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A PRELIMINARY ASSESSMENT OF DRAGONFLIES AND DAMSELFLIES (ODONATA) IN AND AROUND SIME DARBY PLANTATION PROPERTIES IN SABAH, MALAYSIA

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ABSTRACT

A total of 39 species from 8 families of Odonata were identified from the plantation properties of Sime Darby Bhd and surrounding areas near Tawau, Sabah, Malaysia. Anisopterans were especially abundant compared to Zygopterans with Libellulidae making up the most dominant family with a total of 28 species from 39 species recorded. Only two Anisopteran families were recorded compared to six families of Zygopterans. Off the 39 species recorded, six were endemic and one, *Orthetrum triangulare* is reported here for the first time from Sabah and Borneo.

Key words: Dragonflies, Damselflies, Sabah, Borneo, Malaysia

ABSTRAK

Sejumlah 39 spesis daripada 8 famili Odonata telah berjaya dikenalpasti dari kawasan perladangan Sime Darby Bhd dan sekitar Tawau, Sabah, Malaysia. Anisoptera adalah lebih melimpah dibandingkan Zygoptera dengan Libellulidae merupakan famili yang paling dominan yang berjumlah 28 spesis dari 39 spesis telah berjaya direkodkan. Hanya dua famili Anisoptera telah direkodkan berbanding enam famili dari Zygoptera. Daripada 39 spesis yang telah direkodkan, enam adalah endemik dan satu spesis *Orthetrum triangulare* telah dilaporkan buat pertama kalinya di Sabah dan Borneo.

Kata kunci: Dragonflies, Damselflies, Sabah, Borneo, Malaysia

INTRODUCTION

Members from the order Odonata are amongst the most recognizable and distinctive of all insects. Odonata occupy almost all kinds of habitats along the habitat gradient ranging from permanent running waters and lakes to small temporary rain pools (Corbet, 1999). Many species of Odonata are restricted to specific habitats both during larval and adult life stages especially the stenotopic species (Orr, 2003). The Bornean Odonate fauna comprises of about 138 Zygopterans from 10 families and 137 Anisopterans from 5 families, totaling 275 species with 42% are endemic species to this large landmass (Orr, 2003). Currently there are no formal account on how large the diversity of Sabah Odonate fauna as very few studies have been done here. Nevertheless, many new species have been described from Sabah (van Tol, 1990; Huisman & van Tol, 1991; van Tol & Norma-Rashid, 1995). Most studies on Odonate fauna concentrates on forest species with no study on monoculture plantation (Kitagawa *et al*., 1999; Wahizatul-Afzan *et al.,* 2006). The aim of this study was to investigate the composition of dragonflies and damselflies community at two oil palm plantation properties and their surrounding areas near Tawau, Sabah, Malaysia.

METHODS

Collections were made around the Tasik Impian Golf Resort, along trails inside the plantations in Mostyn Plantation and Tiger Hill Plantation and several other areas near the plantation properties in Kunak. Dragonflies and damselflies were collected from 30 January to 8 February 2008 (0830 to 1630h daily) using aerial net.

RESULTS AND DISCUSSION

A total of 39 species representing eight families of Odonata was successfully collected during this study. Libellulidae (Anisoptera) was the major component of odonates community in both plantations making up 71.8% of the total species collected. The Coenagrionidae (Zygoptera) represented 7.7%, Aeshnidae (Anisoptera) and Chlorocyphidae (Zygoptera) represented 5.1% and all other Zygopterans families (Calopterygidae, Euphaeidae, Lestidae, Protoneuridae) represented 2.6% of the total species recorded (Table 1).

The largest Libellulid (*Camacinia gigantean*) from Sabah (Orr, 2003) was recorded in Mostyn Plantation and individuals of the giant *Heliaeschna crassa* were found patrolling many of the sluggish but clear water bodies of the areas. Some of the more common species found here were *Trithemis aurora, Trithemis festiva, Neurothemis fluctuans, Neurothemis ramburii, Orthetrum testaceum* and *Brachydiplax chalybea.*

The under-representation of Zygopterans species compared to Anisopterans was most probably due to difficulties in collecting them. Nevertheless, the monocultural nature of the Sime Darby plantations might have contributed to the finding. The plantation properties have gone through monoculture since 1950s with succession of large- scale cultivation of abaca, cocoa and oil palm. As Zygopterans are usually associated with forest reserves, such a long transformation of forest into large-scale and intensively managed plantations might have turned the landscape unsuitable for the survival of Zygopterans (Orr, 2003).

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TABLE 1: A list of dragonflies and damselflies recorded in and around the oil palm plantation properties of Sime Darby Bhd in Sabah, Malaysia.

No.	Family	Spesies[1]	Mostyn	Kunak
1	Anisoptera: Aeshnidae	*Heliaeschna crassa*	+	0
2	Anisoptera: Aeshnidae	*Hemicordulia tenera*	+	0
3	Anisoptera: Libellulidae	*Acisoma panorpoides*	+	0
4	Anisoptera: Libellulidae	*Agrionoptera insignis*	+	+
5	Anisoptera: Libellulidae	*Brachydiplax chalybea*	+	+
6	Anisoptera: Libellulidae	*Brachydiplax farinosa*	+	0
7	Anisoptera: Libellulidae	*Camacinia gigantean*	0	+
8	Anisoptera: Libellulidae	*Cratilla lineate*	+	+
9	Anisoptera: Libellulidae	*Cratilla metallica*	+	+
10	Anisoptera: Libellulidae	*Crocothemis servilia*	+	+
11	Anisoptera: Libellulidae	*Neurothemis fluctuans*	+	+
12	Anisoptera: Libellulidae	*Neurothemis ramburii*	+	+
13	Anisoptera: Libellulidae	*Neurothemis terminata*	0	+
14	Anisoptera: Libellulidae	*Onychothemis coccinea*	0	+
15	Anisoptera: Libellulidae	*Orthetrum glaucum*	+	+
16	Anisoptera: Libellulidae	*Orthetrum sabina*	+	+
17	Anisoptera: Libellulidae	*Orthetrum testaceum*	+	+

Table 1 continue…

...Table 1 continued

18	Anisoptera: Libellulidae	*Orthetrum triangulare*	0	+
19	Anisoptera: Libellulidae	*Pantala flavescens*	+	+
20	Anisoptera: Libellulidae	*Potamarcha congener*	0	+
21	Anisoptera: Libellulidae	*Rhyothemis Phyllis*	+	0
22	Anisoptera: Libellulidae	*Rhyothemis triangularis*	+	0
23	Anisoptera: Libellulidae	*Risiophlebia dohrni*	0	+
24	Anisoptera: Libellulidae	*Tholymis tillarga*	+	0
25	Anisoptera: Libellulidae	*Trithemis aurora*	+	+
26	Anisoptera: Libellulidae	*Trithemis festiva*	+	+
27	Anisoptera: Libellulidae	*Tyriobapta torrida*	0	+
28	Anisoptera: Libellulidae	*Zygonyx iris**	+	0
29	Anisoptera: Libellulidae	*Zyxomma obtusum*	+	0
30	Anisoptera: Libellulidae	*Zyxomma petiolatum*	+	0
31	Zygoptera: Calopterygidae	*Vestalis beryllae**	0	+
32	Zygoptera: Chlorocyphidae	*Rhinocypha aurofulgens**	+	+
33	Zygoptera: Chlorocyphidae	*Rhinocypha cucullata**	+	+
34	Zygoptera: Coenagrionidae	*Archibasis viola*	+	+
35	Zygoptera: Coenagrionidae	*Ceriagrion cerinorubellum*	+	0
36	Zygoptera: Coenagrionidae	*Pseudagrion perfuscatum**	+	0

Table 1 continue...

...Table 1 continued

37	Zygoptera: Euphaeidae	*Euphaea tricolor**	+	0
38	Zygoptera: Lestidae	*Lestes praemorsus*	+	+
39	Zygoptera: Protoneuridae	*Prodasineura collaris*	+	+
	TOTAL		**31**	**26**

[1] Endemic species to Borneo.