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RECORDS OF THE BLACK AND SCARLET CICADA, *HUECHYS SANGUINEA* (DE GEER) IN SINGAPORE, WITH NOTES ON ITS EMERGENCE (HOMOPTERA: CICADIDAE: CICADETTINAE)

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INTRODUCTION

The black and scarlet cicada, *Huechys sanguinea* (De Geer, 1773) belongs to the tribe Huechysini of the subfamily Cicadettinae (Sanborn et al., 2007). This small, but strikingly coloured, species has a fairly wide South and Southeast Asian distribution, having been recorded from south China (including Hainan), Taiwan, Vietnam, Thailand, the Malay Peninsula, Timor, Borneo, Sumatra, Myanmar and India (Lee, 2008; Moulton, 1923). For Singapore, a published account of the species was based on two males and two females collected between 1967 and 1975 from various localities and deposited at the Zoological Reference Collection (ZRC), Raffles Museum of Biodiversity Research, National University of Singapore (Zaidi & Ruslan, 1997). In addition, there is also an unpublished male specimen (ZRC.6.21588) from Kent Ridge, collected by D. H. Murphy on 27 Mar.1974. Encounters with this cicada at Pulau Ubin are reported here, with observations of its emergence. The reputed medicinal properties of this species are also briefly reviewed.

Fig. 1. Lateral view of the black and scarlet cicada (*Huechys sanguinea*) emerging from its exuvia on 17 Apr.2008 (ca. 1220 hours) at Pulau Ubin. Note tracheal threads trailing out of the thoracic cavity. (Photograph by: Ali bin Ibrahim).

OBSERVATIONS

On the 6 Apr.2006, ABI encountered examples of the black and scarlet cicada on Pulau Ubin, of which representative voucher specimens were collected and deposited at the ZRC, including at least two males (ZRC.6.21586, body length: 19 mm, forewing: 21 mm; ZRC.6.21587, body length: 20 mm, forewing length: 23 mm). On the 17 Apr.2008, ABI was privileged to witness the simultaneous emergence of a number of black and scarlet cicadas, also at Pulau Ubin (Figs. 1, 2). When emerging from its exuvia, the entire body of the cicada is mostly a deep scarlet, while its wing buds were pure white. Once the body was completely eclosed from the exuvia, the wings began to extend downwards. Upon full wing extension, they began to darken progressively, adopting a smoky-grey at the initial stages (Fig. 3). By this time, its proboscis and all three pairs of limbs had transformed to a deep black.

The timing of emergence for this species appears to be regular (in the month of April) and is often localised and synchronous, with many individuals crawling onto the same tree for eclosion within a narrow window period of time (Fig. 4). Individuals were also observed to successfully eclose while perched onto the undersides of leaves (Figs. 5, 6). On 17 Apr.2009, adults of the black and scarlet cicadas were once again sighted at Pulau Ubin by Alan Tan Yong Hong (National Parks Board), who photographed various individuals at ca. 1800 hours. The specimens were not collected.

Fig. 2. Underside of emerging individual (as in Fig. 1), as viewed from the top. At this point, the both sides of its proboscis were still unfused. Its wing buds were white and unexpanded as yet. When its limbs were sufficiently hardened, the cicada arched itself forwards to grasp onto its exuvia, thus liberating the posterior portion of its abdomen. (Photograph by: Ali bin Ibrahim).

Fig. 3. After full extension of its wings, the individual begin to turn smoky-grey and eventually became black. Its proboscis and all three pairs of limbs also turned black. Its body length is ca. 20 mm. (Photograph by: Ali bin Ibrahim).

One of the most systematic documentations of the eclosion of black and scarlet cicada is by Michel Boulard, who successfully photographed the key stages of its entire emergence in Thailand (Boulard, 2007: Pl. 23). The striking combination of black and scarlet in adult individuals has been regarded as a form of aposematic colouration, in order to advertise its distastefulness to any potential predator (Boulard, 2006). Its apparent unpalatable qualities are certainly derived from an inherent concoction of naturally produced chemicals that are designed to repel.

Conversely, the chemical constituents of the black and scarlet cicada, among other insects, have instead drawn the attention of humans, in their search for natural remedies for ailments. In China, the exuviae of the black and scarlet cicada are reportedly used in prescriptions for migraine headaches and ear infections (Kritsky, 1987; Costa-Neto, 2005). In various Chinese provinces (e.g., Fujian, Guangdong, Guangxi, Jiangsu, Sichuan, Zhejiang), the cicadas are harvested in summer and autumn to be sun-dried for treating amenorrhoea, rabies, scrofula, and scabies (Zhao, 2004). Thus far, laboratory tests on crude insect drugs have revealed that buffer extracts from the black and scarlet cicada demonstrated potential anti-cancer activity (Ahn et al., 2000). Regardless of its possible medical applications to us, we must also treasure this, and other species of cicadas as integral components of the entire native biodiversity and ecosystem.

Fig. 4. An aggregation of exuviae on a single tree at Pulau Ubin, encountered on 17 Apr.2008 (ca. 1230 hours). The characteristic exuviae exhibit distinct black rings between their abdominal segments. (Photograph by: Ali bin Ibrahim).

Fig. 5. Anterio-lateral view of recently emerged individual at Pulau Ubin, photographed on 17 Apr.2008. (Photograph by: Ali bin Ibrahim).

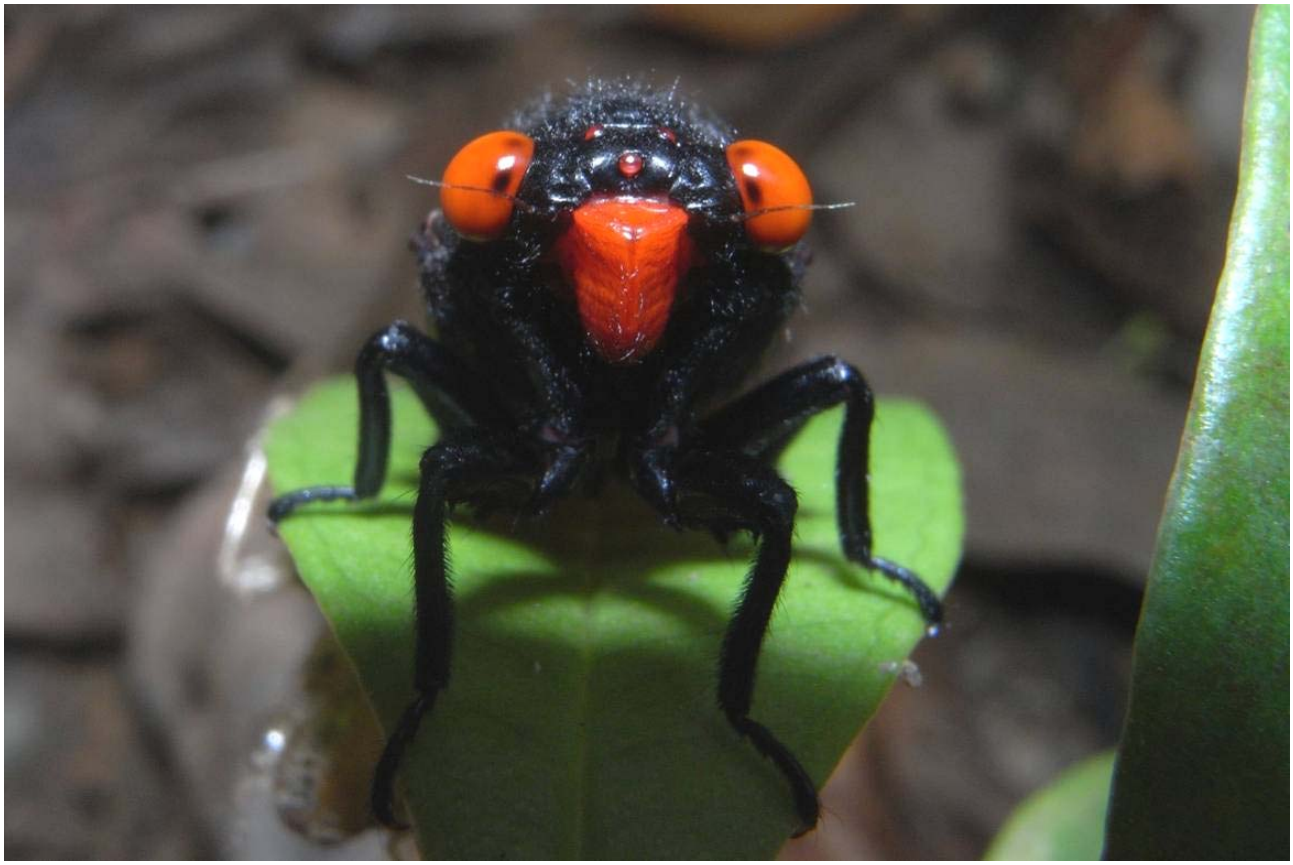

Fig. 6. Frontal view of recently emerged individual (as in Fig. 5). Its exuvia was attached to the underside of the leaf. (Photograph by: Ali bin Ibrahim).

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