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**A CATALOGUE OF THE GENUS-GROUP *THERONIA*
(HYMENOPTERA: ICHNEUMONIDAE:
PIMPLINAE) FROM SUNDALAND**

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ABSTRACT

To date, there are 14 species recorded from the genus-group *Theronia* in Sundaland. A total of eight species from the genus *Theronia* was recorded (*Theronia zebra zebra* Vollenhoven, *Theronia pseudozebra pseudozebra* Gupta, *Theronia maskeliyae schmiedeknechti* Krieger, *Theronia flava* Gupta, *Theronia lucida* Cameron, *Theronia nigrivertex* Gupta, *Theronia clathrata malayensis* Gupta, *Theronia clathrata javensis* Gupta) with three species only found in Java. One species from the genus *Parema* that is *Parema nigrobalteata callida* Tosquinet and three species from the genus *Nomosphaecia* (*Nomosphaecia zebroides zebroides* Krieger, *Nomosphaecia pyramida pyramida* Gupta, *Nomosphaecia scutellata scutellata* Gupta) were recorded. Genus *Augerella* and *Epitheronia* each has one species, *Augerella orientalis borneensis* Gupta and *Epitheronia tomeus* Gupta, respectively.

Key words: Sundaland, Ichneumonidae, Pimplinae, *Theronia*, *Parema*, *Epitheronia*, *Nomosphaecia*, *Augerella*

ABSTRAK

Sehingga ke hari ini, terdapat 14 spesies dari kumpulan-genus *Theronia* telah direkodkan di Pulau-pulau Sunda. Lapan spesies adalah dari genus *Theronia* (*Theronia zebra zebra* Vollenhoven, *Theronia pseudozebra pseudozebra* Gupta, *Theronia maskeliyae schmiedeknechti* Krieger, *Theronia flava* Gupta, *Theronia lucida* Cameron, *Theronia nigrivertex* Gupta, *Theronia clathrata malayensis* Gupta, *Theronia clathrata javensis* Gupta) dengan tiga spesies daripadanya hanya terdapat di Jawa. Satu spesies adalah dari genus *Parema* iaitu *Parema nigrobalteata callida* Tosquinet dan tiga spesies lagi adalah dari genus *Nomosphacia* (*Nomosphacia zebroides zebroides* Krieger, *Nomosphacia pyramida pyramida* Gupta, *Nomosphacia scutellata scutellata* Gupta). Genus *Augerella* dan *Epitheronia* pula masing-masing terdapat satu spesies di bawahnya iaitu *Augerella orientalis borneensis* Gupta and *Epitheronia tomeus* Gupta.

Kata kunci: Pentas Sunda, Ichneumonidae, Pimplinae, *Theronia*, *Parema*, *Epitheronia*, *Nomosphacia*, *Augerella*

INTRODUCTION

Ichneumonidae comprises of 39 subfamilies and is one of the biggest families in Hymenoptera (Wahl and Sharkey, 1993). They are well distributed and highly diverse in almost all terrestrial habitats (La Salle & Gauld 1993). In tropical forests ichneumonids can sometimes be seen on flowers, feeding on nectar or pollen, or resting on foliage whilst vibrating their white-banded antennae, but most often they are only glimpsed as they fly erratically amongst the understory vegetation (Gauld 1991). The ichneumonids play an important role as natural agent for stabilizing the insect pest population in any habitat as they parasitize the larvae of Lepidoptera, Coleoptera and Diptera (Gauld 1988; Wahl & Sharkey, 1993).

The subfamily Pimplinae is one of the largest groups in Ichneumonidae (Wahl & Sharkey, 1993). In Tropical areas, the Pimplinae are the second most abundant ichneumonids in terms

of its abundance and species diversity after the subfamily Cryptinae (unpublished data by Ng et al.). Townes (1969) had subdivided the subfamily into seven tribes namely Pimplini, Polysphinctini, Ephialtini, Theronini, Diacritini, Poemeniini and Rhyssini. However, in 1989 Eggleton recognized that the Pimplinae was a paraphyletic group of relatively primitive ichneumonids, and he attempted to split the group into holophyletic units by separating off several tribes and elevating them to the status of subfamilies. The principle changes and is used by Gauld during his work on the ichneumonidae of Costa Rica in 1991. Gauld (1991) broadly follows the classification of Eggleton (1989) with dividing the subfamily Pimplinae into three tribes; Ephialtini, Polysphinctini and Pimplini.

Theronia genus-group is under the tribe Pimplini and divided into six genera, namely the *Theronia*, *Parema*, *Nomosphacia*, *Augerella*, *Epitheronia* and *Neotheronia* (Gauld 1991). However, *Neotheronia* is not found in Sundaland, the area of South-East Asia that comprises the Malay Peninsula, Sumatra, Java, Bali, Borneo, Palawan and Balabac. *Neotheronia* is said to be found only in New World countries and it has not been found in the Asian region although it is said to inhabit tropical forest (Gauld 1991). Gupta did the last thorough revision and study on this genus in 1962 where he had studied the *Theronia* genus-group from Indo-Australian countries. From his study, Gupta was able to identify 92 species and subspecies with 33 new species and four new subgenera (*Parema*, *Nomosphacia*, *Augerella*, *Epitheronia*), which was then elevated by Gupta himself from subgenera to genera in 1967 (Gupta 1987). Gupta (1962) discovered that Sundaland was apparently the main center of distribution of the genus-group. The Indian and other Asiatic forms were apparently derived from Sundaland (Gupta 1962). Gupta (1962) had also recognized 14 species from five genera of the genus-group *Theronia* in Sundaland.

The genus-group *Theronia* differs from the rest of the tribe by having one or more sharp carinae on the propodeum, a polished abdomen with generally indistinct swellings, large tarsal claws with an enlarged hair at the base which is flattened at its tip, and by having the nervellus broken well above the middle (Gupta

1962). The genus-group *Theronia* inhabit mostly dense forests. Some of them fly close to the ground, but others commonly fly up to waist or shoulder height if there is undergrowth at those levels. Nearly all are pale coloured, usually pale yellow to ferruginous, and frequently banded with blackish. In flight they make a conspicuous pale streak through the dark forest (Townes and Townes 1960).

MATERIALS AND METHODS

This catalogue listed the genera and species of the genus-group *Theronia* that were recorded and described from Sundaland. Below is the list of the Museums that the specimens are located and deposited. In the text the location is indicated by the name of the place, abbreviation or name of the owner for personal collections.

BMNH	British Museum (Natural History), Cromwell Road, London, England.
Bogor	Bogor Museum, Bogor, Java.
Gupta	Personal Collection S.N., and V.K. Gupta
Leiden	Rijksmuseum van Natuurlijke Histoire, Leiden, The Netherlands.
Ottawa	Canadian National Collection, Department of Agriculture, Ottawa, Canada.
Townes	Collection of Henry and Marjorie Townes, Ann Arbor, Michigan, U.S.A.
USNM	U.S. National Museum, Washington 25, D.C., U.S.A
ZMB	Zoologisches Museum der Humboldt-Universität, Invalidenstrasse, Berlin N. 4, East Germany

RESULTS AND DISCUSSION

There are 14 species of the group-genus *Theronia* from Sundaland (Gupta 1962). Eight species are from the genus *Theronia*, three species from the genus *Nomosphacia* and one species from the genera *Parema*, *Augerella* and *Epitheronia* respectively.

Out of the 14 species discovered by Gupta in 1962, five species are well distributed throughout Sundaland. The five species are *Theronia zebra zebra* Vollenhoven, *Theronia pseudozebra pseudozebra* Gupta, *Parema nigrbalteata callida* Tosquinet, *Nomosphacia zebroides zebroides* Krieger and *Epitheronia tomeus* Gupta. There are two species that can only be found in the island of Java which are *Theronia flava* Gupta and *Theronia lucida* Cameron and there are only three species from the genus-group *Theronia* was found so far in the Malay Peninsular. The three species are *Theronia nigrivertex* Gupta, *Theronia clathrata malayensis* Gupta and *Nomosphacia pyramida pyramida* Gupta. On the other hand, *Theronia maskeliyae schmiedeknechti* Krieger was only found in the Java and Sumatera island of Indonesia. There is one species named *Augerella orientalis borneensis* Gupta and it is named borneensis most probably because it was only found in North Borneo and not elsewhere.

Table 1. List of the recorded genera, species and locality of the genus-group *Theronia*

Genus	Species	Locality
<i>Theronia</i>	<i>Theronia zebra zebra</i> Vollenhoven	Malay Peninsular; Java; Singapore; North Borneo
	<i>Theronia pseudozebra pseudozebra</i> Gupta	North Borneo; Malay Peninsular; Java
	<i>Theronia maskeliyae schmiedeknechti</i> Krieger	Sumatra; Java
	<i>Theronia flava</i> Gupta	Java
	<i>Theronia lucida</i> Cameron	Borneo
	<i>Theronia nigrivertex</i> Gupta	Malay Peninsular
	<i>Theronia clathrata malayensis</i> Gupta	Malay Peninsular

	<i>Theronia clathrata javensis</i> Gupta	Java
<i>Parema</i>	<i>Parema nigrbalteata callida</i> Tosquinet	Malaya; Singapore; Sumatra; Borneo; Java
<i>Nomosphecia</i>	<i>Nomosphecia zebroides zebroides</i> Krieger <i>Nomosphecia pyramida pyramida</i> Gupta <i>Nomosphecia scutellata scutellata</i> Gupta	Malaya; Java; Sumatra; Sarawak; Bangka Malay Peninsular Singapore; North Borneo
<i>Augerella</i>	<i>Augerella orientalis borneensis</i> Gupta	North Borneo
<i>Epitheronia</i>	<i>Epitheronia tomeus</i> Gupta	East Borneo; North Borneo; Singapore; Malay Peninsular

SYSTEMATIC ACCOUNTS

Genus: *Theronia* Holmgren

Theronia zebra zebra Vollenhoven

Pimpla zebra Voll., 1879, Stett. Ent. Ztg. **40**:147, ♀, des.; type : ♀, Java : Ambarawa (LEIDEN).

Pimpla zebra, Cameron, 1891, Manchester Lit. Phil. Soc., Mem. & Proc. (4)4:186. "India", host : *Criculatrifenestrata*[?]

Theronia zebra, Roman, 1913, Arkiv Zool. **8**(15):15, ♀, des.; Phillippines (in part): [Misdet ?].-Morley, 1914, Rev. Ichneumonidae British Mus. **3**: 45, ♂, key, syn., des.; (in part); 1914, Ann. Mag. Nat. Hist. Ser. 8, **14**:408, syn. (in part).-Rohwer, 1918, U.S. Natl. Mus., Proc. **54**:566, ♀, Java: Bogor; host: *Cricula trifenestrata*.-Menzel, 1925, Gouv. Kina-Proefsta. Java, Meded. 9:60, Indonesia; host: *Cricula trifenestrata*.-Dammerman, 1929, The agricultural zoology of the Malay Archipelago, p. 353, des., fig.; host; *Cricula* sp. -Lopez, 1931, Philippine Sugar Assoc., Ann. Rpt. Res.

Bur. 1930-31:272, Philippines; in sugarcane fields; [Misdet?].-Tjoa, 1939, Landbouw 15:502, fig., biol. Java.; host: *Hidariirava* -Kalshoven, Sody & Bommel, 1951, De plagen van de cultuurgewassen in Indonesië 2:647, 654, hosts: *Eurema blanda* or *Eurema hecabe*; *Hidariirava*

Theronia (Theronia) zebra zebra: Gupta, 1962. Pacific Ins. Monogr., 4:16. M, F. n. status, key, des., fig. India: Karnataka: Ammatti, 950 m. Malaysia: Malaya: Kuala Lumpur. Sabah: Sandakan. Singapore. Indonesia: Java: Sukabumi, 640m.; Magelang; Bogor; Mt. Salak, 400m., Tjiapus; Bandung; Mt. Malang, Djampang Wetan; Mt. Timerans, Djampang Tengah.

Theronia zebra zebra Gupta, 1970. Ichneumon Hunting in India, p. 59.rev. status.

Host records: *Erionotathrax*, *Delias belisama*, *Criculatrifenestrata*, *Hidari irava*, and from literature: *Eurema blanda* or *Eurema hecabe*

Distribution: Malaya, Singapore, Borneo, S.India, Java, Philippines

Theronia pseudozebra pseudozebra Gupta

Theronia (Theronia) pseudozebra pseudozebra Gupta, 1962. Pacific Ins. Monogr., 4:21.M, F. key, des. Type: F, Malaysia: Sabah: Sandakan (WASHINGTON). Malaysia: Malaya: Fraser's Hill, 1300 m., Pahang; Kedah Peak, 1200 m. Penang I. Indonesia: Java: Dikarang, Mts. Djampang Tengah; Ditalahab, Mts. Djampang Tengah.

Theronia pseudozebra pseudozebra Gupta, 1970. Ichneumon Hunting in India, p.60.rev. status.

Theronia (Poecilopimpla) pseudozebra pseudozebra : He, 1984. Acta Agri. Univ. Zhejiangensis, 10:84. M, F. biol. China: Guangdong: Chaoqing; Guangxi: Xiuanzhou; Guizhou: Meitan

Hostrecords: *Parnara guttata*.

Distributions: China. Malaysia; Malaya; Sabah. Indonesia: Java

***Theronia maskeliyae schmiedeknechti* Krieger**

Theronia schmiedeknechti Kr. 1906. Ztchr. Syst. Hymen. Dipt. 6: 319, ♂, des. ; in key; type: ♂, Java (ZMB).

Theronia maskeliyae schmiedeknechti: Townes, Townes & Gupta, 1961. Mem. Amer. Ent. Inst., 1:74. Java

Theronia (Theronia) maskeliyae schmiedeknechti: Gupta, 1962. Pacific Ins. Monogr., 4:24. M, F. key, des. Indonesia: Sumatra. Java: Mt. Tangkuban Perahu, 1200-1500 m.; Bandung, 700 m.; Dungus Iwul, 100 m. China: Canton

Theronia maskeliyae schmiedeknechti: Gupta, 1970. Ichneumon Hunting in India, p. 60 rev. status.

Theronia (Poecilopimpla) maskeliyae schmiedeknechti: He, 1984. Acta Agri. Univ. Zhejiangensis, 10: 83. Biol., syn. China: Hunan: Wangcheng; Guangxi: Nanning; Lipu; Hechi; Yunnan: Xinping.

Host records: *Parnara guttata*

Distributions: Indonesia: Sumatra, Java; China.

***Theronia flava* Gupta**

Theronia (Theronia) flava Gupta, 1962. Pacific Ins. Monogr., 4:45. F. key, des. Type: F, Indonesia: Java: Tjibodes, 1400 m. (BOGOR). Indonesia: Java: Mt. Gede, Tjibodes, 1400 m.; Puntjak; Mt. Tangkuban Perahu, 1200-1500 m.; Preanger Idjen Mts.: Ongop-ongop, 1850 m.

Theronia flava: Gupta, 1970. Ichneumon Hunting in India, p. 60. rev. status.

Host records: not known

Distribution: Indonesia: Java.

***Theronia lucida* Cameron**

Poecilopimpla lucida Cam., 1903, Straits Branch R. Asiatic Soc., Jour, **39**:141, ♂, des. ; lectotype (here by designated): ♂, Sarawak: Kuching (BMNH)

Theronia lucida Townes & Townes, 1960, U.S. Natl. Mus. Bull. 216(2):351, syn. –Townes, Townes & Gupta, 1961. Mem. Amer. Ent. Inst., 1:74. Sarawak.

Theronia (Theronia) lucida Gupta, 1962. Pacific Ins. Monogr., **4**:37. M., F. lectotype design., key, des. “Borneo”. Sabah: Sandakan.

Theronia lucida Gupta, 1970. Ichneumon Hunting in India, p. 61.rev. status.

Host records: not known

Distribution: Malaysia: Sarawak; Sabah; “Borneo”

***Theronia nigrivertex* Gupta**

Theronia (Theronia) nigrivertex Gupta, 1962. Pacific Ins. Monogr., **4**:45. F. key, des. Type: F, Malaysia: Malaya: Perak: Jor Camp, 550 m., Padang, Batang (WASHINGTON). Malaya: Cameron Highlands; Terbukui, 1200m.

Theronia nigrivertex Gupta, 1970. Ichneumon Hunting in India, p. 61.rev. status.

Host records: not known

Distribution: Malaysia: Malaya

***Theronia clathrata malayensis* Gupta**

Theronia (Theronia) clathrata malayensis Gupta 1962. Pacific Ins. Monogr., **4**:50. F. key, des. Type: F, Malaysia: Malaya: Pahang, Fraser’s Hill, 1300 m. (LONDON)

Theronia clathrata malayensis Gupta, 1970. Ichneumon Hunting in India, p. 61.rev. status

Host records: not known

Distribution: Malaysia: Malaya

***Theronia clathrata javensis* Gupta**

Theronia (Theronia) clathrata javensis Gupta 1962. Pacific Ins. Monogr., 4:50. F. key, des. Type: F, Indonesia: Java: Tjibodas, 1400 m., Mt. Gede (BOGOR). Indonesi: Java: Mt. Oengaran.

Theronia clathrata javensis: Gupta, 1970. Ichneumon Hunting in India, p. 61. rev. status

Host records: not known

Distribution: Indonesia: Java

Genus: *Parema* Gupta

***Parema nigrobalteata callida* Tosquinet**

Theronia zebra Krieger, 1899. Sitzber. Naturf. Gesell. Leipzig, 1897/98: 144. F. Msdet. of zebra Vollenhoven

Xanthopimpla nigrobalteata Cameron, 1902. J. Straits Branch Roy. Asiatic Soc. 37:47. F. Name preocc. In *Theronia* by Cameron 1899. des. Type: F, Borneo (London), Syn. By Gupta, 1962.

Theronia callida Tosquinet, 1903. Mem. Soc. Ent. Belgique, 10:91. F. des. Type : F, Indonesia: Java: Sukabumi, 2000 ft. (Lost)

Theronia zebra zebra Krieger, 1906. Ztschr. System. Hymen. Dipt., 6:235. M, F. misdet of zebra Vollenhoven. key. Java. Sumatra.

Theronia zebra Roman, 1913. Arkiv for Zool. 8 (15):15. F. syn., des. Philippines. (in part). [Occurrence in Philippines unlikely]

Orientotheronia maculipes Morley, 1913. Fauna of British India, Hymenoptera, 3:148. (in part). [Specimen from Singapore

belong to this subspecies]

Theronia nigrobalteata Krieger 1914. Arch. F. Naturgesch., (A) **80** (6):18. n. comb.

Theronia zebra Morley, 1914. Revision of the Ichneumonidae in the British Museum, **3**:45. M, F. key, syn., des. (in part). [Specimen from Singapore belong to this subspecies]

Theronia Parema nigrobalteata callida Townes, Townes & Gupta, 1961. Mem. Amer. Ent. Inst., **1**:74. n.status, syn. Singapore. Java. Sumatra. Borneo.

Theronia (Parema) nigrobalteata callida Gupta, 1962. Pacific, Ins, Monogr., **4**:58. M. F. n. comb., key, syn., des., fig. Malaysia: Malaya: Penang Is. Tandjong Karang, 100 m. Tandjong Morowa, Serdang. Java: Djampang Tengah, Mt. Tjisuru, 600-800 m.; Koba, Bangka; Mt. Tjiampea, 250 m. Bogor (=Buitenzorg); Mt. Malang, Djampang Tengah. Kalimantan: Siluas Sambas.

Parema nigrobalteata callida, Gupta 1970. Ichneumon Hunting in India, p. 62. n. comb

Host records: none

Distributions: Singapore. Malaysia: Malaya; Sabah. Indonesia: Sumatra; Java; Borneo

Genus: *Nomosphacia* Gupta

***Nomosphacia zebroides zebroides* Krieger**

Theronia zebroides Krieger, 1906. Ztschr. System. Hymen. Dipt., **6**:236. F. Des. in key. Type:n F, Indonesia: Sumatra (BERLIN).-Morley, 1914. Revision of the Ichneumonidae in the British Museum, **3**:44. M, F. syn. (in part). -Cushman, 1933. Insecta Matsumurana, **8**:47. key.

Theronia zebroides zebroides Townes, Townes & Gupta, 1961, Mem. Amer. Ent. Inst., **1**:78. n. status. Sumatra.

Theronia (Nomosphacia) zebroides zebroides Gupta, 1962. Pacific. Ins. Monogr., **4**:71. F. n. comb., key, des. Malaysia: Malaya: Water Fall garden, Penang I. Sarawak: Mt. Matang, 300 m.

Indonesia: Sumatra: Sarik. Java: Mt. Malang, Djampang
Wetan Mts.; Ditalahab, Djampang Tengah Mts.:
Radjamandala, 350 m. Bangka I.: Pangkal Pinang. Host:
Eumenes arcuata
Nomosphaecia zebroides zebroides Gupta 1970. Ichneumon
Hunting in India, p. 63 n. comb.

Hostrecords: Eumenes arcuata

Distributions: Malaysia: Malaya; Sarawak. Indonesia: Sumatra;
Java; Bangka I.

Nomosphaecia pyramida pyramida Gupta

Theronia (Nomosphaecia) pyramida pyramida Gupta, 1962. Pacific
Ins. Monogr., 4:80. M. Key, des. Type: M, Malaysia: Malaya:
Kedah Peak, 1200 m. (GUPTA)

Theronia (Nomosphaecia) pyramida pyramida Momoi, 1968.
Kontyu, 36: 183. F. Thailand: Chiang Mai: Doi Sutep

Nomosphaecia pyramida pyramida Gupta, 1970. Ichneumon
Hunting in India, p. 63. n. comb.

Host records: not known

Distributions: Thailand. Malaysia: Malaya.

Nomosphaecia scutellata scutellata Gupta

Theronia (Nomosphaecia) scutellata scutellata Gupta, 1962. Pacific
Ins. Monogr., 4:82. M. Key, des. Type: F, Singapore
(WASHINGTON). Malaysia: Sabah: Sandakan.

Nomosphaecia scutellata scutellata Gupta, 1970. Ichneumon
Hunting in India, p. 63. n. comb.

Host records: not known

Distributions: Malaysia: Sabah. Singapore.

Genus: *Augerella* Gupta

***Augerella orientalis borneensis* Gupta**

Theronia (Augerella) orientalis borneensis Gupta, 1962. Pacific Ins. Monogr., 4:90. F. Key, des. Type: F, Malaysia: Sabah: Sandakan (WASHINGTON). Malaysia: Sabah: Samawang, near Sandakan.

Augerella orientalis borneensis Gupta, 1970. Ichneumon Hunting in India, p.64. n. comb.

Host records: not known

Distribution: Malaysia: Sabah.

Genus: *Epitheronia* Gupta

***Epitheronia tomeus* Gupta**

Theronia (Epitheronia) tomeus Gupta, 1962. Pacific Ins. Monogr., 4: 96. M, F. Key, des. Type: F, Indonesia: Kalimantan: Tabang, 125 m., Bengen River (LEIDEN). Malaysia: Malaya: Langkawi I. Singapore. Sabah: Kudat. Indonesia: Kalimantan: Balikpapan, Mentawir River.

Epitheronia tomeus Gupta, 1970. Ichneumon Hunting in India, p.64. n. comb.

Host records: not known

Distributions: Indonesia: Kalimantan. Singapore. Malaysia: Malaya: Sabah

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Pp 358-449, in *Hymenoptera of the world : An Identification
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