

## CICADA (HOMOPTERA: CICADOIDEA) FAUNA OF CROCKER RANGE PARK, SABAH

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### ABSTRACT

*A total of 15 cicada species in 9 genera (8 belonging to the family Cicadidae and one to the family Tibicinidae) was recorded for Crocker Range Park during the expedition period to the park (14-24 October 1999). Comparison of records revealed the following. Of the 15 species collected and identified, 12 were new records for the park. The 12 new records were Platycleura sp., Tanna bakeri Moulton, Orientopsaltria alticola (Distant), Orientopsaltria hollowayi Duffels & Zaidi, Orientopsaltria ida (Moulton), Orientopsaltria kinabaluana Duffels & Zaidi, Platylomia spinosa (Fabricius), Tosena fasciata Distant, Pomponia decem (Walker), Pomponia graecina Distant, Pomponia lactea (Distant) (Cicadidae) and Scieoptera splendidula (Fabricius) (Tibicinidae). Of the previous total record of 5 species for the park, 3 [Cryptotympana aquila (Walker), Dundubia rufivena Walker, Dundubia vaginata (Fabricius)] were also found while the other 2 [Tacua speciosa (Illiger), Pomponia merula Distant] were not found in the park during the expedition period. Hence, the samplings during the expedition have increased the previous total record of 5 species in 4 genera under 1 family to a present total record of 17 species in 10 genera (9 under the family Cicadidae and 1 under the family Tibicinidae) for the park. Of the 6 studied sectors, Mahua (Tambunan) sector and Keningau Headquarters sector appeared to be better sites in manifesting high cicada species richness of the park (8 out of the 17 species were found in each site). These were followed by the other sector, Tondulu (Tambunan), Ulu Senagang (Tenom), Ulu Kimanis (Keningau) and Ulu Limanis (Papar), where 7, 4, 3, 2 species were found respectively. Comparatively, thus far, D. vaginata appeared to be the most common species spatially as well as temporally in the park. During the expedition (i.e. in the month of October), P. lactea appeared to be the most abundant species, followed by D. rufivena, O. ida and O. alticola.*

### INTRODUCTION

Crocker Range is a long mountain range on the western part of Sabah. It stretches from Kota Belud in the north, through Tuaran-Ranau, Tambunan, Kimanis-Keningau in the middle to Tenom in the south. Two conservation areas, under the jurisdiction of Sabah Parks, lie within this mountain range. They are, namely, the Kinabalu Park, which lies within the northern sector (Kota Belud-Ranau), and the Crocker Range Park, which lies within the southern sector (Tambunan-Kimanis-Keningau-Tenom) of the mountain range.

In October 1999, the Sabah Parks jointly with Universiti Malaysia Sarawak organised an International Scientific Expedition to Crocker Range Park for a period of almost two weeks (14-

24 October 1999). Among others, the aim of the expedition was to gather as much information as possible (within the expedition period) on the biodiversity within the Crocker Range Park. The expedition has provided us a great opportunity to form a working team to conduct a survey of cicadas within such short expedition period, within the spatially extensive areas of park, covering a number of sectors. The sectors are, namely, the Tambunan (Mahua and Tondulu), Keningau (Crocker Range HQ areas), Kimanis (Ulu Kimanis inland area east of Papar and west of Keningau) and Tenom (Ulu Senagang) sectors.

There have been few previous published reports of cicadas from Crocker Range Park, except by Zaidi et al. (1999) and Zaidi et al. (2000). Both indicate that among the specimens that have been repositied in Sabah Parks (Zaidi et al. 1999) and/or Sabah Forestry Research Institute (Zaidi et al. 2000) were specimens of a total of 5 species which have been collected from the park prior to the expedition. The 5 cicada species were *Tacua speciosa* (Illiger), *Cryptolympa aquila* (Walker), *Dundubia rufivena* Walker, *Dundubia vaginata* (Fabricius) and *Pomponia merula* Distant (see Table 1). Thus, the 5 species form the only previous records of cicada species from the park.

Presented herewith is a preliminary study on species diversity of the cicada fauna of Crocker Range Park. This report is based on all cicada specimens collected during the expedition period and also on specimens (including the 5 species) collected from the park that have been repositied in Sabah Parks (SP) (Zaidi et al. 1999), Sabah Forestry Research Institute (SFRI) (Zaidi et al. 2000) and Universiti Malaysia Sabah (UMS).

Table 1. List of Cicada species from Crocker Range Park, Sabah

### Family Cicadidae

#### 1. *Platypleura* sp.

Materials examined: SABAH. Crocker Range Park N. Park HQ, 2022.x.1999, Ito Gen, 1 female.

Remarks: This is a new record for Crocker Range Park (from HQK, repositied in UMS).

#### 2. *Tacua speciosa* (Illiger)

*Tettigonia speciosa* Illiger 1800, Weid. Zool. Arch., 2:145. – Fabricius 1803, Systema Rhyngotorum: 145 (Sumatra).

*Tacua speciosa*: Amyot & Serville 1843, Hist. Nat. Ins., Hemip.: 462 (Java). - Kirkaldy 1907, Ann. Soc. Ent. Belgique, 51: 304 [Penang (male); Sumatra; Borneo]. - Moulton 1923, J. Fed. Mal. St. Mus., 11:138 (Malay Peninsula, Sumatra, Java). - Zaidi et al. 1996, Serangga 1(1): 60 [Peninsular Malaysia (males)]. - Zaidi & Ruslan 1995a, Sayap-Kinabalu Park: 219 [Sabah (male)]. - Zaidi 1996, Serangga 1(2): 101 [Sarawak (males)]. —Zaidi & Ruslan 1998a, Serangga 3(2): 345 [Sarawak (males)]. - Zaidi et al. 1999, Serangga 4(2): 301 [Sabah (males & females)]. - Zaidi et al. 2000, Serangga 5(1): 199 [Sabah (males & female)].

Materials examined: SABAH. Keningau, Crocker Range, 12.vi. 1984, Ento. staff, 1 male; Crocker Range, 3-22.v. 1985, Ento staff, 1 male & 1 female; Papar, Ulu Kimanis, 26.iii. 1993, Ahmed Chan, 1 male

Remarks: This has been previously recorded for Crocker Park from HQK, UKP, repositied in SFRI (Zaidi et al. 2000a); not found during the expedition.

3. ***Cryptotympana aquila* (Walker)**

*Fidicina aquila* Walker 1850, List Horn., 1: 84 [Corea (type, female)].

*Cryptotympana aquila*: Distant 1891, Monogr. Orient. Cicad., 3&4: 85 (Malay Peninsula; Sumatra; Borneo, Corea). - Moulton 1923, J. Fed. Mal.St. Mus., 11:138 [Java (male);Malay Peninsula; Borneo; Sumatra]. - Zaidi et al. 1996, Serangga 1(1): 60 [Peninsular Malaysia (males)]. - Zaidi 1996, Serangga 1(2): 101 [Sarawak (males)]. - Zaidi & Ruslan 1997, Serangga 2(2): [Brunei (male); Peninsular Malaysia (males)]. - Zaidi & Ruslan 1998a, Serangga 3(2): 348 [Sarawak (males & female)]. - Zaidi et al. 1999, Serangga 4(2): 302 [Sabah (males)]. - Zaidi et al. 2000, Serangga 5(1): 201 [Sabah (male)].

Materials examined: SABAH. Crocker Range Park, Liawan River, 27.iii. 1996, Gunik G, 1 male; Crocker Range Park, Keningau (HQ), 22.x. 1999, Zaidi & Nordin, 1 male.

Remarks: This has been previously recorded for Crocker Park from HQK, repositied in SP (Zaidi et al. 1999); also found during the expedition at HQK, repositied in UKM.

4. ***Tanna bakeri* Moulton**

*Tanna bakeri* Moulton 1923, J. Fed. Mal. St. Mus., 11:127 [North Borneo (type, male)].

- Zaidi & Ruslan 1995a, Sayap-Kinabalu Park Sabah: 219 [Sayap-Kinabalu (male)]. - Zaidi & Hamid 1996, Serangga 1(1): 53 [Sarawak (males, female)]. - Zaidi et al. 1999, Serangga 4(2): 304 [Sabah (males & females)].

Material examined: SABAH. Crocker Range Park, Keningau (HQ), 15.x. 1999, Wahab, Horashikin, Catherine, 2 females.

Remarks: This is a new record for Crocker Range Park (from HQK, repositied in UKM).

5. ***Dundubia rufivena* Walker**

*Dundubia rufivena* Walker 1850, List Hom., 1: 59 [Java (type, mate)]. -Moulton 1923, J. Fed. Mal. St. Mus., 11: 84 (New Guinea; Krakatau;Verlaten; Sebesi; Nias & Mentawai; Amboina; Java; Sumatra, Borneo;Southern Siam; Malay Peninsula). - Overmeer & Duffets 1967, Beufortia 14(166): 47 (Java; Borneo; Celebes; Sumatra; Peninsular Malaysia; Siam; Singapore). - Zaidi & Ruslan 1995a, Sayap-Kinabalu Park, Sabah: 219 [Sabah (mate & females)]. - Zaidi & Ruslan 1995b, Tawau Hills Park, Sabah: 200 [Sabah (female)]. - Zaidi et al. 1996, Serangga 1(1): 60 [Peninsular Malaysia (mates & females)]. - Zaidi & Hamid 1996, Serangga 1(1): 53 [Sarawak (females)]. - Zaidi & Rustan 1997, Serangga 2(2): 224 (Indonesia, Bantam Island (male, females); Singapore (male); Peninsular Malaysia (females)]. - Zaidi & Ruslan 1998a, Serangga 3(2): 355 [Sarawak (males & female)]. - Zaidi et al. 1999, Serangga 4(2): 307 [Sabah (males)].- Zaidi et al. 2000, Serangga 5(1): 206 [Sabah (mates & females)].

Materials examined: SABAH. Crocker Range N.P (HQ), 19.vi. 1994, Toru Kikuta, HO/94/00046, 1 male; Crocker Range Park, Mahua (Tambunan), 14.x. 1999, Zaidi & Nordin, 3 females; Crocker Range Park, Mahua (Tambunan), 17.x. 1999, Senail, D., 1 female; Crocker Range Park, Tondulu (Tambunan), 16.x. 1999, Nordin, 1 female; Crocker Range Park, Tondulu (Tambunan), 19.x.1999, Zaidi & Nordin, 1 female; Crocker Range Park, Ulu Kimanis (Papar), 17.x.1999, H. Hines, 3 females.

Remarks: This has been previously recorded for Crocker Park from HQK, repositied in SP (Zaidi et al. 1999); also found during the expedition at MT, TT, UKP (repositied in UKM).

6. ***Dundubia vaginata* (Fabricius)**

*Tettigonia vaginata* Fabricius 1787, Mant. Insect., Rynchota, 2: 266 [Sumatra (type, male)].

*Dundubia vaginata*: Amyot & Serville 1843, Hist. Nat. Ins. Hemip.: 471.-Moulton 1923, J. Fed. Mal. St. Mus., 11: 83 (North Australia; China; India; Java; Sumatra; Borneo, Sarawak; Malay Peninsula). - Overmeer & Duffels 1967, Beufortia 14(166): 34 (Sumatra; Java; Borneo; Peninsular Malaysia; Hongkong; Tenasserim). - Zaidi & Ruslan 1995a, Sayap-Kinabalu Park, Sabah: 219 (Sabah). - Zaidi & Ruslan 1995b, Tawau Hills Park, Sabah: 200 (Sabah). - Zaidi & Hamid 1996, Serangga 1(1): 53 (Sarawak). - Zaidi et al. 1996, Serangga 1(1): 60 (Peninsular Malaysia). - Zaidi 1996, Serangga 1(2): 101 (Sarawak). - Zaidi 1997, Serangga 2(1): 113 (Sarawak). - Zaidi & Ruslan 1997, Serangga 2(2): 225 (Brunei; Peninsular Malaysia).- Zaidi & Ruslan 1998a, Serangga 3(2): 357 (Sarawak). - Zaidi & Ruslan 1998b, Bario, the Kelabit Highlands of Sarawak: 172 (Sarawak). — Zaidi et al. 1999, Serangga 4(2): 308 (Sabah). - Zaidi et al. 2000, Serangga 5(1): 207 (Sabah).

Materials examined: SABAH, Crocker Range, 19.vi.1994, Toru Kikuta, HO/94/00028, 1 male; Crocker Range, 12.xii.1995, Johnny, L., HO/95/00045, 46, 47 & 28, 3 males & 1 female; Crocker Range, 27.iii. 1996, Ekologi Unit TS, Light Trap, 1 male; Crocker Range, 24-31 v.1990, Y.Yana, 1 male; Crocker Range Park, Tondulu (Tambunan), 16.x.1999, Nordin, 1 male & 1 female; Crocker Range Park, Ulu Limanis (Keningau), Telekom Tower, H. Hines, 1 male; Crocker Range Park, Ulu Senagang (Tenom), 19.x.1999, Nordin, 1 female.

Remarks: This has been previously recorded for Crocker Park, from HQK, repositied in SP (Zaidi et al. 1999) & SFRI (Zaidi et al. 2000a); also found during the expedition at TT, UKK, UST (repositied in UKM).

7. ***Orientopsaltria alticola* (Distant)**

*Cosmopsaltria alticola* Distant 1905, Trans. Ent. Soc. Lond.: 200 [North Borneo, Mt. Kinabalu (type, mate)]. - Moulton 1923, J. Fed. Mal. St. Mus., 11: 91 (Borneo, Sarawak)..

*Orientopsaltria alticola*: Duffels 1983, Pac. Ins. Mon., 39: 9. - Zaidi & Ruslan 1995b, Tawau Hills Park: 200 [Sabah (males)]. - Zaidi et al. 1966, Serangga 1(1): 60 [Peninsular Malaysia (male)]. Zaidi & Ruslan 1998a, Serangga 3(2): 358 [Sarawak (females)]. - Zaidi et al. 1999, Serangga 4(2): 309 [Sabah (male & females)]. - Duffels & Zaidi 1999, Tijdschrift voor Entomologie 142(2): 265 [Borneo (Sabah, Sarawak, Brunei, Kalimantan); Peninsular Malaysia (Pahang)]. - Zaidi et al. 2000, Serangga 5(1): 208 [Sabah (males & females)].

Material examined: SABAH. Crocker Range Park, Mahua (Tambunan), 14.x. 1999, Zaidi & Nordin, 2 females; Crocker Range Park, Mahua (Tambunan), 17.x.1999, Senail, D., 1 female; Crocker Range Park, Tondulu (Tambunan), 16.x.1999, Nordin, 1 female; Crocker Range Park, Ulu Kimanis (Papar), 17.x. 1999, H. Hines, 3 females; Crocker Range Park, Ulu Kimanis (Papar), 17.x. 1999, Nordin, 1 female; Crocker Range Park, Ulu Senagang (Tenom), 18.x.1999, Zaidi & Nordin, 1 female.

Remarks: This is a new record for Crocker Range Park (from MT, TT, UKP, UST, repositied in UKM).

8. ***Orientopsaltria hollowayi* Duffels & Zaidi**  
*Orientopsaltria hollowayi* Duffels & Zaidi 1999, Tijdschrift voor Entomologie 142(2): 245 [Malaysia, Sarawak, Gunung Mulu National Park (type, male); Malaysia (Sarawak, Sabah)].  
 Material examined: SABAH. Crocker Range Park, Mahua (Tambunan), 14.x. 1999, Zaidi & Nordin, 1 male & 1 female; Crocker Range Park, Mahua (Tambunan), 15.x.1999, Zaidi, 1 male  
 .Remarks: This is a new record for Crocker Range Park (from MT, repositied in UKM).
9. ***Orientopsaltria ida* (Moulton)**  
*Cosmopsaltria ida* Moulton 1911, J. Str. Branc. Roy. Asiat. Soc., 57: 139 [Sarawak (type, male)]. - Moulton 1923, J. Fed. Mal. St. Mus., 11: 91 (Sarawak, Kedurong).  
*Orientopsaltria ida*: Duffels 1983, Pac. Ins. Mon., 39: 9. - Zaidi & Ruslan 1995a, Sayap-Kinabalu Park, Sabah: 219 [Sabah (mates & females)]. - Zaidi & Hamid 1996, Serangga 1(1): 53 [Sarawak (males)]. - Zaidi & Ruslan 1998a, Serangga 3(2): 359 [Sarawak (mates)]. — Zaidi, et al. 1999, Serangga 4(2): 310 [Sabah (males)]. - Duffels & Zaidi 1999, Tijdschrift voor Entomologie 142(2): 249 [Borneo (Sabah, Sarawak, Brunei, Kalimantan); Peninsular Malaysia (Pahang)]. — Zaidi et al. 2000, Serangga 5(1): 208 [Sabah (mates & females)].  
 Materials examined: SABAH. Crocker Range Park, Mahua (Tambunan), 14.x.1999, Zaidi & Nordin, 1 male & 4 female; Crocker Range Park, Mahua (Tambunan), 15.x.1999, Zaidi & Nordin, 1 male & 1 female; Crocker Range Park, Mahua (Tambunan), 16.x. 1999, H. Hines, 1 mate; Crocker Range Park, Mahua (Tambunan), 17.x.1999, Zaidi & Nordin, 1 male; Crocker Range Park, Tondulu (Tambunan), 16.x.1999, Nordin, 1 female.  
 Remarks: This is a new record for Crocker Range Park (from MT & TT, repositied in UKM).
10. ***Orientopsaltria kinabaluana* Duffels & Zaidi**  
*Orientopsaltria kinabaluana* Duffels & Zaidi 1999, Tijdschrift voor Entomologie 142(2): 261 [Malaysia, Sabah, Keningau (type, mate); Malaysia (Sabah)].  
 Materials examined: SABAH. Crocker Range Park, Tondulu (Tambunan), 16.x.1999, Nordin, 1 female.  
 Remarks: This is a new record for Crocker Range Park (from TT, repositied in UKM).
11. ***Platylomia spinosa* (Fabricius)**  
*Tettigonia spinosa* Fabricius 1787, Mant. Insect., Ryngota 2: 266 [Sumatra (type, male)].  
*Platylomia spinosa*: Distant 1906, Cat. Homop. Cicad. 1:158 (Philippines; Borneo; Sumatra; Malay Peninsula). - Moulton 1923, J. Fed. Mal. St. Mus. 11: 98 (New Guinea; Philippines; Sumatra; Borneo, Sarawak; Malay Peninsula; Singapore). — Zaidi & Ruslan 1995a, Sayap-Kinabatu Park, Sabah: 219 (Sabah). - Zaidi & Hamid 1996, Serangga 1(1): 53 (Sarawak). - Zaidi et al. 1996, Serangga 1(1): 61 (Peninsular Malaysia). - Zaidi 1996, Serangga 1(2): 101 (Sarawak). - Zaidi 1997, Serangga 2(1): 113 (Sarawak). Zaidi & Ruslan 1997, Serangga 2(2): 226 (Singapore; Peninsular Malaysia). - Zaidi & Ruslan 1998a; Serangga 3(2): 361 (Sarawak). – Zaidi et al. 1999, Serangga 4(2): 312 (Sabah). - Zaidi et al. 2000, Serangga 5(1):211 (Sabah).

Materials examined: SABAH, Crocker Range Park, Mahua (Tambunan), 15.x. 1999, Zaidi & Nordin, 1 male; Crocker Range Park, Mahua (Tambunan), 21 .x. 1999, Addenan, 1 female; Crocker Range Park, Tondulu (Tambunan), 16.x.1999, Nordin, 1 male. Crocker Range Park, Ulu Senagang (Tenom), 18.x.1999, Zaidi & Nordin, 2 males.

Remarks: This is a new record for Crocker Range Park (from MT, TT & UST, repositied in UKM).

12. ***Tosena fasciata* (Fabricius)**

*Tettigonia fasciata* Fabricius 1787, Mantissa Insectorium, II: 265 (Java). *Tosena fasciata*: Amyot & Serville 1843, Hist. Nat. Insc.: 462 (Java). -Moulton 1923, J. Fed. Mal. St. Mus., 11:145 (Borneo; Sumatra; Java; Amboyna). - Zaidi et al. 1999, Serangga, 4(2): 314 [Sabah (male)]. Zaidi et al. 2000, Serangga 5(1): 213 (Sabah).

Materials examined: SABAH.Crocker Range Park, Mahua (Tambunan), 14.x.1999, Zaidi, 2 males

Remarks: This is a new record for Crocker Range Park (from MT, repositied in UKM).

13. ***Pomponia decem* (Walker)**

*Dundubia decem* Walker 1857, Journ. & Proc. Linn. Soc. London, Zool. 1:141 [Sarawak (type, female)].

*Pomponia decem*: Moulton 1923, J. Fed. Mal. St. Mus., 11:109 (Borneo, Sarawak, Banguay I; Malay Peninsula). - Zaidi & Ruslan 1995a, SayapKinabatu Park, Sabah: 219 [Sabah (male)]. - Zaidi et al. 1996. Serangga 1(1): 60 [Peninsular Malaysia (males)]. - Zaidi & Rustan 1998a, Serangga 3(2): 362 [Sarawak (male & female)]. - Zaidi & Ruslan 1998b, Bario, Kelabit Highlands of Sarawak: 172 [Sarawak (male)].- Zaidi et al. 1999, Serangga 4(2): 315 [Sabah (male)]. - Zaidi et al. 2000, Serangga 5(1): 211 [Sabah (male & females)].

Materials examined: SABAH.Crocker Range Park, Tondulu (Tambunan), 16.x.1999, Nordin, 1 male; Crocker Range Park HQ (Keningau), 15.x.1999, Wahab, Norashikin, Catherine, 1 male.

Remarks: This is a new record for Crocker Range Park (from TT, HQK, repositied in UKM).

14. ***Pomponia graecina* Distant**

*Pomponia graecina* Distant 1889, Ann. Mag. Nat. Hist. 6(3): 421 [North Borneo, Mt. Kinabatu, (type, female)] - Moulton 1923, J. Fed. Mal. St. Mus., 11: 112 (Borneo). - Zaidi & Ruslan 1998b, Serangga 3(2): 363 [Sarawak (males)]. - Zaidi et al. 1999, Serangga, 4(2): 315 [Sabah (males & females)]. - Zaidi et al. 2000, Serangga 5(1): 214 [Sabah (male & females)].

Materials examined: SABAH, Crocker Range Park, Ulu Senagang (Tenom), 22.x.1999, H. Hines & Zaidi

Remarks: This is a new record for Crocker Range Park (from UST, repositied in UKM).

15. ***Pomponia lactea* (Distant)**

*Leptopsaltria lactea* Distant, 1887, Ann. Mag. Nat. Hist. 5, 11: 229 [Sumatra (type, male)].

*Pomponia lactea*: Distant 1891, Monogr. Orient. Cicad., 1&2: 71 [Perak (male); Sumatra]. - Moulton 1923, J. Fed. Mal. St. Mus., 11: 111 (Borneo, Brunei; Sumatra);

Java; Malay Peninsula, Perak). - Zaidi & Ruslan 1997, Serangga 2(2): 229 [Peninsular Malaysia (males)]. - Zakli & Ruslan 1998a, Serangga 3(2): 364 [Sarawak (males & females)]. - Zaidi & Ruslan 1998b, Bario, Kelabit Highlands of Sarawak: 172 [Sarawak (male)]. - Zaidi et al. 1999, Serangga, 4(2): 315 [Sabah (males & females)]. - Zaidi et al. 2000, Serangga 5(1): 214 [Sabah (males & female)].

Materials examined: SABAH. Crocker Range Park, Mahua (Tambunan), 14.x.1999, Zaidi & Nordin, 1 female; Crocker Range Park, Mahua (Tambunan), 15.x.1999, Zaidi & Nordin, 6 males & 1 female; Crocker Range Park, Mahua (Tambunan), 17.x.1999, Senail, D., 1 male; Crocker Range Park, Mahua (Tambunan), 17.x.1999, Zaidi & Nordin, 1 female; Crocker Range Park HQ (Keningau), 15.x.1999, Wahab, Norashikin, Catherine, 4 males & 4 females; Crocker Range Park HQ (Keningau), 19.x.1999, Wahab, Norashikin, Catherine, 4 males & 3 females; Crocker Range Park HQ (Keningau), 22.x.1999, Zaidi & Nordin, 2 males & 2 females

Remarks: This is a new record for Crocker Range Park (from MT. HQK, repositied in UKM).

#### 16. *Pomponia merula Distant*

*Pomponia merula* Distant 1905, Ann. Mag. Nat. Hist., 7(15): 68 [Sarawak (type, male)]. - Moulton 1923, J. Fed. Mal. St. Mus., 11:108 (Borneo, Sarawak). - Zaidi & Ruslan 1995b, Tawau Hills Park, Sabah: 200 [Sabah (female)]. - Zaidi & Hamid 1996, Serangga 1(1)53 [Sarawak (males)]. - Zaidi & Ruslan 1998a, Serangga 3(2): 365 [Sarawak (males)]. - Zaidi et al. 1999, Serangga 4(2): 315 [Sabah (males & females)]. - Zaidi et al. 2000, Serangga 5(1): 215 [Sabah (males & female)].

Materials examined: SABAH. Keningau, Crocker Range, 12.vi. 1984, Ento staff, 1 male.

Remarks: This has been previously recorded for Crocker Park from UKK, repositied in SFRI (Zaidi et al. 2000a); not found during the expedition.

### Family Tibicinidae

#### 17. *Scieroptera splendidula* (Fabricius)

*Tettigonia splendidula* Fabricius 1775, Syst. Ent. Rynchota 7: 681 (China). *Scieroptera splendidula*: Stal 1866, Berl. Ent. Zeitschr., 10: 169. - Moulton 1923, J. Fed. Mal. St. Mus., 11: 154 [Sumatra, Lampongs (males & females); China; India; Java; Borneo; Malay Peninsula]. - Zaidi et al. 1996, Serangga 1(1): 60 [Peninsular Malaysia (males & females)]. - Zaidi & Ruslan 1998a, Serangga 3(2): 368 [Sarawak (males & female), Sabah (male)]. - Zaidi et al. 1999, Serangga 4(2): 318 [Sabah (female)]. - Zaidi et al. 2000, Serangga 5(1): 216 [Sabah (females)].

Materials examined: SABAH. Crocker Range Park, Mahua (Tambunan), 17.x.1999, Senait, D., 1 female.

Remarks: This is a new record for Crocker Range Park (from MT, repositied in UKM).

## MATERIALS AND METHODS

During the expedition period, night and day time collections of cicada specimens were carried out. Cicadas that came, at nights, to the lights of the expedition base camps and the 150-watt mercury vapour lights (powered by portable generators) directed towards the surrounding forest

canopies, in the studied sectors of the park, were collected by hand and/or nets. Insect nets (at times with long extended handles) were used during day light hours to collect cicadas from bushes and trees within the studied sectors of the park, to supplement the night collections. The studied sectors of the park were, namely, Mahua-Tambunan (MT), Tondulu-Tambunan (TT), Keningau Crocker Range HQ areas (HQK), Ulu-Kimanis-Keningau (UKK), Ulu-Kimanis-Papar (UKP) and UluSenagang-Tenom (UST) sectors.

The collected cicada specimens were killed in killing jars containing cotton wools wet with ethyl acetate. The specimens were kept in dry plastic containers. At the Centre for Insect Systematics, Universiti Kebangsaan Malaysia (UKM), Bangi, the specimens were oven-dried, pinned, labeled, identified and classified.

Cicada specimens previously collected from the park which have been repositied in the Sabah Parks (SP) (Zaidi et al. 1999), Sabah Forestry Research Institute (SFRI) (Zaidi et al. 2000) and Universiti Malaysia Sabah (UMS) were also re-examined after the expedition. These were carried out to provide a good overview of the cicada fauna of the park.

Identification and species naming of the cicada specimens were based on standard taxonomic references (Moulton 1923; Overmeer & Duffels 1967; Duffels & Zaidi 1999). Classification of the cicada species in this report is in accordance to that of Duffels & van der Laan (1985).

The cicada specimens collected during the expedition period are presently kept in the repository of the Centre for Insect Systematics, Universiti Kebangsaan Malaysia (UKM) Bangi, except the one specimen of *Platypleura* sp. which has somehow already been repositied at the Universiti Malaysia Sabah (UMS) (see Table 1). Duplicates of the specimens will be deposited in the Insect Reference Collection of Sabah Parks at Kinabalu Park, Sabah (SP).

## RESULTS AND DISCUSSIONS

### Cicada fauna of Crocker Range Park

The cicada fauna of the park, presented below in the form of species checklist (Table 1) and summary table (Table 2), is principally based on the specimens, collected from the park prior and during the expedition to the park. All cicada specimens currently housed at SP, SFRI, UMS and UKM were examined. From the repositied specimens, it was indicated that collections of cicadas from the park have been made on seven separate occasions which include in June (12) 1984, May (3-22) 1985, March (26) 1993, June (19) 1994, December (12) 1995, March (27) 1996 and the expedition period [October (14-24) 1999] (Table 1 and Table 2).

Table 2. Cicadas from Crocker Range Park

	Specimens (m:f) collected in sampling no.						
	1 June 1985	2 May 1984	3 Mar 1993	4 June 1994	5 Dec 1995	6 Mar 1996	7 Oct 1999
<b>Cicadididae</b>							
1. <i>Platypleura</i> sp*	-	-	-	-	-	-	0:1HQK

2.	<i>Tacua speciosa</i> (Illiger)	1:0UKK	1:1UKK	1:0UKP	-	-	-	-
3.	<i>Cryptotympana aquila</i> (Walker)	-	-	-	-	-	1:0HQK	1:0HQK
4.	<i>Tanna bakeri</i> Moulton*	-	-	-	-	-	-	0:2HQK
5.	<i>Dundubia rufivena</i> Walker	-	-	-	1:0HQK;	-	-	2:5MT 0:1TT 2:1HQK 0:3UKP
6.	<i>Dundubia vaginata</i> (Fabricius)	-	-	-	1:0HQK	3:1HQK	1:0HQK;	1:1TT 1:0UKK 0:1UST 0:3MT
7.	<i>Orientopsaltria alticola</i> (Distant)*	-	-	-	-	-	-	0:1TT 0:3UKP 0:1UST
8.	<i>Orientopsaltria hollowayi</i> Duffels & Zaidi*	-	-	-	-	-	-	2:1MT
9.	<i>Orientopsaltria ida</i> (Moulton)	-	-	-	-	-	-	5:5MT 0:1TT
10.	<i>Orientopsaltria kinabaluana</i> Duffels & Zaidi*	-	-	-	-	-	-	0:1TT
11.	<i>Platylomia spinosa</i> (Fabricius)*	-	-	-	-	-	-	1:1MT 1:0TT 2:0UST
12.	<i>Tosena fasciata</i> Distant*	-	-	-	-	-	-	2:0MT
13.	<i>Pomponia decem</i> (Walker)*	-	-	-	-	-	-	1:0TT 1:0HQK
14.	<i>Pomponia graecina</i> Distant*	-	-	-	-	-	-	1:0UST
15.	<i>Pomponia lactea</i> (Distant)*	-	-	-	-	-	-	7:4MT, 10:9HQK
16.	<i>Pomponia merula</i> Distant	1:0UKK	-	-	-	-	-	-

**Tibicinidae**

17. <i>Scieoptera splendidula</i> (Fabricius)*	-	-	-	-	-	-	0:1MT
Total specimens (m:f)	2:0KK;	1:0Ukk;	1:0UKP;	2:0HQK;	3:1HQK;	1:0HQK;	19:20MT 3:5TT 14:13HQK 1:0Ukk 0:6UKP 3.2UST
	2:0	1:0	1:0	2:0	3:1	1:0	40:46
Total species	2Ukk	1Ukk	1Ukk	2HQK	1HQK	1HQK	8MT 7TT 5HQK 1Ukk 4UKP 4UST
	2	1	1	2	1	1	15

Note: mf = male: female;

Sampling occasion no.7 = Expedition period (14-24 Oct 1999)

Sampling sectors: MT = Mahua, Tambunan; TT = Tondulu, Tambunan;  
 HQK = Headquarters Keningau; UKK = Ulu Kimanis, Keningau;  
 UKP = Ulu Kimanis, Papar; UST = Ulu Senagang, Tenom

\* = New records for Crocker Range Park (made during the expedition), totaling 12 species

Prior to the expedition, only a total 5 cicada species (4 genera under 1 family, Cicadidae) have been recorded for the park (Zaidi et al. 1999, 2000) over sampling occasions 1-6 (Table 2). They were *Tacua speciosa* (Illiger), *Cryptotympana aquila* (Walker), *Dundubia rufivena* Walker, *Dundubia vaginata* (Fabricius) and *Pomponia merula* Distant (Table 2 and Table 1).

Table 2 also shows that during the expedition period (sampling occasion 7) a total of 15 cicada species in 9 genera (8 belonging to the family Cicadidae and 1 to the family Tibicinidae) were recorded for the park. Of these 15 species, 3 (*C. aquila*, *D. rufivena* and *D. vaginata*) have been recorded previously (Zaidi et al. 1999, 2000). Thus, of the 15 species, 12 obviously form new records for the park. The 12 new records are *Platypleura* sp., *Tanna bakeri* Moulton, *Orientopsaltria alticola* (Distant), *Orientopsaltria hollowayi* Duffels & Zaidi, *Orientopsaltria ida* (Moulton), *Orientopsaltria kinabaluana* Duffels & Zaidi, *Platylomia spinosa* (Fabricius), *Tosena fasciata* Distant, *Pomponia decem* (Walker), *Pomponia graecina* Distant, *Pomponia lactea* (Distant) (Cicadidae) and *Scieoptera splendidula* (Fabricius) (Tibicinidae). Table 2 also shows that of the previous total record of 5 species for the park, 2 [*T. speciosa* and *P. merula* Distant] were not found in the park during the expedition period. Hence, the samplings during the expedition have increased the previous total record of 5 species in 4 genera under 1 family to a present total record of 17 species in 10 genera (9 under the family Cicadidae and 1 under the family Tibicinidae) for the park.

It is pertinent to mention that during the expedition, only 2 specimens of the species, *T. fasciata*, could be obtained during day-time samplings from tall trees, using insect nets with long telescopic handles, while the other 14 species were obtained off the lights (trap lights and base camp lights). All specimens of the 5 previously recorded species were presumably obtained off the lights. This is based on the fact that with the exception of few cicada species (including *T. fasciata*) cicadas have been mostly attracted to lights.

### **Manifestation of species richness, composition, commonness and abundance**

Table 2 shows sampling occasions 1, 3, 4, 5 and 6 were very brief (each of one-day duration) and localized (each in one location only). Sampling occasion 2, although longer, was also localized. Sampling period during the expedition (occasion 7) was not only relatively longer (over 11 days) but also spatially extensive (covering 6 locations). Thus, it was not surprising that, unlike the other occasions prior to it, more cicada species were collected (a total of 15 with 12 forming additional records for the park) during the expedition. In lieu of these, species richness and composition of cicadas in the park appears to be better manifested in October.

Table 2 also shows that of the 6 studied locations, Mahua (Tambunan) sector and Keningau Headquarters sector appeared to be better sites in manifesting high cicada species richness of the park (8 out of the 17 species were found in each site). These were followed by the other sector, Tondulu (Tambunan), Ulu Senagang (Tenom), Ulu Kimanis (Keningau) and Ulu Limanis (Papar), where 7, 4, 3, 2 species were found respectively.

Temporally, *D. vaginata* appeared to be the most commonly encountered species in the park (found in 4 out of 7 sampling occasions). This was followed by *T. spiciosa* (found in 3 out of 7 sampling occasions), *C. aquila* and *D. rufivena* (each found in 2 out of 7 sampling occasions). The rest of the species were each found only in 1 out of the 7 occasions (in October, during the expedition). Table 2 also shows that, spatially, *D. rufivena*, *D. vaginata* and *O. alticola* appeared to be the most commonly manifested species (found in 4 out of 6 studied locations). The rest of the species were each either found in one or two locations only. Comparatively, thus far, *D. vaginata* appeared to be the most common species spatially as well as temporally.

During the expedition (i.e. in the month of October), *P. lactea* appeared to be the most abundant species (30 specimens from 2 locations were obtained), followed by *D. rufivena* (14 specimens from 4 locations), *O. ida* (11 specimens from 2 locations) and *O. alticola* (8 specimens from 4 locations). Other species appeared less abundant (less than 6 specimens were obtained). It was also noted that during the expedition, *T. fasciata* was seen to be quite abundant in Mahua (Tambunan) sector of the park, flying high between tall trees. Being a species that was rarely attracted to light and found to be flying high among the canopy and tree trunks, its less abundant status in the park (especially at Mahua) would be quite misleading if such conclusion were to be drawn from the two specimens caught manually.

## **CONCLUSION**

Our relatively longer period of field work during the expedition compared to previous collection trips have provided us with the opportunity to sample cicadas from more localities within the

Crocker Range Park. This had resulted in a better representation of the cicada fauna of this park with respect to the species diversity. The study not only gave a better picture of cicada's species richness and composition but also the abundance status of the common species *D. vaginat* and *P. lactea*. It could only be expected that a much longer and extensive survey would reveal a longer checklist of cicada fauna for the Park which would ultimately include the less commonly encountered species such as *Nabalua mascula* (Distant), *Ternopsia sp.*, *Puranoides sp.* *Purana guttularis* (Walker), *Purana sp.*, *Maua affinis* Distant, *Orientopsaltria montivaga* (Distant), *Orientopsaltria saударapadda* Duffels & Zaidi and *Pomponia rajah* Moulton. These species have been recorded in VJR Rafflesia (Tambunan) which lies on the Crocker Range, just outside the western part of Tambunan sector of Crocker Range Park (Zaidi et al. 1999,2000).

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