper Changi Road on 5 Sep.2009. SL = 29.65 mm. c. Male. Collected along New Upper Changi Road on 23 Oct.2009. SL = 28.95 mm.

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Fig. 8. *Phlaeoba antennata* (Brunner von Wattenwyl, 1893) male. Collected along New Upper Changi Road on 18 Dec.2009. SL = 31.90 mm.



Fig. 9. *Trilophidia annulata* (Thunberg, 1815) male. Collected along New Upper Changi Road on 28 Nov.2009. SL = 23.20 mm.



Fig. 10. *Gastrimargus marmoratus* (Thunberg, 1815) male. Collected along New Upper Changi Road on 29 Oct.2009. SL = 45.20 mm.



Fig. 11a. *Conocephalus maculatus* (Le Guillou, 1841) male. Collected along Bedok South Avenue 1 on 15 Jun.2009. SL = 30.65 mm.



Fig. 11b. *Conocephalus maculatus* (Le Guillou, 1841) female. Collected along New Upper Changi Road on 11 Dec.2009. SL = 35.70 mm.



Fig. 12a. *Euconocephalus* sp. female. Collected along Bedok South Avenue 1 on 13 Jun.2009. SL = 66.50 mm.



Fig. 12. *Euconocephalus* sp. b. Female. Collected along New Upper Changi Road on 30 Aug.2009. SL = 68.05 mm. c. Male. Collected along New Upper Changi Road on 2 Jan.2010. SL = 64.70 mm.



Fig. 13. *Oxylakis* sp. female. Collected along New Upper Changi Road on 30 Nov.2009. SL = 38.55 mm.

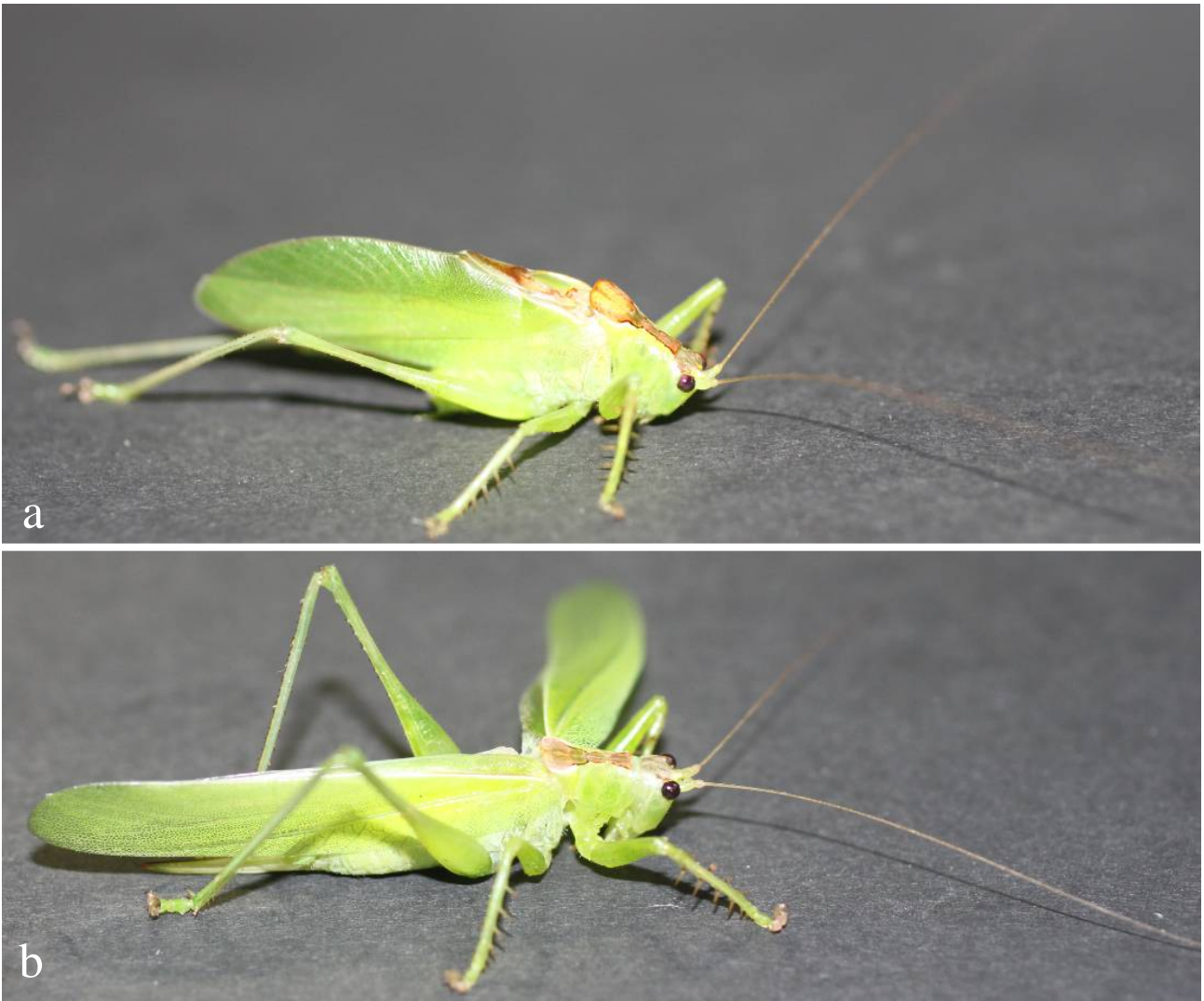


Fig. 14. *Hexacentrus unicolor* (Serville, 1831). a. Male. Collected along New Upper Changi Road on 10 Oct.2009. SL = 53.05 mm. b. Female. Collected along New Upper Changi Road on 13 Dec.2009. SL = 59.20 mm.



Fig. 15. *Patiscus* sp. female. Collected along New Upper Changi Road on 11 Sep.2009. SL = 28.35 mm.



Fig. 16. *Euscyrtus concinnus* (de Haan, 1842) female. Collected along Bedok South Avenue 1 on 15 Jun.2009. SL = 26.15 mm.



Fig. 17. *Teleogryllus* sp. male. Collected along New Upper Changi Road on 14 Aug.2009. SL = 37.70 mm.



Fig. 18. *Gryllodes* sp. male. Collected along New Upper Changi Road on 30 Aug.2009. SL = 27.40 mm.