Taxonomy of nocturnal parasitic wasps family Braconidae (Hymenoptera: Ichneumonoidea) in Doi Phu Kha National Park, Thailand

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อนุกรมวิธานของแตนเบียนวงศ์ Braconidae (Hymenoptera: Ichneumonoidea) ที่ออกหากินเวลากลางคืนในอุทยานแห่งชาติดอยภูคา ประเทศไทย

น.ส.มาริสา รวีอร่ามวงศ์

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มาริสา รวีอร่ามวงศ์ : อนุกรมวิธานของแตนเบียนวงศ์ Braconidae (Hymenoptera: Ichneumonoidea) ที่ออกหากินเวลากลางคืนในอุทยานแห่งชาติดอยภูคา ประเทศไทย. (Taxonomy of nocturnal parasitic wasps family Braconidae (Hymenoptera: Ichneumonoidea) in Doi Phu Kha National Park, Thailand) อ.ที่ปรึกษาหลัก : รศ. ดร. บัณฑิกา อารีย์กุล บุทเชอร์, อ.ที่ปรึกษาร่วม : ศ. ดร.โดนัล ควิก

แตนเบียนวงศ์ Braconidae จัดอยู่ในอันดับ Hymenoptera กลุ่มเดียวกับผึ้ง มด ต่อ และแตนชนิดอื่น จัดเป็นแมลงอันดับและวงศ์ที่มีความหลากหลายทางชนิดสูง อุทยานแห่งชาติดอยภูคา มีความหลากหลายทางชนิดทั้งพืชพรรณ และสัตว์ป่า สะท้อนให้เห็นถึงสภาพของป่าที่มีถิ่นที่อยู่อาศัยหลากหลาย แต่อย่างไรก็ตามข้อมูลเกี่ยวกับอนุกรมวิธานของแตนเบียนวงศ์ Braconidae ในพื้นที่อุทยานแห่งชาติดอยภูคายังมีไม่มากนัก ดังนั้นจุดประสงค์ของงานวิจัยนี้ คือศึกษาอนุกรมวิธานของแตนเบียนวงศ์ Braconidae ที่ออกหากินเวลากลางคืนในอุทยานแห่งชาติดอยภูคา โดยใช้กับดักแสงไฟ จากการเก็บตัวอย่างเป็นระยะเวลา 1 ปี ตั้งแต่เดือนกันยายน 2561 ถึง พฤศจิกายน 2562 พบแตนเบียนวงศ์ Braconidae ทั้งหมด 846 ตัวอย่าง 177 morphospecies ใน 21 วงศ์ย่อย (มีวิถีชีวิตแบบ koinobiont จำนวน 15 วงศ์ย่อย และ มีวิถีชีวิตแบบ idiobiont จำนวน 6 วงศ์ย่อย) ได้แก่ Agathidinae, Alysiinae, Aphidiinae, Brachistinae, Braconinae, Charmontiinae, Cheloninae, Doryctinae, Euphorinae, Homolobinae, Hormiinae, Ichneutinae, Lysiterminae, Macrocentrinae, Meteorideinae, Microgastrinae, Opiinae, Orgilinae, Pambolinae, Rhysipolinae และ Rogadinae โดยแตนเบียนที่พบมากสุดอยู่ในวงศ์ย่อย Rogadinae คิดเป็นร้อยละ 31 จากตัวอย่างทั้งหมด (259 จาก 846 ตัวอย่าง) นอกจากนี้ยังพบแตนเบียนชนิดที่มีการรายงานครั้งแรกในประเทศไทย คือ *Gyroneuron glabrum* Long, 2018 (Rogadinae) และแตนเบียนชนิดใหม่ที่มีการค้นพบ และตั้งชื่อวิทยาศาสตร์ คือ *Trigastrotheca doiphukhaensis* Raweearamwong, Quicke & Butcher, 2020

สาขาวิชา	สัตววิทยา		ลายมือชื่อนิสิต ....
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Marisa Raweearamwong : Taxonomy of nocturnal parasitic wasps family Braconidae (Hymenoptera: Ichneumonoidea) in Doi Phu Kha National Park, Thailand. Advisor: Assoc. Prof. Dr. Buntika Areekul Butcher Co-advisor: Prof. Dr. Donald L.J. Quicke

Parasitoid wasps of the family Braconidae are classified in the order Hymenoptera, same as bees, ants and other wasps. The Braconidae is one of the most species-rich families in the Insecta. Doi Phu Kha National Park (DPKNP) has highly diverse organisms, both flora and fauna reflecting the great varieties of habitat types, however, there is very little information on the taxonomy of Braconidae in this national park. Therefore, the aim of this research is to establish the taxonomy of nocturnal parasitic wasps in the family Braconidae within the DPKNP using light trapping technique. A total of 846 specimens, 177 morphospecies within 21 subfamilies of the Braconidae (15 koinobionts and 6 idiobionts) were collected during September 2018 to November 2019. The collected braconid wasps are classified in 21 subfamilies: Agathidinae, Alysiinae, Aphidiinae, Brachistinae, Braconinae, Charmontiinae, Cheloninae, Doryctinae, Euphorinae, Homolobinae, Hormiinae, Ichneutinae, Lysiterminae, Macrocentrinae, Meteorideinae, Microgastrinae, Opiinae, Orgilinae, Pambolinae, Rhysipolinae and Rogadinae. The highest number of specimens and morphospecies collected from this study is in the Rogadinae, representing 31% of all specimens (259 from 846 specimens). *Gyroneuron glabrum* Long, 2018 (Rogadinae) was the first recorded from Thailand. *Trigastrotheca doiphukhaensis* Raweearamwong, Quicke & Butcher, 2020 was described and illustrated.

Field of Study: Zoology		Student's Signature ....
Academic Year: 2019		Advisor's Signature ....
		Co-advisor's Signature ....

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CHAPTER I
INTRODUCTION

1.1 Rationale

Parasitoid wasps are classified in the order Hymenoptera which is one of the largest orders of insects. The most familiar insects of the Hymenoptera are bees, ants, and social wasps. However, the parasitoids taxa are by far the most diverse group as well as being of importance in the biological control programmes for reducing damage by insect pests (Wharton et al., 1997). The Ichneumonoidea is the most diverse group of parasitoids, it can be divided into two large families, the Ichneumonidae and Braconidae (Quicke, 2015).

Parasitoid wasps of the family Braconidae (Hymenoptera: Ichneumonoidea) are one of the most species-rich groups of insects, with approximately 20,000 species in over 1,000 genera described worldwide (Yu et al., 2012). However, it has been estimated that at least 50,000 to 60,000 braconid species are waiting to be discovered and described (Dolphin and Quicke, 2001; Jones et al., 2009). Since 2002, research on the taxonomy of Thai braconids species has been carried out intensively by Butcher, B.A. and Quicke, D.L.J.; the number of new species described or newly recorded from Thailand has rapidly increased since then. Up until now approximately 300 species have been recorded from Thailand based on original research (Butcher et al., 2012; Quicke et al., 2013; Butcher, 2014; Quicke et al., 2017a; Quicke et al., 2017c).

Nevertheless, braconid wasps are still massively understudied in the tropical countries. Thailand's National Parks provides one of the most diverse and important regions for insect biodiversity, however, they have been poorly sampled for parasitic wasps. The latest database of braconids collected in Thai national parks using Malaise traps were reported by the TIGER project (Thailand Inventory Group for Entomological Research) since 2006 (Sharkey Lab Project, 2008).

This study aims to establish the first formally preliminary database of both morphological and molecular taxonomic database of nocturnal Braconidae at Doi Phu Kha National Park, Thailand. Doi Phu Kha National Park is selected for studying taxonomy of nocturnal braconids wasps using light trap to collect the insect specimens because of its diverse habitats, lacking of parasitic wasp taxonomic work there. The only previous work on parasitic wasps in this national park apart from a collecting trip by Kitching, I.J. (the Natural History Museum, London) and Cotton, A.M. in 1991 were by the TIGER project which ran Malaise traps there in 2007-2008. From the TIGER materials collected, 19 species of *Aleiodes* (Hymenoptera: Braconidae: Rogadinae) (Butcher et al., 2012). Most *Aleiodes* species are nocturnal and are probably better collected by light trapping than in Malaise traps because they are attracted to bright (especially U.V. containing) lights at night. Up until now there has been no data for nocturnal braconids in Doi Phu Kha national park.

1.2 Objective

To study taxonomy of nocturnal braconid wasps (Hymenoptera: Ichneumonoidea: Braconidae) in Doi Phu Kha National Park, Thailand

1.3 Scope of study

Scope of this thesis is to study the taxonomy of nocturnal parasitic wasps family Braconidae (Hymenoptera: Ichneumonoidea) at Doi Phu Kha National Park, Nan province, Thailand. Insects were collected every two months for a year started from September 2018 to November 2019, 8 trips in total, by light trapping. Each field trip, adult braconid parasitoids were collected in three different locations of Doi Phu Kha National Park (three nights in total depending on the weather). The light trap was installed in the uncluttered area for allowing the light from the trap to attract parasitoids and switched on the light before the sunset until midnight. Parasitoids were collected by hand or using an aspirator then preserved them in tubes contain 95%

ethanol to preserve DNA, labelled and kept for further studies in the laboratory. Braconid wasps were sorted from the insect samples in the Integrative Ecology Laboratory. The specimens were pinned, mounted, given a unique voucher number, and photographed using Olympus Stylus (TG-2 Tough). The new species was imaged using a Leica M205 C with fusion optics stereo microscope and the Leica Application Suite imaging system. The morphological identification of braconids was identified to subfamily, genus or species rank depending on the available of identification keys. A large subset of specimens was selected for DNA barcoding to test the accuracy of the morphospecies sorting. A large majority of specimens represented species that are new to science but formal scientific description could only be carried out for genera for which there already exists a good taxonomic treatment for S.E. Asia.

CHAPTER II

LITERATURE REVIEWS

2.1 Parasitoid wasps

Parasitoid wasps are classified in the order Hymenoptera, one of the largest and most successful orders of insects which also includes bees, ants and other wasps (Quicke, 2015). Generally, insect hosts are mostly belonging to the order Lepidoptera, Coleoptera and Diptera but also include some arachnids (Gauld and Bolton, 1988). Adult female parasitoid searches for hosts and attack either by penetrating the body and laying eggs inside the host (endoparasitoid) or attaching eggs on the outside of body (ectoparasitoid). Once eggs hatch, parasitoid larvae develop on or within the host, consume the host body fluid and tissues, molt inside or outside of the host's body cavity. Depending on the species, pupation occurs either within or outside the host's body (Askew and Shaw, 1986).

Parasitoid wasps are divided into 2 major groups, according to their lifestyles, idiobionts and koinobionts. Idiobiont parasitoids by definition prevent further development of the host or any activities after parasitisation, therefore, parasitoid larvae develop on the non-feeding and immobile host. In contrast, koinobiont parasitoids allow the host to continue to feed, grow and metamorphose after being parasitised (Askew and Shaw, 1986; Shaw and Huddleston, 1991). Comparison of the idio- and koinobiont strategies is shown in Table 1.

Table 1 The comparison of the idio- and koinobiont strategies (based on Quicke, 2015)

Idiobionts	Koinobionts
- mostly ectoparasitoids	- mostly endoparasitoids
- hosts generally concealed	- hosts generally exposed
- often generalists	- often specialists
- larval hosts permanently paralysed	- larval hosts temporarily paralysed
- larval development rapid	- larval development protracted
- females with few mature eggs at any one time	- female always carry many mature eggs at any one time
- host stage attacked larger than wasp	- host stage attacked smaller than wasp
- mostly diurnal	- diurnal or nocturnal

In addition, parasitoids can be either solitary or gregarious. For solitary parasitoids, only one parasitoid larva develops in the body cavity of host or outside the host's body, whereas, gregarious parasitoids can lay more than one egg up to thousand eggs upon a single host from a single adult female wasp.

Among the parasitic hymenopteran, Ichneumonoidea and Chalcidoidea are the largest superfamilies of parasitoids. The Ichneumonoidea is one of the most diverse and species-rich groups of parasitoids, and comprises two large extant families, the Ichneumonidae and Braconidae (Quicke, 2015) together a small specialised third family, Trachypetidae, known only from Australia (Quicke et al., 2020b).

2.2 Braconidae

The Braconidae is a family of parasitoids closely related to Ichneumonidae. Braconids can be differentiated from ichneumonids by these morphological characters: fore wing without vein 2m-cu (with one rare exception); presence of vein 1/Rs+M (absent in all ichneumonids); second submargimal cell trapezoid-shaped (diamond-shaped or small pentagonal in all ichneumonids); hind wing vein r-m located distal to split of R1 from R or RSa (Figure 1); antennae with 16 segments or more; hind trochanters have two segments (Quicke, 2015; Quicke et al., 2020c). In general, the body size of braconids is smaller than that of ichneumonids but the overall range is more or less the same. Most nocturnal ichneumonoids exhibit an ophionoid facies being typically yellow-brown in colour with long antennae and large eyes and ocelli (Quicke, 2015).

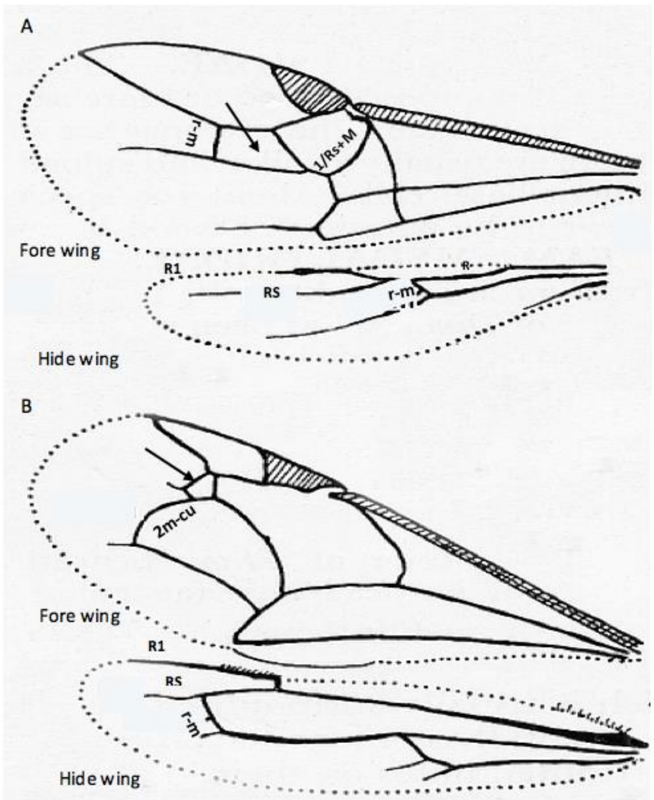

Figure 1 Wing venation of Ichneumonoidea

A: wings of braconid (arrow shows a trapezoid-shaped second submarginal cell); B: wings of ichneumonid (arrow shows a diamond-shaped second submarginal cell) (Watson and Dallwitz, 2003)

The Braconidae is one of the most species-rich families of insects, with at least 20,000 described species in over 1,000 genera (Yu et al., 2012). The vast majority of braconids are primary parasitoids of other insects, especially the larval stages of Lepidoptera, Coleoptera and Diptera (Gauld and Bolton, 1988), only a few Neotropical species are phytophagous. They include both idio- and koinobiont species though most subfamilies are consistently one or the other. Many members of the Braconidae are beneficial because they act as natural enemies that play an important role for controlling populations of insect pests, especially caterpillars, in the biological and integrated control programmes (Shaw and Huddleston, 1991; Quicke, 2015).

Braconidae can be divided into two evolutionary lineages, the cyclostome and non-cyclostome based on the characters of their labrum and clypeus (Wharton et al., 1997) but this is not 100% reliable because many species in the cyclostome lineage have secondarily lost cyclostomicity. In typical, cyclostome braconids, the labrum and the ventral part of the clypeus are concave, form a rounded cavity above the mandibles (Figure 2A). In contrast, non-cyclostome braconids are not concave therefore, there is no rounded cavity presented as in cyclostome braconids (Goulet and Huber, 1993) (Figure 2B).

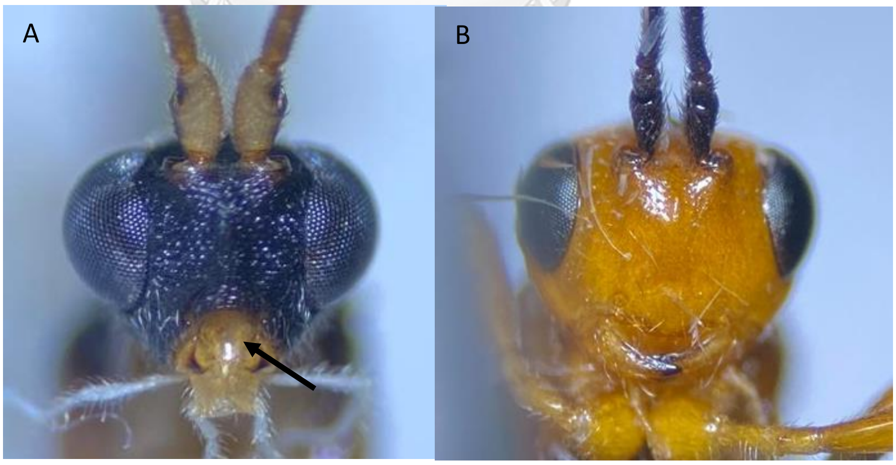

Figure 2 Cyclostome braconid, arrow shows a rounded cavity above the mandible (A) and non-cyclostome braconid (B)

Braconid wasps can be divided into 39 subfamilies as follows: Agathidinae, Alysiinae, Amicrocentrinae, Aphidiinae, Apozyginae, Braconinae, Brachistinae, Cardiochilinae, Cenocoeliinae, Cheloninae (including Adeliinae), Dirrhopinae, Doryctinae (including Ypsitocerinae), Euphorinae (including Ecnomiinae and Neoneurinae), Gnamptodontinae, Exothecinae, Helconinae, Homolobinae, Hormiinae (including Lysiterminae), Ichneutinae, Khoikhoiinae, Macrocentrinae, Maxfischeriinae, Mendesellinae, Meteorinae, Meteorideinae, Mesostoinae, Microgastrinae, Microtypinae, Miracinae, Opiinae, Orgilinae, Pambolinae, Rhysipolinae, Rhyssalinae (including Histeromerinae), Rogadinae (including Betylobraconinae), Sigalphinae, Telengaiinae, Vaepellinae, and Xiphozelinae. Of these 16 subfamilies belong to the cyclostome lineage and 23 to the non-cyclostome lineage (Quicke, 2015; Quicke et al., 2020b; Quicke et al., 2020c). The Masoninae were recently reasigned to the Ichneumonidae (Quicke et al., 2020a), and the Trachypetinae (including Cercobarconinae) raised to family status (Quicke et al., 2020b).

2.3 Taxonomy of Thai braconids

The Braconidae is cosmopolitan, and can be found in all terrestrial habitats, ranging from wet, tropical forests to arid regions (Wharton et al., 1997). Many new species are still being discovered especially among the smaller bodies species (Quicke, 2012, 2015). However, taxonomists who work in this group estimated that there are about 50,000-60,000 braconid species worldwide, many species have not been discovered and described yet (Dolphin and Quicke, 2001; Jones et al., 2009).

During the last decade, numerous Thai braconid species have been described as new to science, and more than 300 species have been recorded, especially subfamily of Agathidinae, Aphidiinae, Braconinae and Rogadinae (Yu et al., 2016) and subsequent publications (Butcher et al., 2012; Quicke et al., 2013; Butcher, 2014; Quicke et al., 2017a; Quicke et al., 2017c).

Agathidinae is a moderately large subfamily with 1,061 described species worldwide and 238 in the Oriental Region (Yu et al., 2005). Sharkey et al., 2009 (Sharkey et al., 2009) revised Thai Agathidinae and produced interactive keys to the genera. There were 17 genera reported throughout Thailand in several national parks: *Agathis* Latreille, 1804; *Amputostypos* Sharkey, 2009; *Aneurobracon* Brues, 1930; *Biroia* Szpligeti, 1900; *Braunsia* Kriechbaumer, 1894; *Camptothlipsis* Enderlein, 1920; *Coccygidium* Saussure, 1892; *Cremnops* Foester, 1862; *Cremnoptoides* van Achterberg and Chen, 2004; *Disophrys* Foerster, 1862; *Earinus* Wesmael, 1837; *Euagathis* Szepligeti, 1900; *Gyrochus* Enderlein, 1920; *Hypsostypos* Baltazar, 1963; *Lytopylus* Forster 1862; *Therophilus* Wesmael 1837 and *Troticus* Brull, 1846). Stoelb and Sharkey (2011) described six more new Thai agathidines (*Braunsia chaweewanae*, *Camptothlipsis annemariae*, *Ca. sheilae*, *Coccygidium mastigion*, *Co. phaeoscapos*, and *Cremnoptoides yui*) and provided dichotomous keys to the species of each genus (Sharkey and Stoelb, 2011).

The species of the genus *Euagathis* Szépligeti from Thailand were revised by van Achterberg et al., 2014, eight species were recorded and three species were described as new (*E. breviantennata, E. setosimaculata* and *E. pallitarsis*) (van Achterberg et al., 2014). Sharkey and Chapman (2018) revised Thai agathidines in the genus *Zosteragathis* and described 19 new species (*Z. chaiyaphumensis*, *Z. eukos*, *Z. hinensis*, *Z.hongensis*, *Z. inthanonensis*, *Z. krachanensis*, *Z. lampangensis* , *Z. lampooensis*, *Z. luangensis*, *Z. ngamensis*, *Z.perknos*, *Z. petchaburiensis*, *Z. phahompokensis*, *Z. phuphanensis*, *Z. sakaeratensis*, *Z. sakonensis*, *Z.samensis*, *Z. surinensis*, *Z. taemensis* and *Z. tonensis*), key to Thai species of *Zosteragathis* is provided (Sharkey and Chapman, 2018).

There have been very few studies of Thai Aphidiinae, the first attempt was made by Starý et al., 2008 in which a new species was described, *Areopraon thailandicum* Starý, 2008 and other species were recorded from Thailand for the first time (*Aphidius autriquei*, *Archaphidus greenideae*, *Lipolexis gracilis*, *Lipolexis oregmae*, *Toxares shigai*). Another study aim to facilitating taxonomic research on aphidiine parasitoids of SEA in general and Thailand by Starý et al., 2010 which recorded seven species for the first time (*Binodoxys indicus*, *Bioxys japonicus*, *Diaeretus leucopterus*, *Ephedrus lacertosus*, *Fissicaudus thailandicus*, *Indaphidius curvicaudatus* and *Parabioxys songbaiensis*) (Starý et al., 2008; Starý et al., 2010a).

Recent studies of Braconinae were conducted by Butcher and Quicke, 2010 on the Indo-Australian braconine wasp genus *Ischnobracon* Baltazar, 1963, from Thailand, Laos and Vietnam. The revision included descriptions of three new species from Thailand (*I. feliciae*, *I. hannongbuai* and *I. xanthoflagellaris*) (Butcher and Quicke, 2010). This was followed by a revision of the non-Afrotropical species of *Trigastrotheca* Cameron, 1906, which included descriptions of two new species from Thailand (Quicke et al., 2017b), viz *T. pariyanonthae* and *T. sureeratae* collected from Nam Nao NP, Phetchabun and Doi Inthanon NP, Chiang Mai, respectively, bringing the total number of *Trigastrotheca* to 14 species.

Before 2010, there were a few publications on the Rogadinae. For example, only three species of *Aleiodes* were recorded from the fauna of Thailand, *A. narangae* Rohwer, 1934, is a parasitoid of in the moth genus *Naranga* Moore (Noctuidae) (Yu et al., 2005), *A.* (*Hemigyroneuron*) *roberti* (Butcher and Quicke, 2011), and *A. spurivena* (Butcher et al., 2011). Butcher et al., 2012 reported 179 new species of a single, predominantly nocturnal, genus *Aleiodes* (Rogadinae). Specimens were mostly collected using Malaise traps by the TIGER programme (Thailand Inventory Group for Entomological Research) in 25 national parks in Thailand which yielded over 1,000 specimens of *Aleiodes*, over a three years period (2006-2008).

Others studies including *Yelicones samaesanensis* Butcher, 2014 (Rogadinae) collected from Khao Ma Jor, Samaesan, Sattahip, Chonburi province by light trapping (Butcher, 2014).

The very poorly known genus *Cedria*, currently placed in the Hormiinae has had one new species described *Cedria wichasei* Quicke, Belokobylskij & Butcher, 2017, collected from light trapping at Chulalongkorn University Campus, Kaeng Khoi, Saraburi province. It is the first recorded member of its genus from Thailand for the first time (Quicke et al., 2017a).

During 2015 to 2016, taxonomy of Thai nocturnal braconid wasps was conducted at Sattahip, Chonburi province and Kaeng Khoi, Saraburi province. A total of 652 and 998 braconid specimens were collected from Chonburi and Saraburi provinces, respectively. They were classified into 17 subfamilies, 175 morphospecies (Charoennitiwat, 2015) and 17 subfamilies, 88 morphospecies (Raweearamwong, 2016), respectively. From these researches, many morphospecies are probably new to science, still waiting for further studies. These studies confirm that Thai braconid wasps are still understudied and poorly known at many regions of the country. Moreover, very little taxonomic entomological studies had been reported from the faunas of national parks, which have a massive numbers of undescribed insect species.

Insect specimens have been poorly sampled from Thai national parks, including parasitic wasps. The latest works on the taxonomy of parasitic wasps studied in the national parks around Thailand covered every part of the country were carried out using malaise traps by the TIGER project since 2006. Insect specimens were collected from 25 national parks across Thailand such as Doi Phu Kha NP, Khoa Sok NP, Khao Yai NP and Kaeng Krachan NP (Sharkey Lab Project, 2008). In addition, there are several publications of Braconidae in TIGER-project study (Starý et al., 2008; Starý et al., 2010a; Starý et al., 2010b; Sharkey and Stoelb, 2011; Sharkey and Stoelb, 2012).

2.4 External morphology of Braconidae

Traditionally, the identification of Braconidae has been based entirely on morphological characters of adult parasitoids, such as wing venation patterns (Figure 3), head (Figure 4), mesosoma (Figure 5), metasoma (Figure 6). There are a few keys used for separating braconids from ichneumonids such as Gauld and Bolton, (1988), Shaw and Huddleston, (1991) and Wahl and Sharkey, (1993) (Wahl and Sharkey, 1993).

Identifying specimens into subfamily is apparently more difficult, however, due to the changes in publishing technology, the illustrations of the most recent dichotomous keys are better than the past: (for examples, van Achterberg, 1990 and Wharton et al., 1997) are used for identifying braconid specimens into subfamily (van Achterberg, 1990).

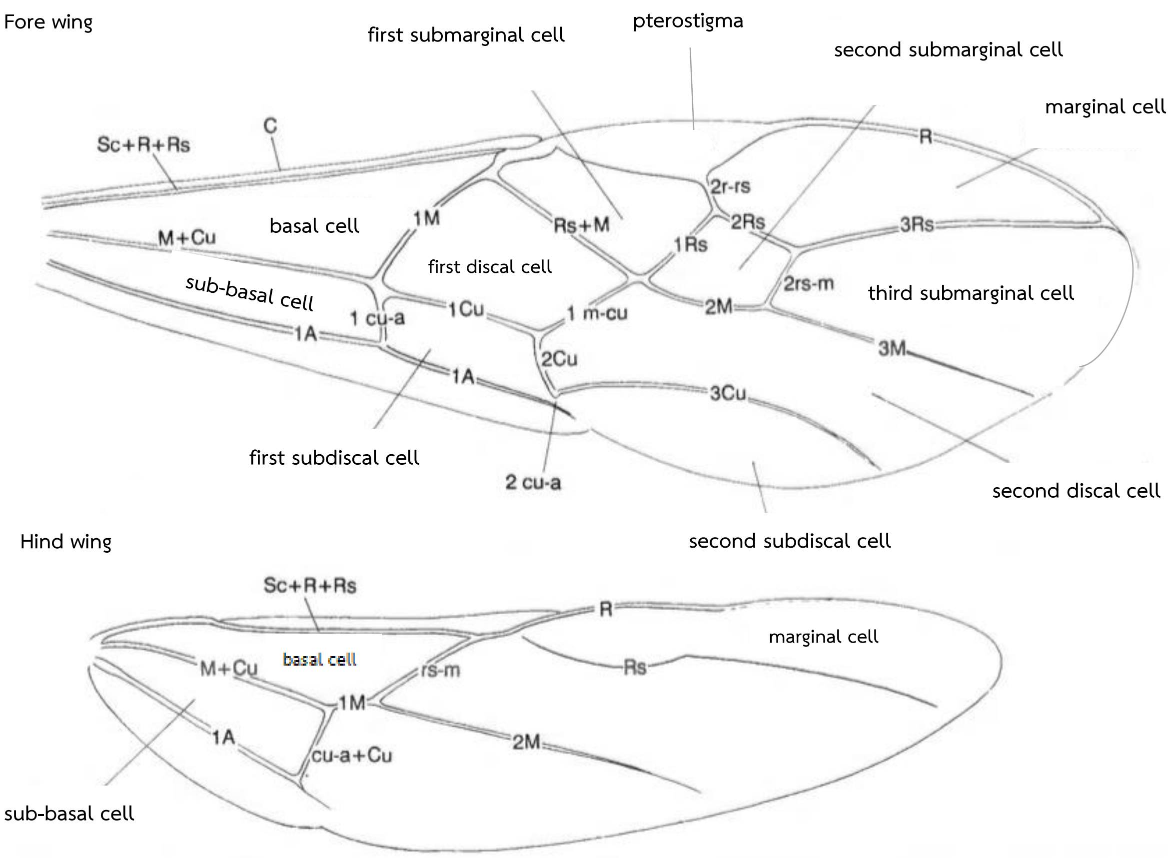

Figure 3 Wing venation of Braconidae

(modified from Shaw and Huddleston, 1991)

The essential dichotomous keys which are widely used for identification of Braconidae are those of Wharton et al, (1997) and van Achterberg (1990, 1993). The key of van Achterberg (1993) is for subfamilies of braconids in the world, while the key of van Achterberg (1990) is only for the Holarctic region and Wharton et al, (1997) is only for those subfamilies which is found in the New World.

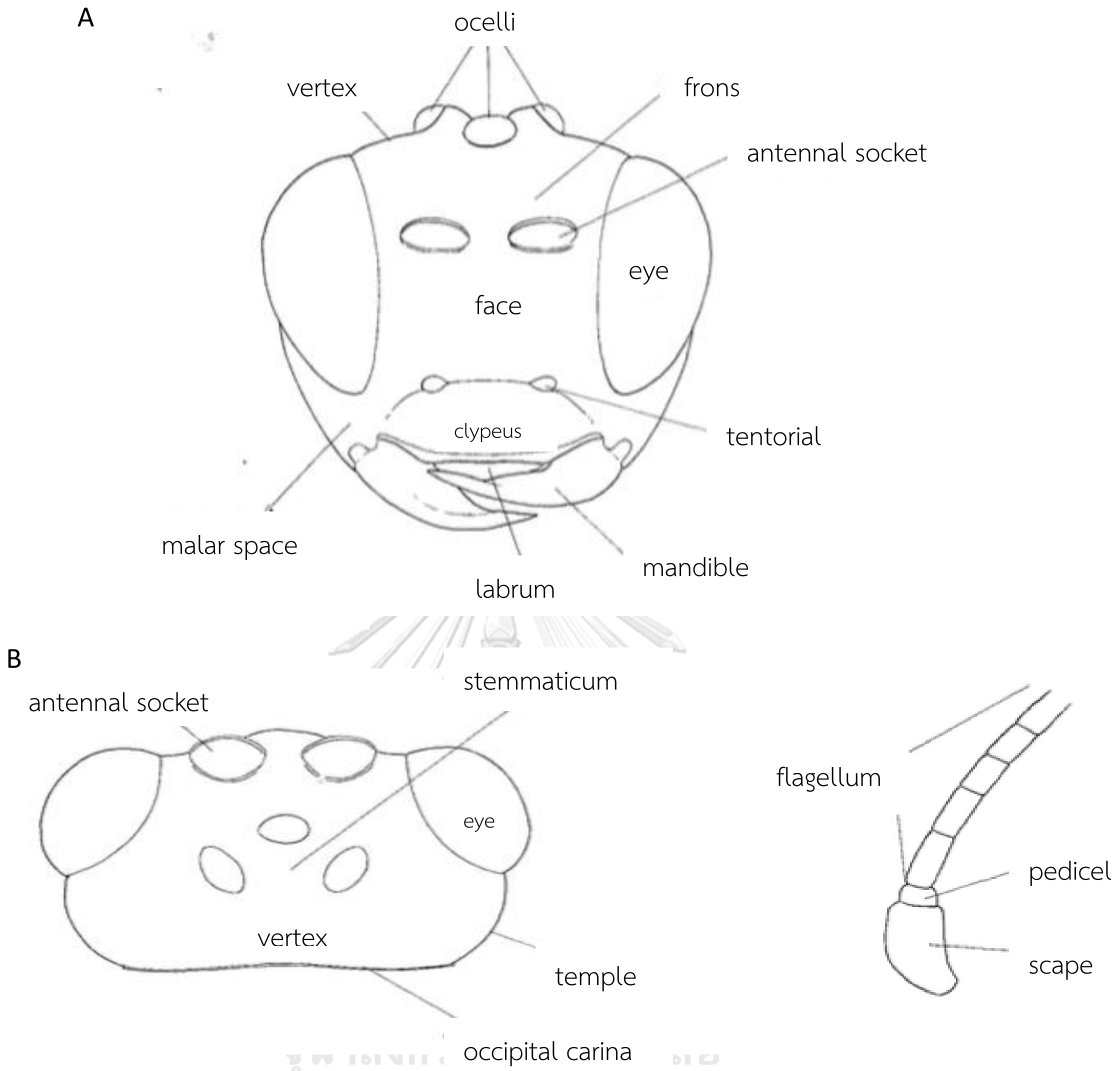

Figure 4 Head of Braconidae

A: anterior view; B: top view and antenna (modified from Shaw and Huddleston, 1991)

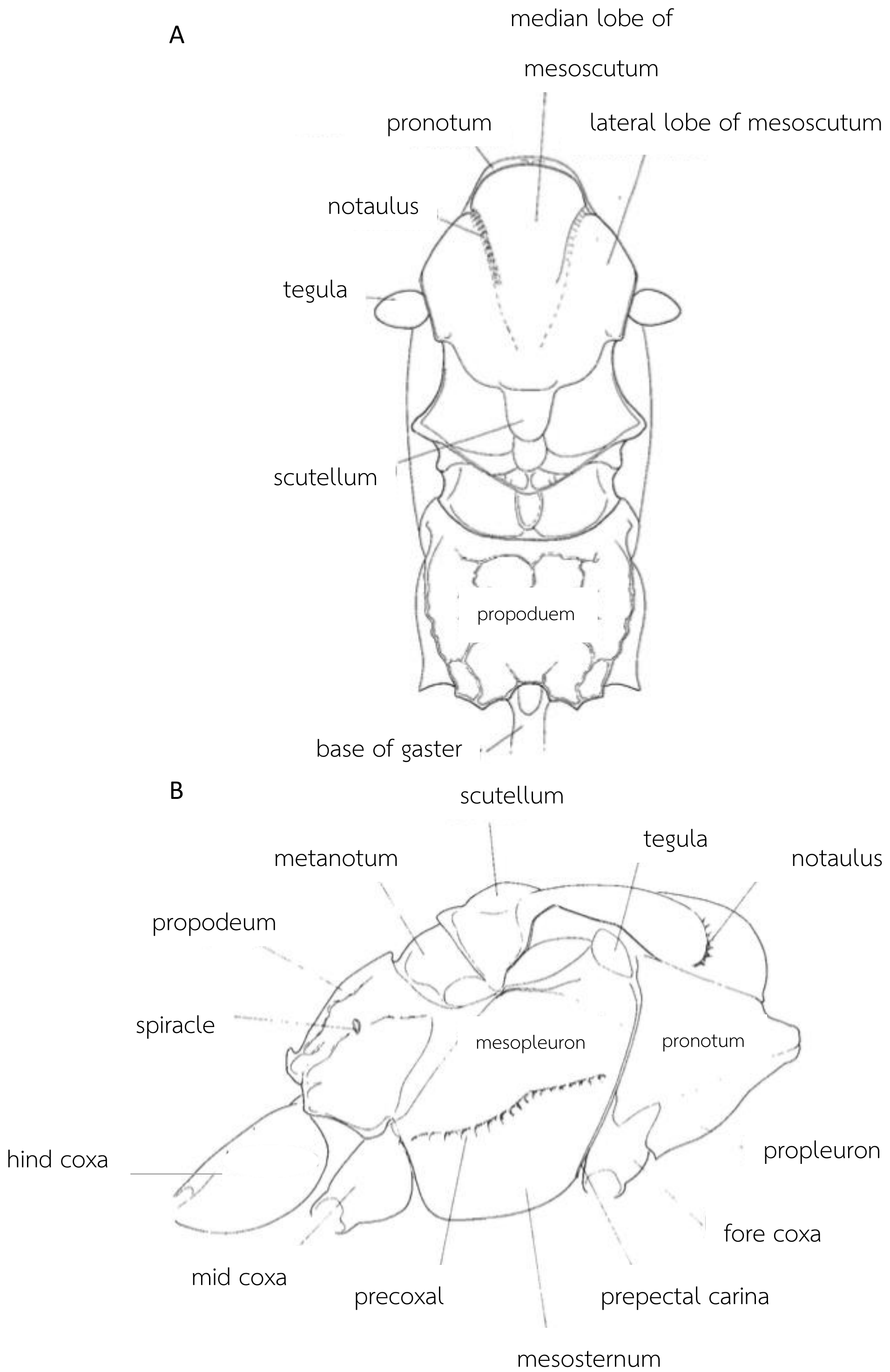

Figure 5 Mesosoma of Braconidae

A: dorsal view; B: lateral view (modified from Shaw and Huddleston, 1991)

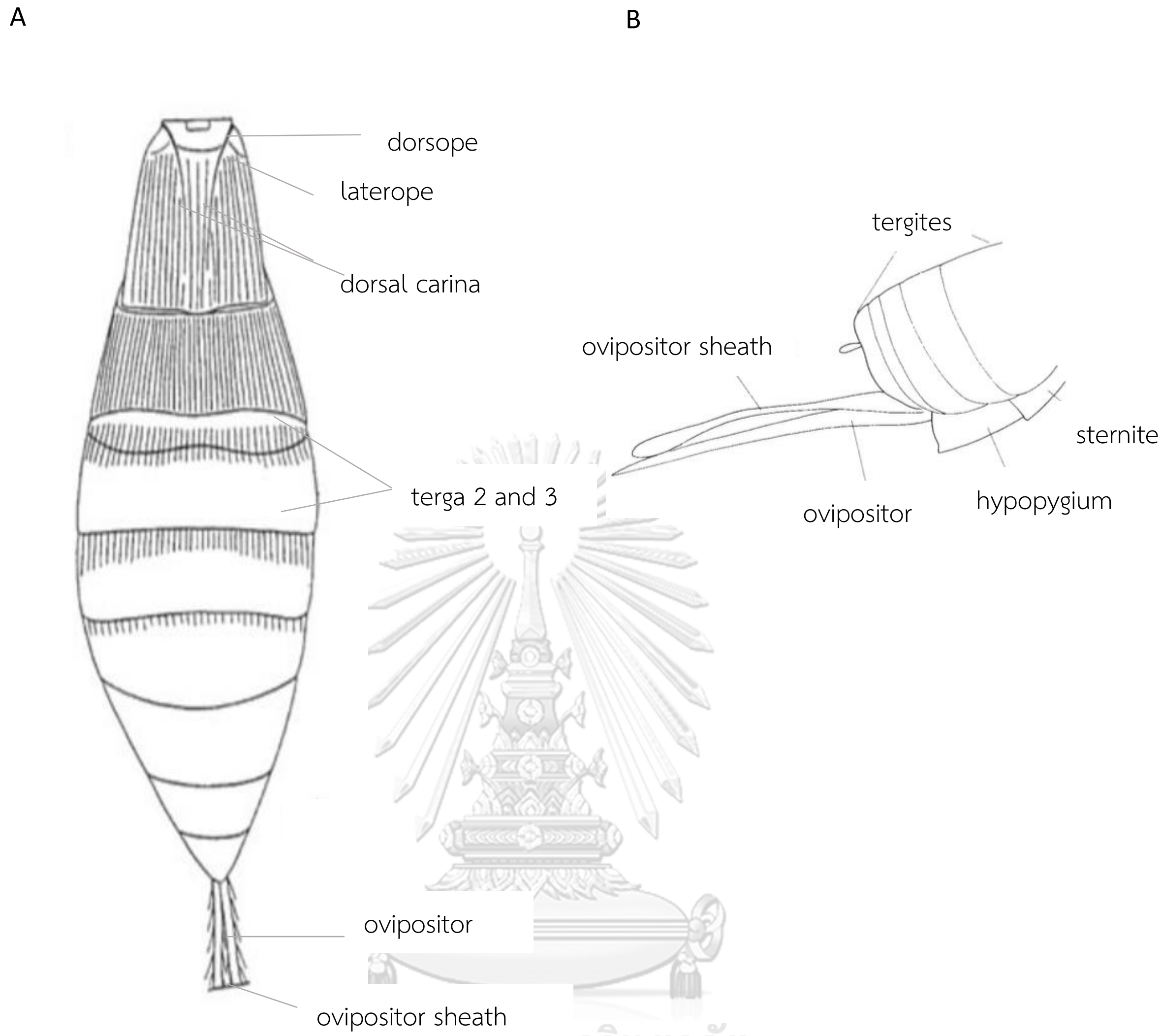

Figure 6 Metasoma of Braconidae

A: dorsal view; B: lateral view (modified from Shaw and Huddleston, 1991)

2.5 Doi Phu Kha National Park

Doi Phu Kha National Park (DPKNP) locates at Pua district, Nan Province, Northern Thailand. It is the largest national park in Nan Province and parallel to the Lao People's Democratic Republic border, with the total area of 1,704 square kilometres. The elevation of national park is 1,980 metres above a mean sea level with 25° C in average of temperature. It consists of the many types of forest zones ranging from, hill evergreen forest, dry evergreen forest at lower altitudes through deciduous forest, dry dipterocarp forest at higher elevations, and includes some natural savanna (National Park Office, 2015). Doi Phu Kha National Park has rich natural resources and great diversity in both flora and fauna due to the wide variety of habitats types and considerable geographic spread incorporating distinctly different regional biomes.

In 2012, 19 new braconid species of the genus *Aleiodes* (Hymenoptera: Braconidae: Rogadinae) were collected using malaise traps by the TIGER project in 2006 from Doi Phu Kha National Park alone (Sharkey Lab Project, 2008: Online), and these were described by Butcher et al. (2012). Since then, there is no more database of braconids wasps collected in Doi Phu Kha National Park, also no data on nocturnal braconids, therefore, the aim of this research is to establish the first taxonomy of nocturnal parasitic wasps family Braconidae using light trap in Doi Phu Kha National Park.

The preliminary database of nocturnal braconid wasps from natural habitats at Doi Phu Kha National Park would be an important data for biodiversity conservation and sustainable natural resource management.

Presently, there are still few studies or work on Braconidae in Doi Phu Kha National Park. One of the noticeable study was conducted by TIGER Project. Braconid specimens collected in Malaise traps yielded many specimens and revealed a large number of new species. To date, 21 species were described from DPKNP, especially parasitoids in the Rogadinae and the Agathidinae (Sharkey Lab Project, 2008: Online).

In 2012, 19 species of *Aleiodes* (Braconidae: Rogadinae) collected from DPKNP were described as new species to science, *A. archicolorus*, *A. asperum*, *A. basipunctatus*, *A. buzuriquadruplus*, *A. concoronarius*, *A. conina*, *A. corrusciput*, *A. curvicauda*, *A. deathi*, *A. flavostriatus*, *A. lobocarinus*, *A. nathismus*, *A. nonicones*, *A. propodocarinus*, *A. rectanguliguttatus*, *A. reticulisoma*, *A. stibbonsi*, *A. thirakupti* and *A. tulipus* (Butcher et al., 2012). Quicke and Butcher, 2011 described two new genera of Rogadinae, *Confusocentrus* and *Quasimodorogas*, one of them was collected from DPKNP, *Quasimodorogas confusus.* Sharkey and Stoelb, 2012 revised *Therophilus* (Braconidae: Agathidinae) and described 11 new species, only one species, *Therophilus wannai*, was collected from DPKNP (Sharkey and Stoelb, 2012).

2.6 Light trapping

UV light trap is normally used on a taxonomic work for collecting nocturnal insects, especially moths, beetles, and many hymenopterans such as bees, ants, solitary wasps and mainly nocturnal groups of parasitic wasps (Wagner and Kurina, 1997). For setting the light trap, a white vertical sheet and a light source are required. Light trap should be installed from the period of sunset to as late as possible. Many groups of braconids such as Rogadinae and Cheloninae are mostly settle on the back side of the white sheet, therefore patrolling the sheet on both sides can provide the best yield of parasitoids. For avoiding the interrupting by uninvolved light sources, the location of the trap should be far away from other competing light sources. In addition, to promote the large yield of parasitoids settle on the white sheet, the trap should be set in the cleared space or uncluttered habitat (Quicke, 2015).

2.7 DNA barcoding

In this study, dichotomous keys are used to identify braconids to the genera, and in some cases species level. In case of discovering new species, DNA barcoding is used to ascertain the accuracy of species identification. DNA barcoding is a taxonomic method using short genetic marker in an organism's DNA to identify a species. It uses amplified, sequences and analysed in uniform region of the mitochondrial gene, such as cytochrome C oxidase I (COI), a 650 base-pair region which is used as a standard barcode for most animals then compare with the sequences from the previous database (Genbank and BOLD). It has been extensively used to identify organisms and discover new species (Hebert et al., 2003). Misidentification is one of the most common problem especially for morphological identification in the genus or species level, thus using DNA barcoding can reduce this problem and provide an accurate species identification (Stoeckle et al., 2004; Seifert et al., 2007). DNA barcoding is a reliable and cost effective method for molecular identification, which can solve mimicry, sibling and cryptic species and inter-or, intra-specific variation. In addition, most insects have 4 life stages, egg, larva, pupa and adult and some stages are difficult to identify by other techniques (Hebert et al., 2004; Hebert and Gregory, 2005). Many studies show that it is a reliable tool for species identification of various order of insects such as Lepidoptera, Hymenoptera, Coleoptera and Diptera (Janzen et al., 2005; Hajibabaei et al., 2006; Pfenninger et al., 2007; Vaglia et al., 2008; Jurado-Rivera et al., 2009).

In case of cryptic species, members of two or more species groups are morphologically indistinguishable but are basically different species, which often occur in highly diverse taxa (such as Ichneumonoidea, morphologically very difficult to distinguish), barcoding can help or supplement morphological studies when it comes to describing species. In addition, once barcoding has been assigned to a valid species, taxonomists can simply find out the DNA sequence for specimens and compare with the available data to get a generic or species name. Identification keys are sometimes difficult to deal with, thus DNA barcoding is very helpful for species identification and used in species descriptions especially for those extreme species-rich and underdescribed taxa in the tropics such as Ichneumonoidea. Meierotto et al., 2019 described species in two genera, *Hemichoma* and *Zelomorpha* (Braconidae:

Agathidinae), the description of new species was based primarily on the DNA barcode diagnosis, combine with high quality of a lateral habitus image of the specimen and holotype specimen information (Meierotto et al., 2019).

Barcode-based descriptions are more reliable and diagnostic than morphological descriptions for discriminating members of tropical complexes of sibling or cryptic species. For example, three cryptic species of the *Diachasmimorpha longicaudata* complex (Hymenoptera: Braconidae) can be found throughout Thailand. Species identification of each member of the complex is very necessary for implementing effective biological control managements. Three cryptic species of *D. longicaudata* were identified in Thailand, which were recently confirmed using genetic techniques and revealed that *D. longicaudata* A, B and BB formed a monophyletic group (Kitthawee, 2013; Kitthawee and Dujardin, 2016).

The potential of DNA barcoding in the Braconidae to assist species discovery and separation is well-illustrated by Gutiérrez-Arellano et al. (2015). The authors collected 961 specimens of Doryctinae in Chamela-Cuixmala Biosphere Reserve in Mexico, of which 883 were successfully barcoded. The results suggested that their samples comprised at least 170 separated species in 30 recognised genera. Of these an amazing 170 belonged to the single genus *Heterospilus*, the vast majority of them undescribed (Gutiérrez-Arellano et al., 2015).

CHAPTER III
MATERIALS AND METHODS

3.1 Field site

Field work was carried out at various sites within Doi Phu Kha National Park (DPKNP), Nan province (Northern Thailand) (Figure 7). Insect collection was conducted every two months for a year started from September 2018 to November 2019; a total of 8 field trips (Insect collecting trips in August and October 2019 were not conducted due to natural disaster, landslides). During each trip, adult braconid parasitoids were collected at three different locations (three nights in total depending on weather). The trap sites were selected based on an uncluttered gap, allowing the lights to attract insects from habitat further away (Figure 8). Precise trap locations were recorded using Garmin eTrex 30 GPS (Figure 9) (Table 2). The permission to conduct research and collect insect specimens in national park is obligated according to department of National Park, Wildlife and Plant Conservation, National Park Petmit: 0907.4/18722 (ไทย: ทส 0907.4/18722).

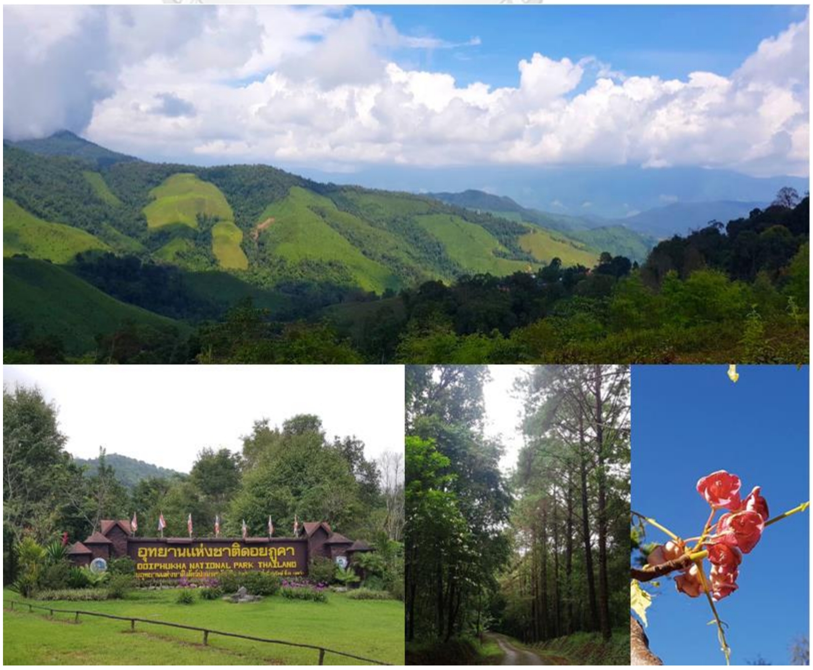

Figure 7 Doi Phu Kha National Park

Figure 8 Insect collecting areas

(left) light trap was set up and switched lights on (right)

Figure 9 Garmin eTrex 30 GPS

Table 2 GPS locations recorded by Garmin eTrex30 of insect collecting sites each field trips from DPKNP

Field trip no.	Dates	Sampling site locations (degrees and decimal minutes)	
		Latitude (N)	Longitude (E)
1	11-13 September 2018	N 19°12.283′	E 101°04.802′
2	8-10 October 2018	N 19°12.120′	E 101°04.669′
		N 19°10.831′	E 101°05.737′
		N 19°12.283′	E 101°04.802′
3	24-26 December 2018	N 19°10.817′	E 101°06.908′
		N 19°13.000′	E 101°04.160′
		N 19°12.137′	E 101°04.381′
4	4-6 February 2019	N 19°12.155′	E 101°04.482′
		N 19°12.226′	E 101°04.739′
		N 19°11.996′	E 101°04.865′
5	1-3 April 2019	N 19°12.226′	E 101°04.739′
		N 19°12.283′	E 101°04.802′
		N 19°12.866′	E 101°04.400′
6	17-19 June 2019	N 19°12.283′	E 101°04.802′
		N 19°12.283′	E 101°04.802′
		N 19°12.164′	E 101°04.473′
7	2-4 September 2019	N 19°12.283′	E 101°04.802′
8	4-6 November 2019	N 19°13.284′	E 101°04.132′

3.2 Collecting technique

Black light trap

Braconid wasps were collected using ultraviolet light trapping with a white sheet. This technique is the most common method for collecting nocturnally active flying insects (most of all collected insects, 99% should be nocturnal) most of which are attracted to UV light. Materials for setting the light trap consist of a white vertical sheet (approximately 2 x 3 m), one high pressure mercury vapour lamp (125 watts) hung at the upper middle of the sheet, plus two black UV light bulbs (40 watts each) hung on both sides of the mercury vapour lamp. The sheet and lights were suspended from a frame made from metal piping (Figure 10). The light bulbs were powered using the generator (Kipor IG1000) (Figure 11). The overall design is portable and useful when there are no suitable natural supports.

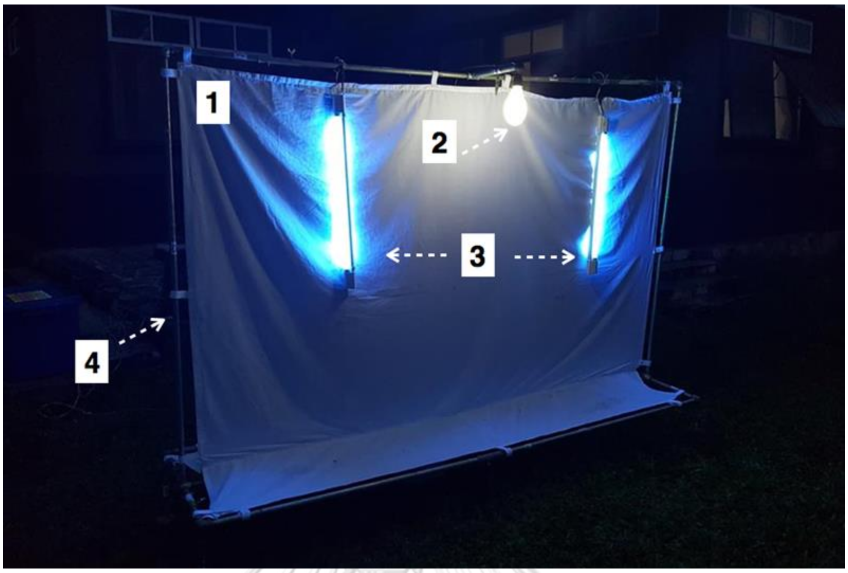

Figure 10 Black light trap

(1) white sheet, (2) mercury vapour lamp, (3) black UV light bulbs, (4) metal frame for hanging sheet made from metal pipe

Figure 11 Electric generator power

Light trap was installed and switched on the light bulbs just before sunset and operated until midnight. Insects were collected from the sheet on both sides by patrolling regularly (Figure 12). All braconids and parasitoids on the sheet were collected by hand or aspirator, and then preserved in 95% ethanol, labelled the location and collector's name (Figure 13).

Figure 12 Light trapping while operating
front-side (left), back-side (right)

Figure 13 Braconid wasp and other parasitoid specimens were preserved in 95% ethanol

3.3 Taxonomic methods

3.3.1 Sorting insect

At the Integrative Ecology Laboratory, specimens were placed in the Petri dish (Figure 14) then sorted out to only braconids under the stereo microscope (Olympus SZ60) using standard diagnostic characteristics notably wing venations, fore wing without vein 2m-cu; presence of vein (RS+M)a; hind wing: vein r-m located distal to split of R1 from R or RSa (Figure 15).

Figure 14 Collected specimens were placed in the petri dish for sorting process

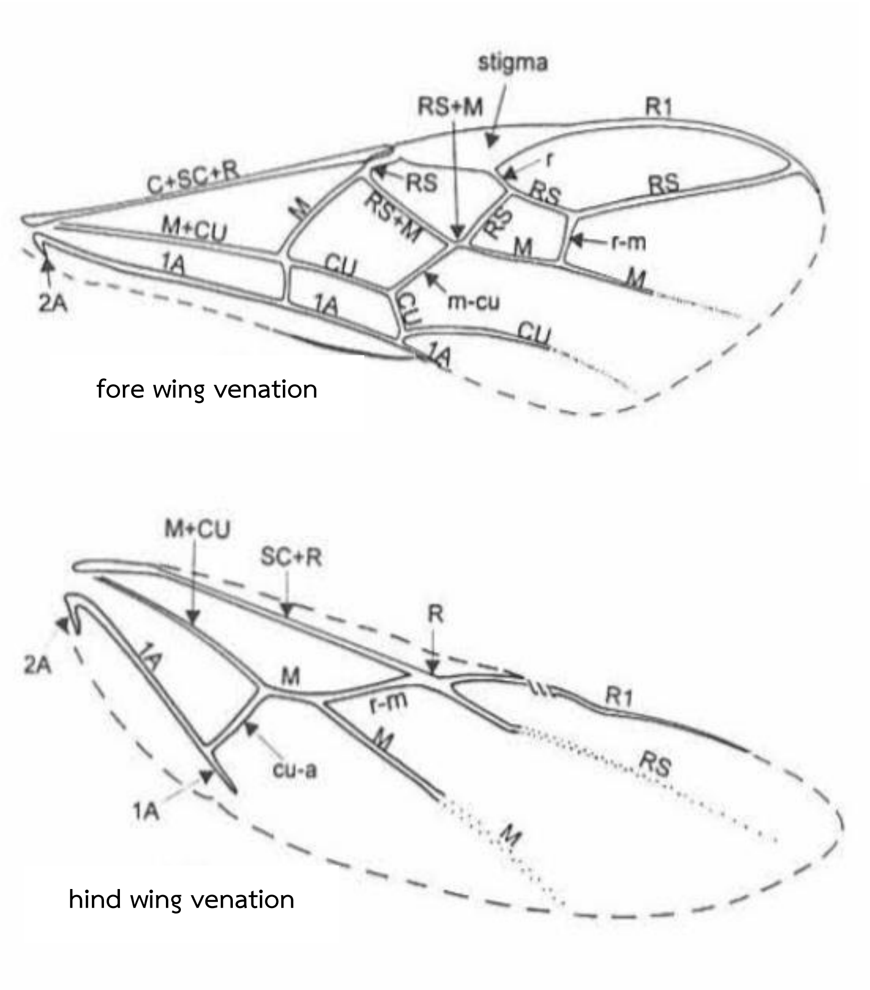

Figure 15 Diagrams of fore- and hind wing venations of braconid wasps (Wharton et al., 1997)

3.3.2 Pinning and mounting specimens

Most specimens (body size < 1 cm) were mounted by standard card-pointing using water-soluble Hercules glue (Figure 16), attached to the card at the right side of their mesosoma (Figure 17). Larger specimens (body size > 1 cm) were direct pinned through top of the thorax, slightly to the right side of the midline so that one side remained undamaged (Figure 18). The insect pin used for pinning was no.3.

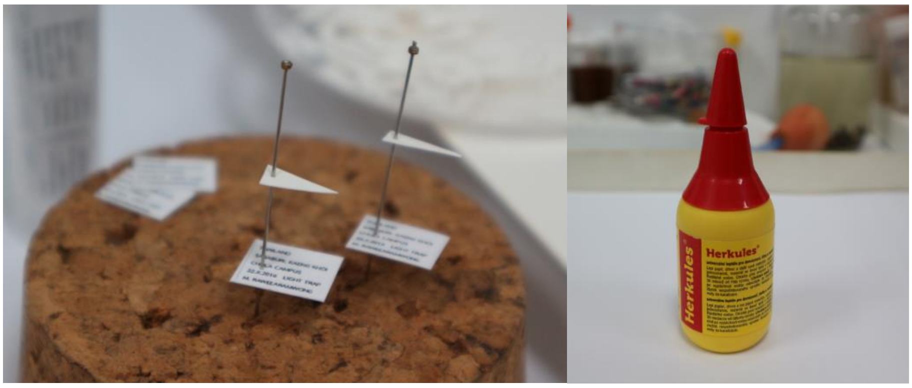

Figure 16 Triangular white cards and water-soluble glue used for insect pinning and mounting

Figure 17 Card-pointed specimen mounted on its right side

Figure 18 Specimen was pinned through the body on the right side of top of thorax

3.3.3 Morphological identification

Morphological terminology and wing venations used in this thesis followed van Achterberg (1988) (van Achterberg, 1988) and Wharton et al. (1997). All specimens are stored at insect museum, Museum of Natural History, Chulalongkorn University (CUMZ).

Dry mounted specimens were identified to various levels (subfamily, genus or species) depending on the availability of published dichotomous keys: Goulet and Huber (1984), van Achterberg (1993), Chen et al., (1997), Wharton et al. (1997), Butcher et al. (2011; 2012), Shaw and Huddleston (1991), Long, (2014), Butcher and Quicke (2015), Quicke et al. (2017b), Long et al., (2018).

3.3.4 DNA barcoding

For any potentially different (often new) species, based on their morphology, the specimens were subjected to DNA barcoding, compared to homologous sequences in GenBank. The new species or molecular operational taxonomic unit (MOTU) were described in details and compared to the holo-/paratypes of the morphologically similar and phylogenetically related species/MOTUs. For agreement between the morphological and molecular analysis, the new species were given scientific name and dichotomous key were produced to accommodate the new species and for separating it from the other species. However, if separated only by morphology and not a unique MOTU, the specimens were described as a morphological variant of the existent species/MOTU.

For DNA extraction middle or hind leg (depending on size) was removed and placed in individually in 96 well-plate containing 30 μl of absolute ethanol (Figure 19). Completed plates were sent to Canadian Centre for DNA Barcoding (CCDB), Biodiversity Institute of Ontario, University of Guelph, Canada for processing. Standard barcoding protocols were used to sequence the 658 base-pair barcoding region of the mitochondrial cytochrome oxidase subunit C gene (Smith et al., 2008).

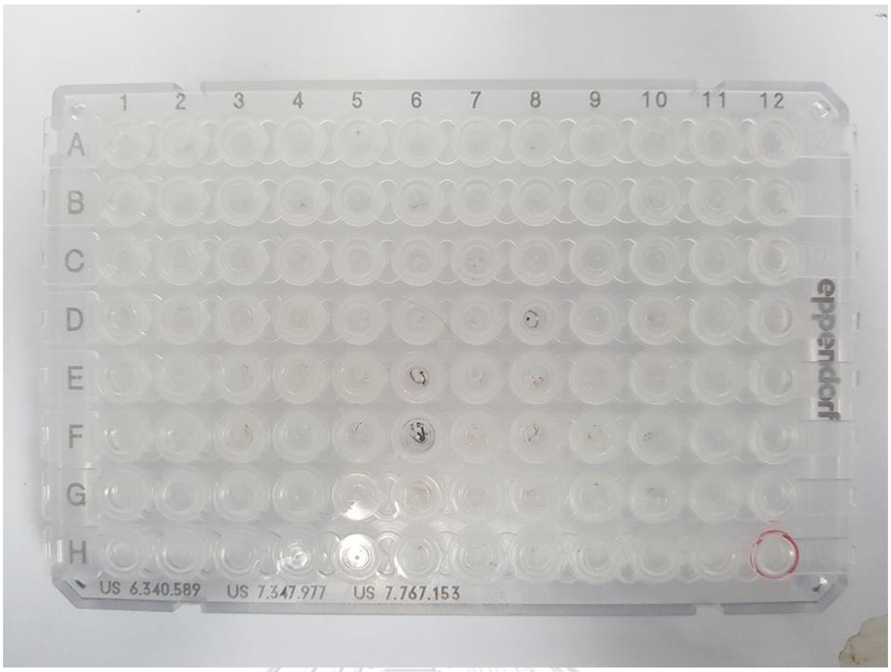

Figure 19 Legs of parasitoids in a 96 well-plate

3.3.5 DNA sequence processing and tree construction

The sequences returned from Guelph were converted from fasta format to phylip format and aligned by reference to amino acid sequence. Only one codon indel was detected involving a previously recognised species group of *Aleiodes* (Rogadinae). Tentative identifications based on barcode were obtained in two ways: (1) using the CCDB alignment tool (http:// http://www.boldsystems.org), and (2) using BLAST (Basic Local Alignment Search Tool) on GenBank (https://www.ncbi.nlm.nih.gov/nucleotide/).

The aligned sequences were analysed using maximum likelihood by the programme RAxML (Stamatakis, 2006), using a GTR + G rate model with three data partitions (three cytochrome oxidase codon positions).

3.3.6 Digital photography

At least one representative of all morphospecies were photographed by Olympus Stylus (TG-2 Tough) and image stacking, the programme works by photographing the insect from the top to the lowest part of specimen with automated multiple image capture and image combination. The new species was imaged using a Leica M205 C with fusion optics stereo microscope and using the Leica Application Suite imaging system (Figure 20). Attention was paid to characters that are especially useful for species diagnosis in the relevant group.

Figure 20 Light micrograph of *Trigastrotheca doiphukhaensis* Raweearamwong, Quicke & Butcher, 2020 habitus

3.3.7 Description of Braconidae species

Species, with particular reference to ones determined to be new to science based on a combination of morphology and DNA sequence data were described and illustrated in details. Basic features were examined using an Olympus SZ60 microscope and measurements made using an ocular micrometer grid. All species descriptions were made compliant with the International Code of Zoological Nomenclature (ICZN).

3.4 Establishing database

Each species level determination was added to a database of Thai braconid species, including voucher number, locality and date of collection, digital photo of the wasps and labels.

Database of nocturnal parasitic wasps of Braconidae collected from Doi Phu Kha National Park, Nan province, Thailand was established (Appendix).

CHAPTER IV
RESULTS

4.1 Subfamilies of Braconidae collected in Doi Phu Kha National Park

A total of 846 specimens, 177 morphospecies within 21 subfamilies of the Braconidae were collected during October 2018 to November 2019, plus one preliminary collecting in September 2018 at Doi Phu Kha NP, Nan province. These subfamilies are Agathidinae, Alysiinae, Aphidiinae, Brachistinae, Braconinae, Charmontiinae, Cheloninae, Doryctinae, Euphorinae, Homolobinae, Hormiinae, Ichneutinae, Lysiterminae, Macrocentrinae, Meteorideinae, Microgastrinae, Opiinae, Orgilinae, Pambolinae, Rhysipolinae and Rogadinae. These 11 subfamilies are non-cyclostome braconids: Agathidinae, Brachistinae, Charmontiinae, Cheloninae, Euphorinae, Homolobinae, Ichneutinae, Macrocentrinae, Meteorideinae, Microcentrinae and Orgilinae and 10 subfamilies are cyclostome braconids: Alysiinae, Aphidiinae, Braconinae, Doryctinae, Hormiinae, Lysiterminae, Opiinae, Pambolinae, Rhysipolinae and Rogadinae.

In total, eight hundred and forty-six specimens (177 morphospecies) were collected within a year of insect collecting (Sep 2018 - Nov 2019). The highest number of specimens and morphospecies collected from this study is in the subfamily Rogadinae (259 specimens, 31 morphospecies). Second is the Euphorinae (172 specimens, 27 morphospecies) followed by the Microgastrinae (120 specimens, 12 morphospecies). The lowest number of specimens and morphospecies collected from this study is in the subfamily Homolobinae (only one specimen and one morphospecies) (Figure 21) (Table 3).

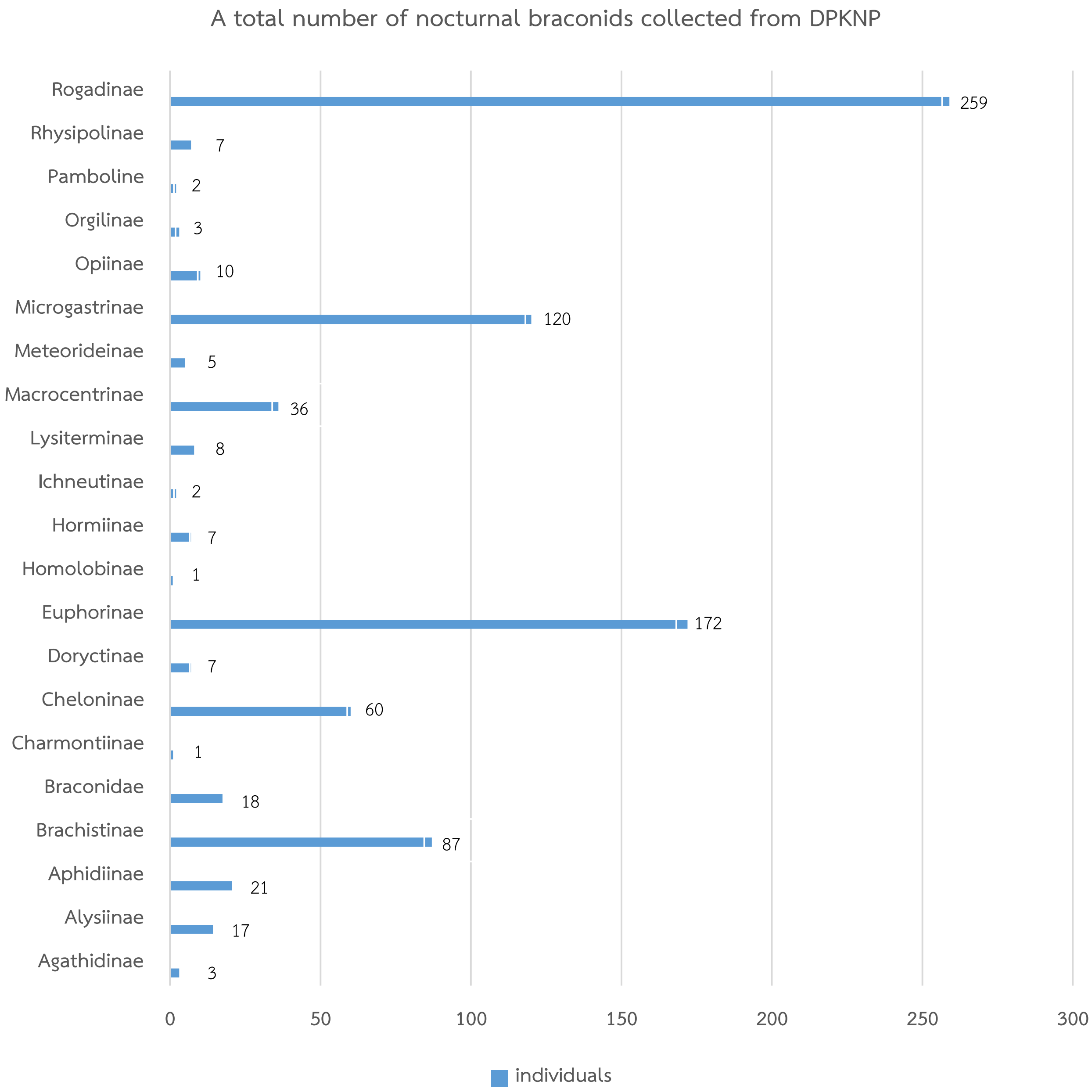

Figure 21 A bar chart represents the number of each subfamlilies of the Braconidae found in DPKNP

Table 3 A total number of nocturnal braconids collected each month

Subfamilies	Number of specimens in each month (individuals)									
	Sep 2018	Oct 2018	Dec 2018	Feb 2019	Apr 2019	Jun 2019	Sep 2019	Nov 2019	Total (individuals)	Morphospecies
Agathidinae	1	1	0	0	0	0	1	0	**3**	**3**
Alysiinae	1	1	0	1	0	2	11	1	**17**	**7**
Aphidiinae	8	7	1	2	0	0	2	1	**21**	**5**
Brachistinae	3	11	0	19	24	18	7	5	**87**	**15**
Braconinae	1	3	0	2	3	2	5	2	**18**	**15**
Charmontiinae	0	0	0	0	1	0	0	0	**1**	**1**
Cheloninae	8	6	1	8	16	7	8	6	**60**	**16**
Doryctinae	2	1	0	1	0	1	2	0	**7**	**6**
Euphorinae	22	35	8	8	16	5	53	25	**172**	**28**
Homolobinae	0	1	0	0	0	0	0	0	**1**	**1**
Hormiinae	1	1	0	2	1	2	0	0	**7**	**5**
Ichneutinae	0	0	0	0	1	1	0	0	**2**	**1**
Lysiterminae	1	0	0	3	2	1	0	1	**8**	**8**
Macrocentrinae	4	3	1	2	17	4	3	2	**36**	**10**
Meteorideinae	1	0	0	2	1	0	0	1	**5**	**1**
Microgastrinae	6	14	11	15	14	17	14	29	**120**	**12**
Opiinae	1	2	0	2	0	0	2	3	**10**	**5**
Orgilinae	0	0	0	0	3	0	0	0	**3**	**3**
Pambolinae	0	1	0	0	0	0	1	0	**2**	**2**
Rhysipolinae	0	0	2	1	1	1	1	1	**7**	**4**
Rogadinae	23	33	24	39	57	12	46	25	**259**	**31**
TOTAL	83	120	48	107	157	73	156	102	**846**	**177**

1. Subfamily Agathidinae

Agathidinae Haliday, 1833 (Sharkey et al., 2006)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Lepidoptera

Diagnosis: second submarginal cell of fore wing usually present (Figure 22), when present it is small and quadrate or triangular-shaped, fore wing M+CU not tubular in basal third or more, fore wing RS complete and reaching wing margin, occipital carina absents, mouthparts elongate (Sharkey et al., 2006).

Agathidinae is a moderately large subfamily of Braconidae with approximately more than 1,000 described species worldwide and more than 200 in the Oriental Region (Yu et al., 2005). Agathidines can be found in terrestrial habitats worldwide but more diverse in humid tropical regions (Sharkey et al., 2006). Many members of the Agathidinae are solitary koinobiont endoparasitoids of concealed lepidopteran larvae. Agathidines are the important natural enemies in the classical biological control of pest species of the Lepidoptera (Wharton et al., 1997), for example, *Agathis pumila* was used to control larch casebearer, *Coleophora laricella* in Oregon, United States (Ryan, 1990). Recently, there are 20 species of Agathidinae recorded from Thailand (Sharkey and Stoelb, 2011).

Three specimens of Agathidinae were collected from DPKNP, Nan, Thailand. One of them is unidentified (Figure 23), and others are identified as *Therophilus* Wesmeal, 1837 (2 morphospecies and 2 specimens) (Figure 24)

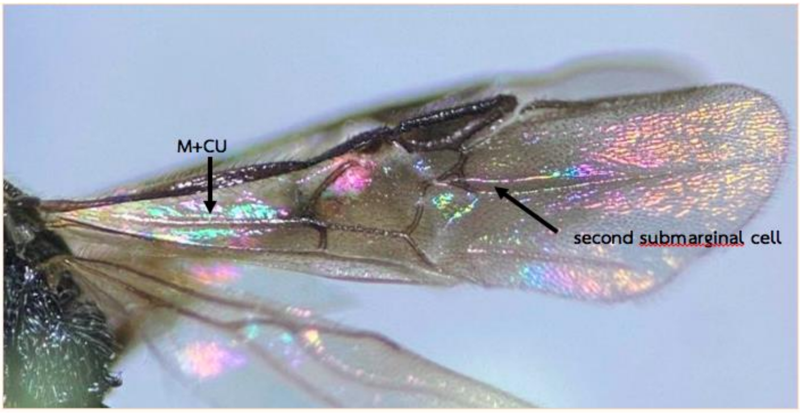

Figure 22 Light microscope photograph of Agathidinae's fore wing

(arrow show M+CU vein and second submarginal cell)

Therophilus Wesmeal, 1837 is a small, cosmopolitan genus of the Agathidinae, 14 described species were recorded in Thailand (Yu et al., 2016). It is a parasitoid of micro-Lepidoptera, mostly in the concealed microhabitats. It can be recognised by: ovipositor longer than metasoma, gena and mounthparts not elongate, tarsal claws with a basal lobe, metasomal cavity positioned partly between hind coxal cavities and third metasomal tergite, lacking sculpture (Sharkey et al., 2009).

Figure 23 Photograph of the unidentified Agathidinae sp.

(not to scale)

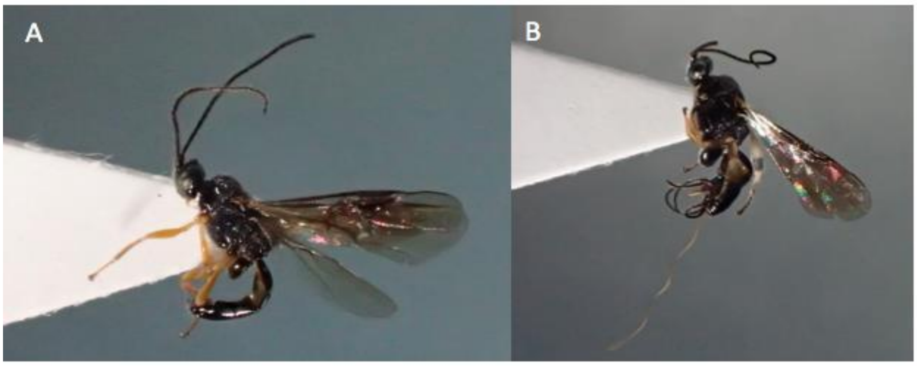

Figure 24 Photographs of the unidentified A, *Therophilus* sp.1 and B, *Therophilus* sp.2 (not to scale)

2. Subfamily Alysiinae

Alysiinae Leach, 1815 (Ghahari et al., 2006)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Diptera

Diagnosis: The presence of outward curved exodont mandibles (Figure 25), mandibles are generally with 3-toothed though some of them have 4 teeth and a few have either 2 or 5 teeth. The mandibles are unique characters of the alysiines though also occur in some Gnamptodontines and Ichneutinae. Additionally, alysiines lack both the occipital and epicnemial carinae. The longitudinal suture run through mid-ventrally of mesothorax (Ghahari et al., 2006).

Figure 25 Light microscope photographs of exodont mandible of Alysiinae A, face and B, lateral side of face (arrows shows the exodont mandibles)

The Alysiinae is a large subfamily containing over 2,000 described species and more than 100 genera worldwide (Yu et al., 2012). All alysiines are koinobiont endoparasitoids of cyclorrhaphous Diptera (Shaw and Huddleston, 1991). For example, alysiines in the genera *Gnathopleura* Wharton, *Aphaereta* and *Alysia* Latreille have been released as natural enemies to control population of calliphorids and muscids in biological control programmes (Wharton, 1984).

Seven morphospecies (17 specimens) were collected in this study, unidentified species 1-7 which are shown in Figure 26.

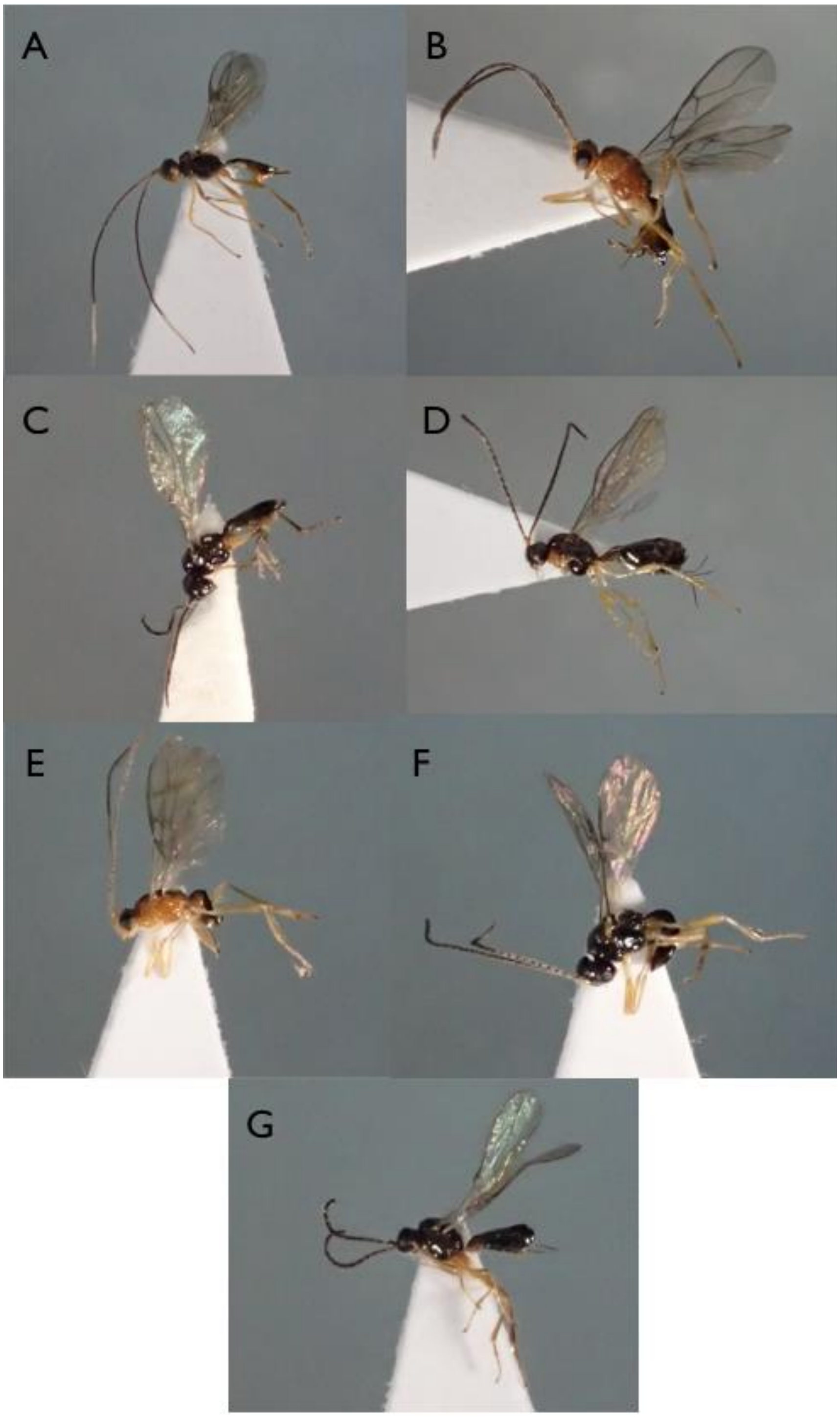

Figure 26 Photographs of the unidentified Alysiinae

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3; D, unidentified sp.4; E, unidentified sp.5; F, unidentified sp.6 and G, unidentified sp.7 (not to scale)

3. Subfamily Aphidiinae

Aphidiinae Haliday, 1833 (Nees, 1811)

Distribution: cosmopolitan

Life history: solitary koinobiont endoparasitoids

Host: Hemiptera

Diagnosis: Aphidiinae have fragile bodies, with metasomal tergites weakly sclerotized. Short antennae consisting of 18 or fewer flagellomeres. The suture between 2nd and 3rd metasomal tergites is flexible thus allowing the metasoma to bend at this joint (Figure 27A). Wing venation in the Aphidiinae is extraordinarily variable, and is often diagnostic at genus or tribe level (Figure 27B). Occipital carina absent (Wharton et al., 1997).

Aphidiinae are small, usually with 1.5-3.5 mm long, because of their small hosts. Female aphidiines have short ovipositor but sometimes highly modified accessory structures used for graphing host aphids. This subfamily is cosmopolitan, with most species known from the northern Hemisphere where aphids are highly most diverse. Several species have been widely introduced into tropical countries to control introduced aphid pests (Starý, 1987). Biology of aphidiines have been extensively studied.

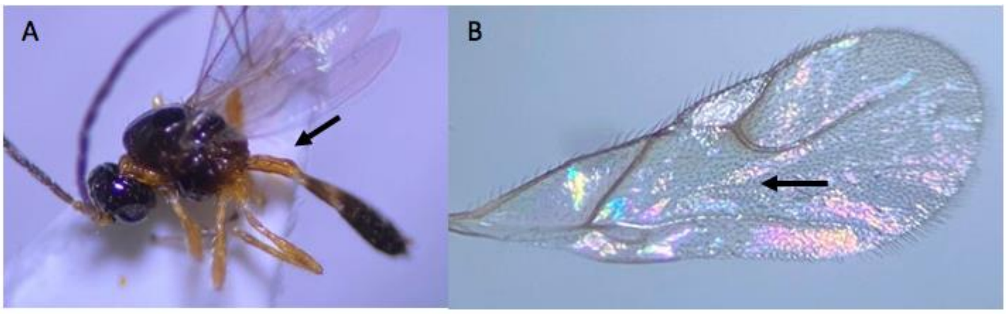

Figure 27 Light microscope photograph of Aphidiinae

A, habitus (arrow shows suture between 2nd and 3rd metasomal tergites); B, fore wing (arrow shows a single large cell at the middle of fore wing)

Two morphospecies of *Binodoxys* (5 specimens) were collected from this study, *Binodoxys* species 1-2 were shown in Figure 28.

The genus *Binodoxys* Mackauer, 1960 is a member of the Aphidiinae, only one species was recorded from Thailand, *Binodoxys indicus* Subba & Sharma, 1958 (Yu et al., 2016). It is specialised in parasitising aphids on herbaceous plants. The genus is closely related to *Trioxys* Haliday and *Acanthocaudus* Smith, and can be distinguished from these related genera by the following combination of characteristics: first metasomal tergite with tubercles, prongs of female hypopygium absent, 5th, 6th and 7th metasomal tergites of female without subapical row of pegs or spiny bristles (Wharton et al., 1997).

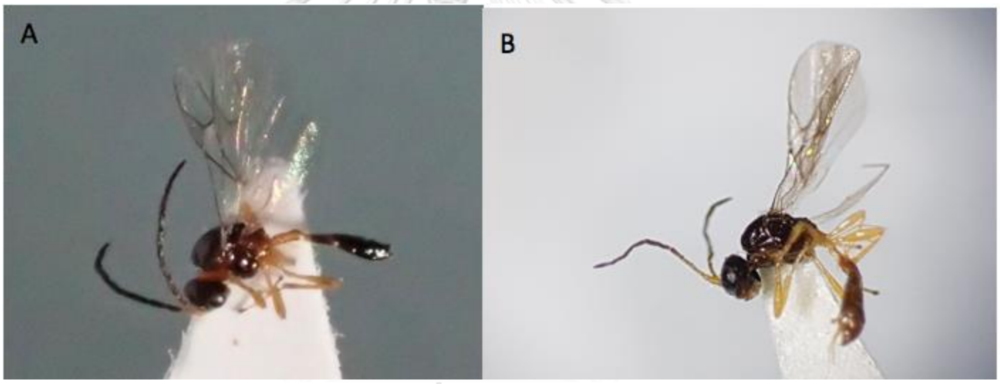

Figure 28 Photographs of the *Binodoxys* sp.
A, *Binodoxys* sp.1 and B, *Binodoxys* sp.2 (not to scale)

Three morphospecies of unidentified Aphidiinae species (16 specimens) were collected from this study and were shown in Figure 29.

Figure 29 Photographs of the unidentified Aphidiinae sp.
A, unidentified sp.1; B, unidentified sp.2 and C, unidentified sp.3 (not to scale)

4. Subfamily Braconinae

Braconinae Nees, 1811 (Belokobylskij and Žikić, 2009)

Distribution: cosmopolitan

Life history: idiobiont ectoparasitoids

Host: Lepidoptera, Coleoptera, Diptera and Hymenoptera

Diagnosis: Hypoclypeal depression present, have a large, dorsally rounded depression above the mandibles formed by a ventrally recessed clypleus and an exposed, concave labrum. The occipital carina is always absent (Figure 30), epicnemial carina absent. The hind wing cross vein m-cu is always absent.

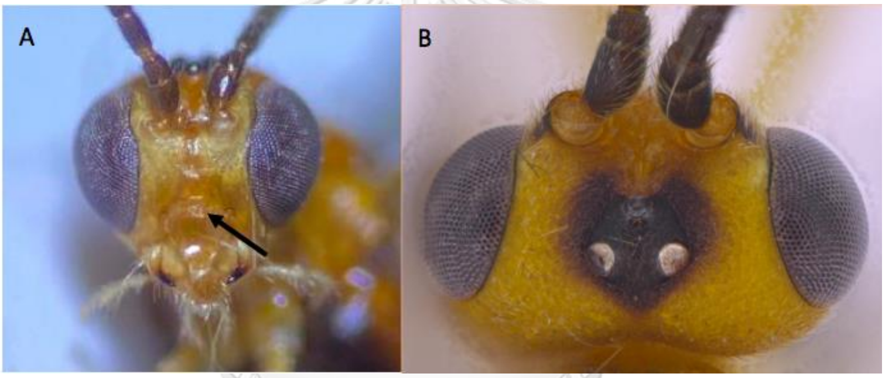

Figure 30 Light microscope photographs of Braconinae

A, face (arrow shows hypoclypeal depression) and B, top of head (occipital carina absent)

The Braconinae is a large subfamily with approximately 2,000 descibed species worldwide (Quicke, 1987; Quicke, 2015). They are cosmopolitan, with specific diversity being in the Old World tropical regions but are also found in the New World. All New World braconines are idiobiont ectoparasitoids of concealed insect larvae, particularly Lepidoptera and Coleoptera (Shaw and Huddleston, 1991).

Five morphospecies of *Bracon* (8 specimens) were collected in this study, *Bracon* species 1-5 were shown in Figure 31.

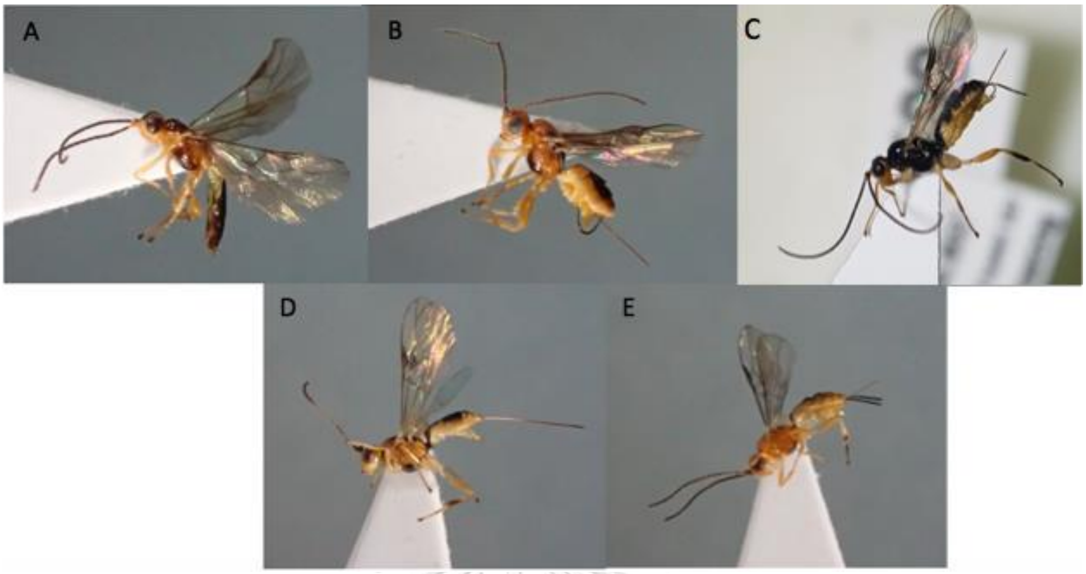

Figure 31 Photographs of the *Bracon*
A, Bracon sp.1*; B, Bracon* sp.2*; C, Bracon* sp.3; *D, Bracon* sp.4 *and E, Bracon* sp.5 (not to scale)

Bracon Fabricius, 1804 is cosmopolitan and a very common genus in the Braconinae with approximately 800 species worldwide (Fahringer, 1925). There is only one species of *Bracon* recorded in Thailand, *Bracon hebetor* Say, 1836 (Yu et al., 2016). It is generally large and brightly coloured. Hosts of *Bracon* are lepidopterous, coleopterous and dipterous larvae (Wharton et al., 1997). Several characteristics can be used to separate *Bracon* from other genera such as face without median or sublateral carina extended from clypleus to antennal sockets, flagellomeres cylindrical, fore wing vein 3-SR more than 1.6x length of vein r (Quicke, 1989).

Trigastrotheca doiphukhaensis is described as a new species, etymology is named after the type locality, DPKNP (Figure 32).

Trigastrotheca Cameron, 1906 is a small genus known mainly from Africa but also known from Australia (Quicke and Ingram, 1993) and Indo-Australian region (Enderlein, 1920; Quicke et al., 2017b). The uninque morphological characteristics of *Trigastrotheca* are the modified posterior margin of 5th metasomal tergite with strong submedial posterior emarginations and a pair of sublateral points in the female (Quicke, 1987).

Figure 32 Photograph of *Trigastrotheca doiphukhaensis* Raweearamwong, Quicke and Butcher, 2020 (not to scale)

Two morphospecies of *Dolabraulax* (2 specimens) were collected in this study, *Dolabraulax* species 1-2 (Figure 33).

Dolabraulax Quicke, 1986 is a small genus of Braconinae. This genus can be separated from all other braconines by these following characters: scapus small, ventrally shorter than dorsally with dorso and medio-basal expansions, posterior part of propodeum with a mid-longitudinal carina and 1st metasomal tergite with the median area formed into a transverse ridge (Wang et al., 2010).

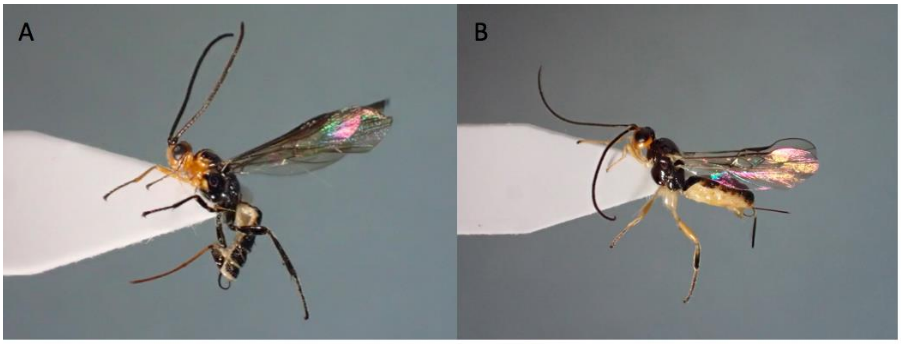

Figure 33 Photographs of the *Dolabraulax*

A, *Dolabraulax* sp.1 and B, *Dolabraulax* sp.2 (not to scale)

Another 7 unidentified morphospecies (7 specimens) of the Braconinae were collected in this study, unidentified species 1-7 which are shown in Figure 34.

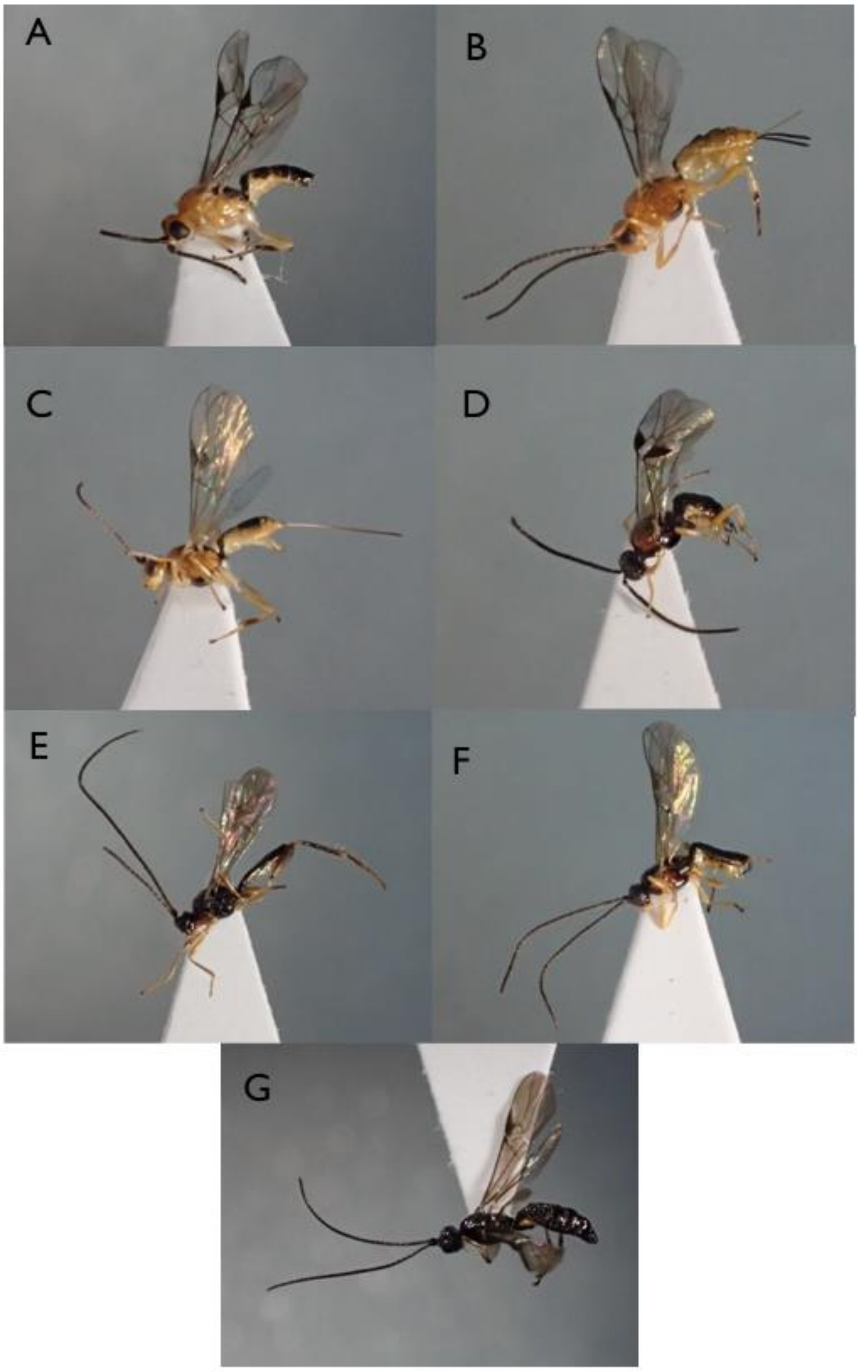

Figure 34 Photographs of the unidentified Braconinae

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3; D, unidentified sp.4; E, unidentified sp.5; F, unidentified sp.6 and G, unidentified sp.7 (not to scale)

5. Subfamily Brachistinae

Brachistinae Förster, 1862 (Yan et al., 2013)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Coleoptera

Diagnosis: The r-m cross vein of the fore wing always absent (second submarginal cell open) and 2cu-a of fore wing usually present and most have the first three metasomal terga forming a carapace (Figure 35). Occipital carina complete dorsally.

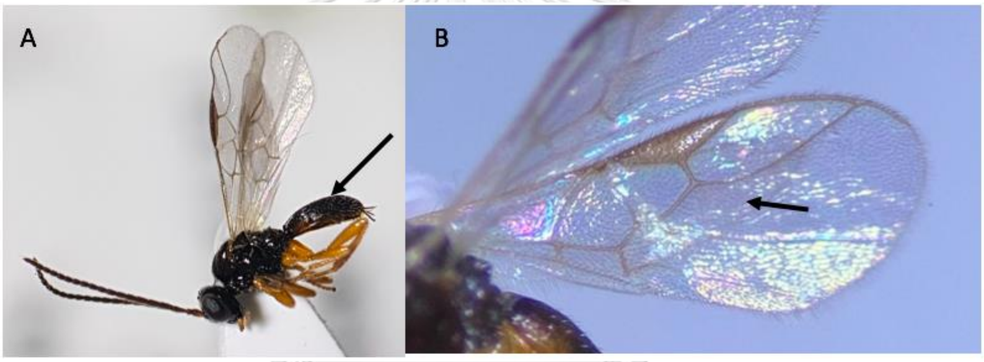

Figure 35 Light microscope photographs of Brachistinae
A, habitus, arrow shows carapace and B, fore wing r-m vein absent

The Brachistinae is cosmopolitan, members of this subfamily are known as egg-larval endoparasitoids of Coleoptera. For example, *Triaspis thoracicus* has been imported to Canada and United States to control population of legume weevils, *Bruchus pisorum* (Charlet and Seiler, 1994).

Six morphospecies of *Triaspis* (33 specimens) were collected in this study, *Triaspis* species 1-6 are shown in Figure 36.

Triaspis Haliday, 1835 is cosmopolitan distribution, only two species were formally recorded in Thailand, *Triaspis pinsapo* (Papp, 1993) Schizoprymnus and *Triaspis semiglabra* (Szépligeti, 1902) Sigalphus (Yu et al., 2016). It is an egg-larva parasitoid of Curculinidae and Bruchidae (Martin, 1956). Characteristics of *Triaspis* are 1st and 2nd metasomal tergites fused, forming a carapace-like, metasomal carapace with 2 complete transverse grooves (anterior groove complete and posterior groove present at least laterally).

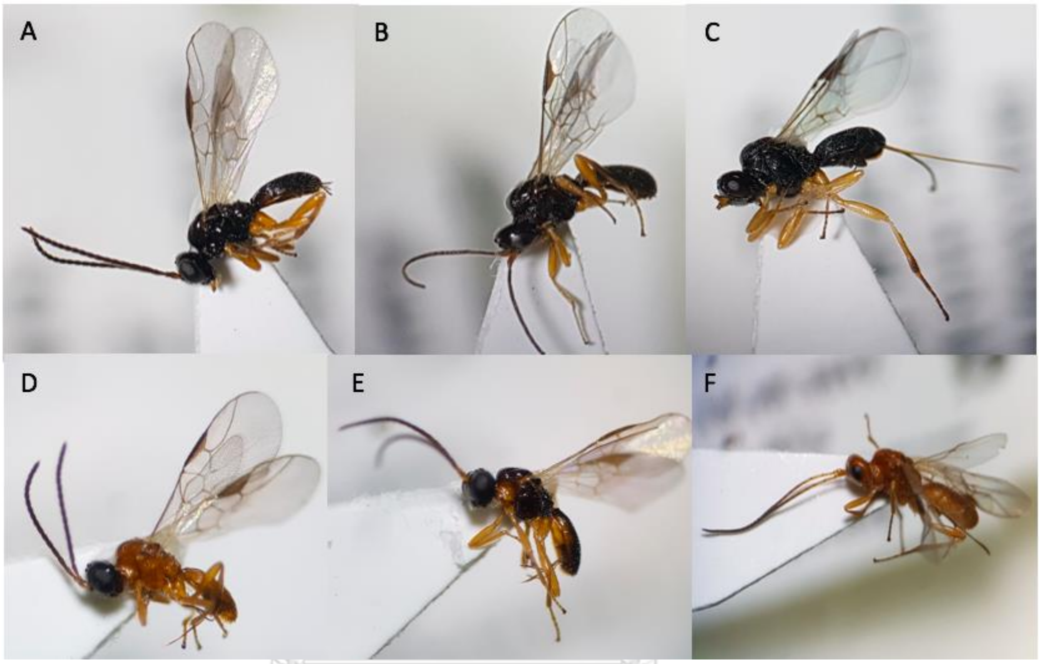

Figure 36 Photographs of the *Triaspis*

A, *Triaspis* sp.1; B, *Triaspis* sp.2; C, *Triaspis* sp.3; D, *Triaspis* sp.4; E, *Triaspis* sp.5; F, *Triaspis* sp.6 (not to scale)

Two morphospecies of *Blacus* (2 specimens) were collected from this study, *Blacus* species 1-2 were shown in Figure 37.

Blacus Nees, 1818 is a common genus of Brachistinae, with approximately 40 described species in the New World and four species recorded in Thailand (Yu et al., 2016). It can be distinguished from other Brachistinae by the presence of occipital carina, r-m and 2cu-a of fore wing absent and petiole with dorsope (Figure 38) (van Achterberg, 1992).

Figure 37 Photographs of the *Blacus*

A, *Blacus* sp.1 and B, *Blacus* sp.2 (not to scale)

Figure 38 Light microscope photographs of *Blacus*

A, face and B, fore wing

Seven morphospecies (54 specimens) were collected in this study, unidentified species 1-7 were shown in Figure 39.

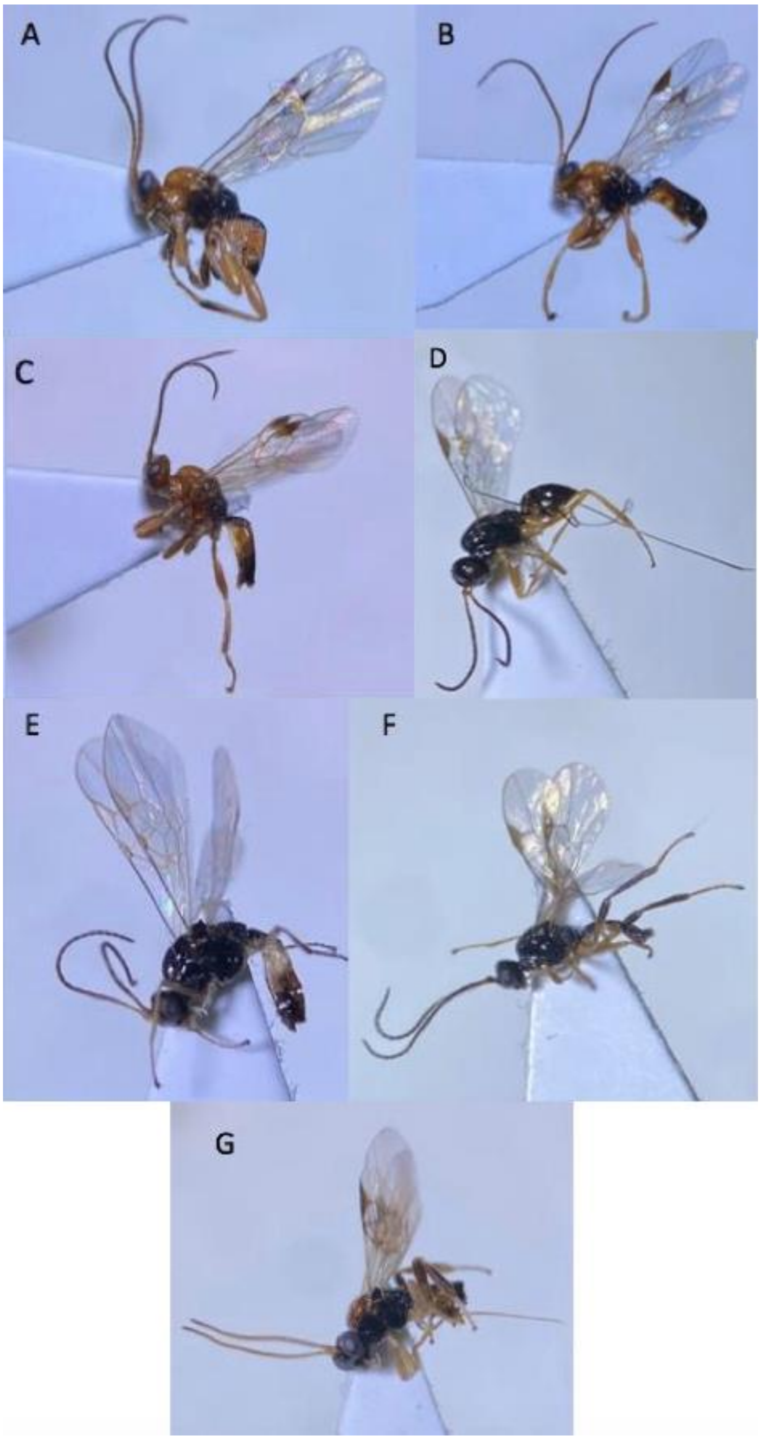

Figure 39 Photographs of the unidentified Brachistinae

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3; D, unidentified sp.4; E, unidentified sp.5; F, unidentified sp.6 and G, unidentified sp.7 (not to scale)

6. Subfamily Charmontiinae

Charmontiinae van Achterberg, 1979 (Quicke and van Achterberg, 1990)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Lepidoptera

Diagnosis: The vein 2A of the hind wing present, vein of fore wing absent (second submarginal cell open), no comb of teeth-like pegs on the trochantelli, occipital carina present (Quicke & van Achterberg, 1990).

The Charmontiinae are endoparasitoids of concealed lepidopterous larvae such as the oriental fruit moth, *Grapholtha molesta*. The Charmontiinae is a subfamily erected by Quicke and van Achterberg, 1990 to accommodate the common Holarctic genus *Charmon* Haliday, 1833 (Quicke, 2015). *Charmon* is recognised by the presence of only two submarginal cells (fore wing cross vein r-m absent) in combination with the presence of an anal cross vein (a) in the hind wing. Third segment of labial palp much shorter than second segment, sometimes absent (Wharton et al., 1997).

One morphospecies of *Charmon* (1 specimen) was collected in this study, *Charmon* species 1 is shown in Figure 40.

Figure 40 Photographs of the unidentified *Charmon* sp1.
(not to scale)

7. Subfamily Cheloninae

Cheloninae Förster, 1862 (Beyarslan, 1985)

Distribution: cosmopolitan

Life history: egg-larval endoparasitoids

Host: Lepidoptera

Diagnosis: The Cheloninae is easily recognised by the metasomal carapace (1^{st}-3^{rd} metasomal tergites fused, thus when view from above, the first three terga conceal the rest of the metasomal tergites), complete postpectal carina, r-s vein of fore wing not tubular, with three submarginal cells in the fore wing (Figure 41) and with swollen hind tibiae (Beyarslan, 1985). However, the tribe *Adeliini* which was until recently regarded as a separate subfamily differ markedly, lacking a carapace and having only two submarginal cells. Belshaw et al. (1998) using molecular data which showed that the Adeliinae as it was then, were probably closely related to Cheloninae (Dowton et al., 1998; Dowton et al., 2002), and Kittel et al. (2016) based on a more intensive study, formally synonymised Adeliinae with Cheloninae (Belshaw et al., 1998).

The Cheloninae is a large cosmopolitan subfamily with more than 1,300 described species, 20 genera worldwide (Yu et al., 2012). Presently, there are only four species of Cheloninae formally recorded from Thailand, *Phanerotomella varicolorata* Zettel, 1989; *Phanerotoma sylepta* Zettel, 1990; *Phanerotoma pellucida* Zettel, 1990 and *Chelonus scrobiculatus* Szepligeti, 1900 (Yu et al., 2012).

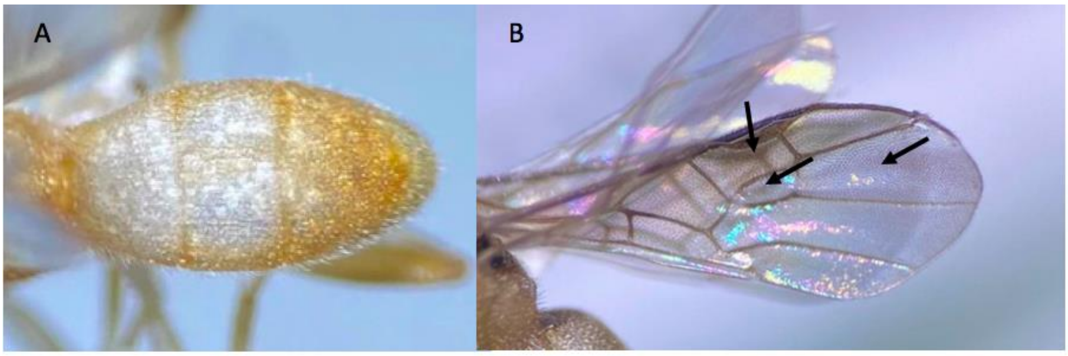

Figure 41 Light microscope photographs of Cheloninae

A, dorsal view of carapace-like metasoma and B, arrows show 1st ,2nd and 3rd submarginal cells of fore wing

One morphospecies of *Adeliini* (1 specimen) was collected in this study, *Adeliini* species was shown in Figure 42. The tribe *Adeliini* Viereck, 1918 is cosmopolitan comprising small-sized species (1.8 - 2.2 mm) that are parasitoids of leaf-mining Lepidoptera of the family Nepticulidae. It can be distinguished from others chelonines by the following characteristics: antennae with 20 segments, the first two to four metasomal tergites fused to form a short 'carapace' but with more posterior tergites exposed, wing venation reduced when compared to others chelonines, with robust hind legs (Dowton et al., 1998).

Figure 42 Photograph of *Adeliini* sp.1

(not to scale)

Only one morphospecies of *Ascogaster* (1 specimen) was collected in this study, *Ascogaster* species was shown in Figures 43.

The genus *Ascogaster* Wesmael, 1835 is a small genus of Cheloninae and cosmopolitan in distribution. Members of *Ascogaster* can be distinguished from other chelonines by these characters: predominantly blackish coloured body, transverse furrows on carapace completely absent, fore wing with 1-SR+M present separating the first submarginal cell and discal cell, eyes glabrous and antenna with more than 20 segments (Figure 44) (Kittel et al., 2016).

Figure 43 Photograph of *Ascogaster* sp.1
(not to scale)

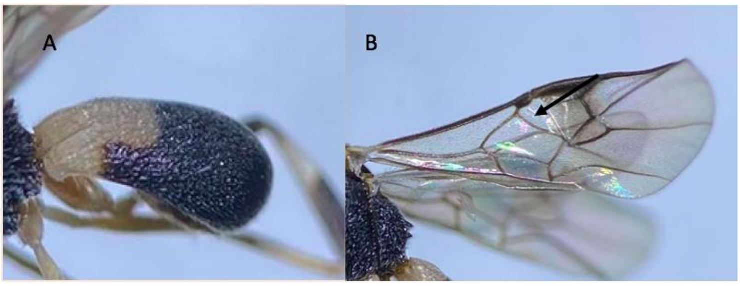

Figure 44 Light microscope photographs of *Ascogaster*

A, dorso-lateral side of metasoma and B, fore wing (arrow shows 1-SR+M vein separating first submarginal cell and discal cell)

Three morphospecies of *Chelonus* (4 specimens) were collected in this study, *Chelonus* species 1-3 were shown in Figure 45.

The genus *Chelonus* Panzer, 1806 is cosmopolitan in distribution. The characteristics of *Chelonus* are quite similar with *Ascogaster*, blackish coloured body, transverse furrows on carapace completely absent (no articulation at these junctions) except for fore wing without 1-SR+M thus, the first submarginal cell and discal cell combined into one large cell (Figure 46) (Shaw and Huddleston, 1991).

Figure 45 Photographs of the *Chelonus*

A, *Chelonus* sp.1; B, *Chelonus* sp.2 and C, *Chelonus* sp.3 (not to scale)

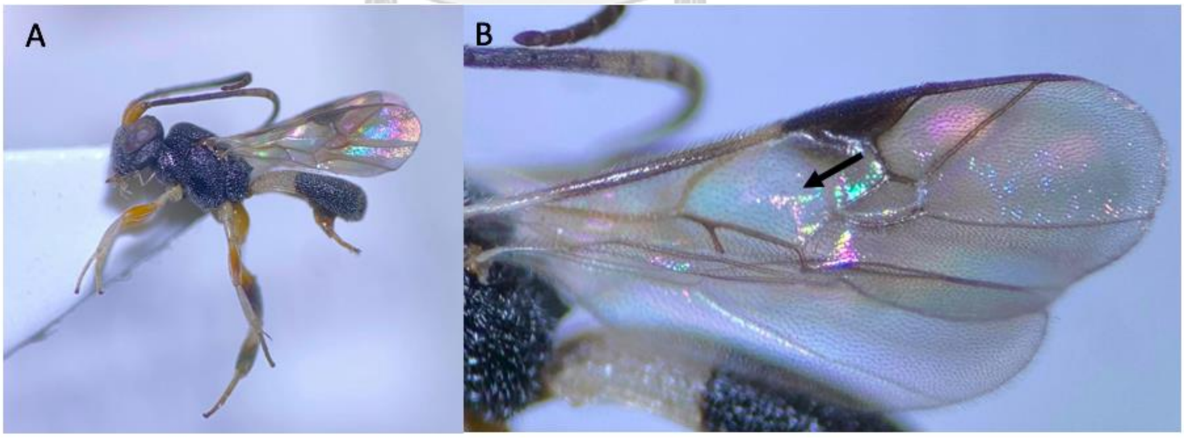

Figure 46 Light microscope photographs of *Chelonus*

A, habitus and B, fore wing (arrow shows the first submarginal cell and discal cell combined into one large cell)

Eleven morphospecies of *Phanerotoma* (54 specimens) were collected in this study, *Phanerotoma* species 1-11 were shown in Figure 47.

Phanerotoma Wesmael, 1838 is a very common genus with more than 280 described species worldwide (Yu et al., 2006). In *Phanerotoma,* the carapace bears two crenulate transverse furrows, marking the boundaries between the first three tergites.

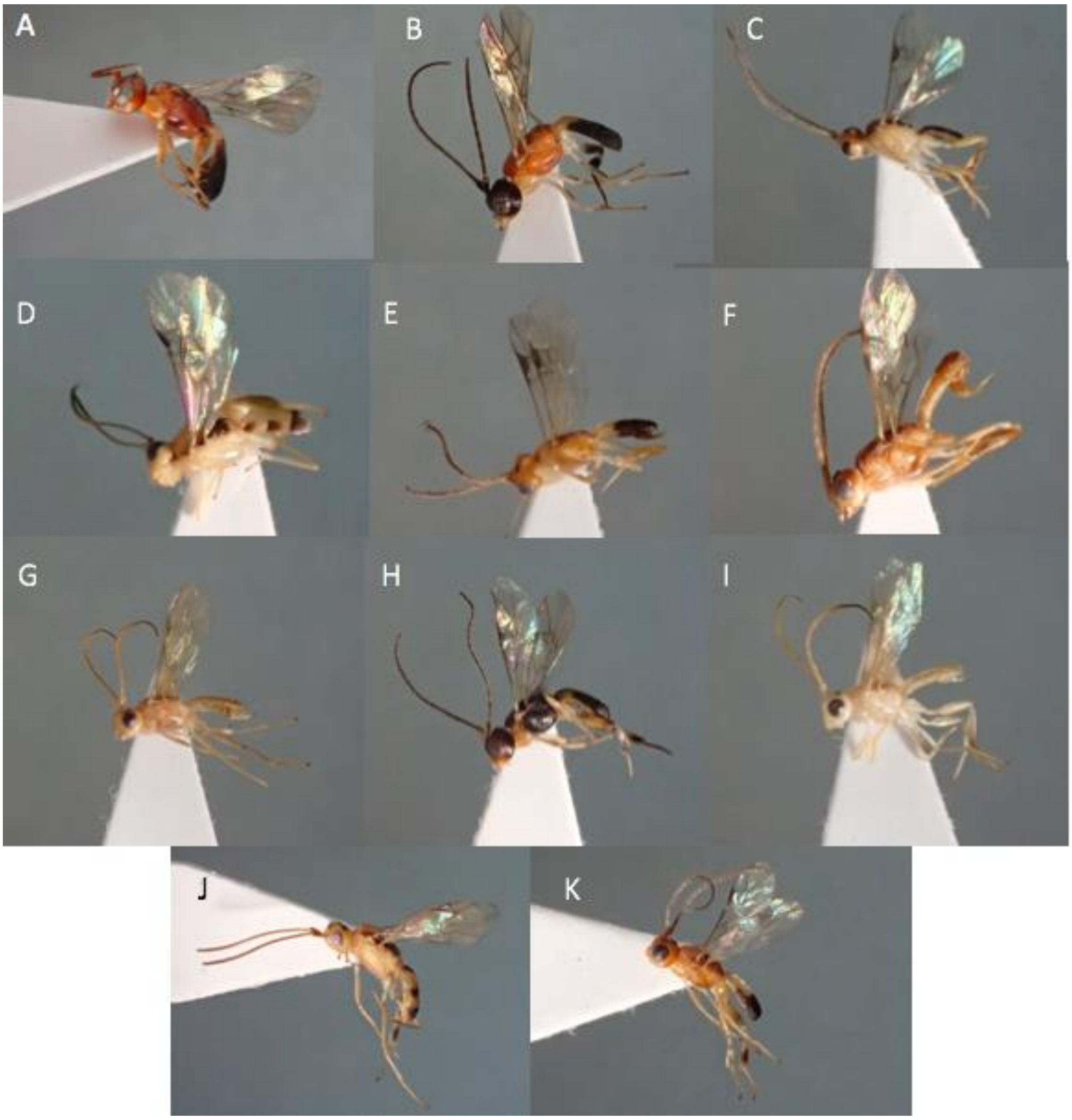

Figure 47 Photographs of the *Phanerotoma*

A, *Phanerotoma* sp.1; B, *Phanerotoma* sp.2; C, *Phanerotoma* sp.3; D, *Phanerotoma* sp.4; E, *Phanerotoma* sp.5; F, *Phanerotoma* sp.6; G, *Phanerotoma* sp.7; H, *Phanerotoma* sp.8; I, *Phanerotoma* sp.9; J, *Phanerotoma* sp.10; K, *Phanerotoma* sp.11 (not to scale)

8. Subfamily Doryctinae

Doryctinae Förster, 1862 (Marsh, 1988)

Distribution: cosmopolitan

Life history: idiobiont ectoparasitoids

Host: Coleoptera, Lepidoptera and Hymenoptera

Diagnosis: Cyclostome braconids, with a row of (usually) well-differentiated spines on fore tibia (shorter and thicker than normal setae), usually with well-developed occipital carina and usually have large cubic or subconical head (Marsh, 1988) (Figure 48), and with double nodus near the apex of the dorsal valve of the ovipositor which is black (Quicke and Marsh, 1992).

The Doryctinae is one of the most diverse groups of the Braconidae, with approximately 1,000 described species worldwide, and most species occurring in tropical areas (Marsh, 1988). They are idiobiont ectoparasitoids mainly of wood-boring beetle larvae but a few attack stem boring lepidopteran and sawfly larvae (Wharton et al., 1997), some are phytophagous.

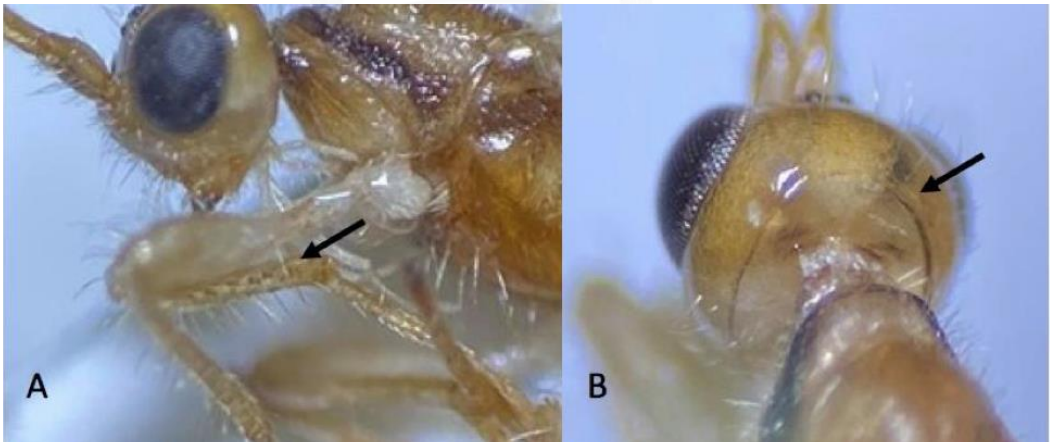

Figure 48 Light microscope photographs of Doryctinae

A, fore tibia (arrow shows a row of well-differentiated spines) and B, head (arrow shows complete occipital carina)

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Only one morphospecies of *Heterospilus* (1 specimen) was collected in this study, *Heterospilus* species was shown in Figure 49.

The *Heterospilus* Haliday, 1836 is a small genus in Doryctinae, it is cosmopolitan in distribution but most species are recorded from Western Hemisphere. *Heterospilus* are parasitoids of wood boring beetle larvae and moths (Quicke and Marsh, 1992). Characteristics of *Heterospilus* are: hind wing cu-a present, spines of fore tibia pointed (long or short), second tergum without longitudinal grooves, hind coxa with distinct basal tubercle.

Figure 49 Photograph of the *Heterospilus* sp.1

(not to scale)

Five morphospecies of unidentified Doryctinae genera (6 specimens) were collected in this study (Figure 50).

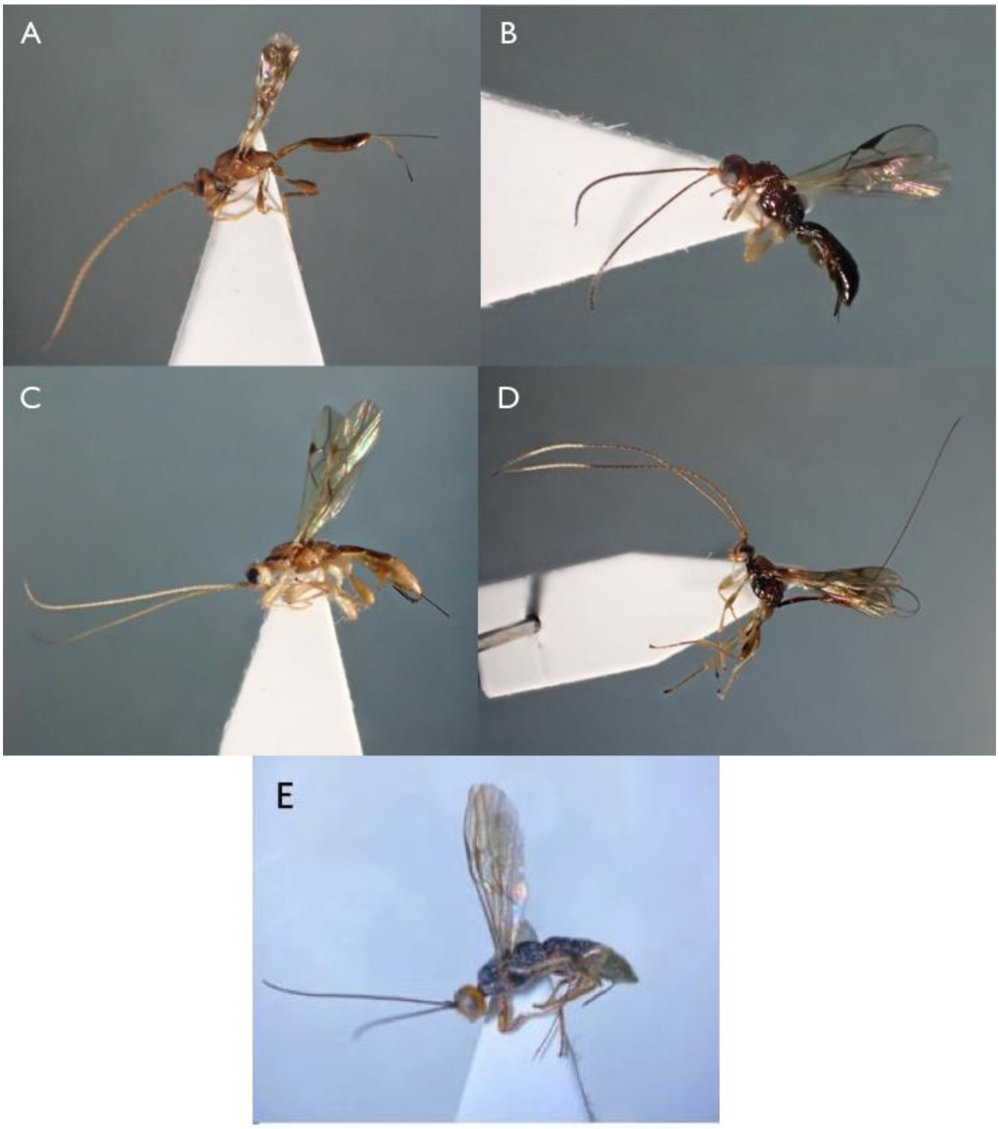

Figure 50 Photographs of the unidentified Doryctinae species

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3; D, unidentified sp.4; E, unidentified sp.5 (not to scale)

9. Subfamily Euphorinae

Euphorinae Förster, 1862 (van Achterberg and Haeselbarth, 2003)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Coleoptera, Lepidoptera, Hymenoptera, Neuroptera and Psocoptera

Diagnosis: Cross vein 2cu-a on the forewing is always absent, resulting in a characteristic of open subdiscal cell, fore wing vein 3RS is distinctly curved, the first metasomal tergite petiolised (1st metasomal tergite elongate) (Figure 51). Female specimens often die in the position of ovipositor bended into theirs face (van Achterberg and Haeselbarth, 2003). Otherwise they are extremely morphologically diverse.

The Euphorinae comprises a large and diverse subfamily and genera of the Braconidae in the Palaeartic region (Yu et al., 2005). They are solitary or gregarious koinobiont endoparasitoids and usually attack the adult stage of various insects, especially coleopteran (Shaw and Huddleston, 1991).

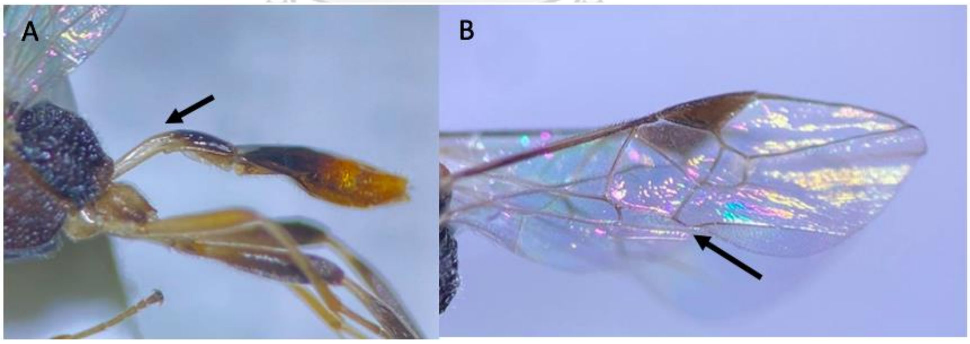

Figure 51 Light microscope photographs of Euphorinae

A, metasoma (arrow shows petiole-like metasomal tergite) and B, fore wing (arrow shows the open subdiscal cell)

One morphospecies of *Aridelus* (1 specimen) was collected in this study, *Aridelus* species was shown in Figure 52.

The *Aridelus* Marshall, 1887 is a small genus in the Euphorinae, with the unique characteristics mesosoma covered with coarse honey-combed, areolate sculpture, petiole shorter than the rest of the metasomal tergites.

Figure 52 Photograph of the *Aridelus* sp.1
(not to scale)

Ten morphospecies of *Meteorus* (130 specimens) were collected in this study, *Meteorus* species 1-10 which are shown in Figure 53.

The *Meteorus* Haliday, 1835 is cosmopolitan with more than 300 described species worldwide. The characteristics of *Meteorus* are: non-cyclostome, labrum completely concealed by clypeus, occipital carina and epicnemial carina present, open first subdiscal cell due to lack of 2cu-a vein of fore wing, quadrate-shaped second submarginal cell, petiole at least 2.5 times wider than the narrowest point of posterior margin.

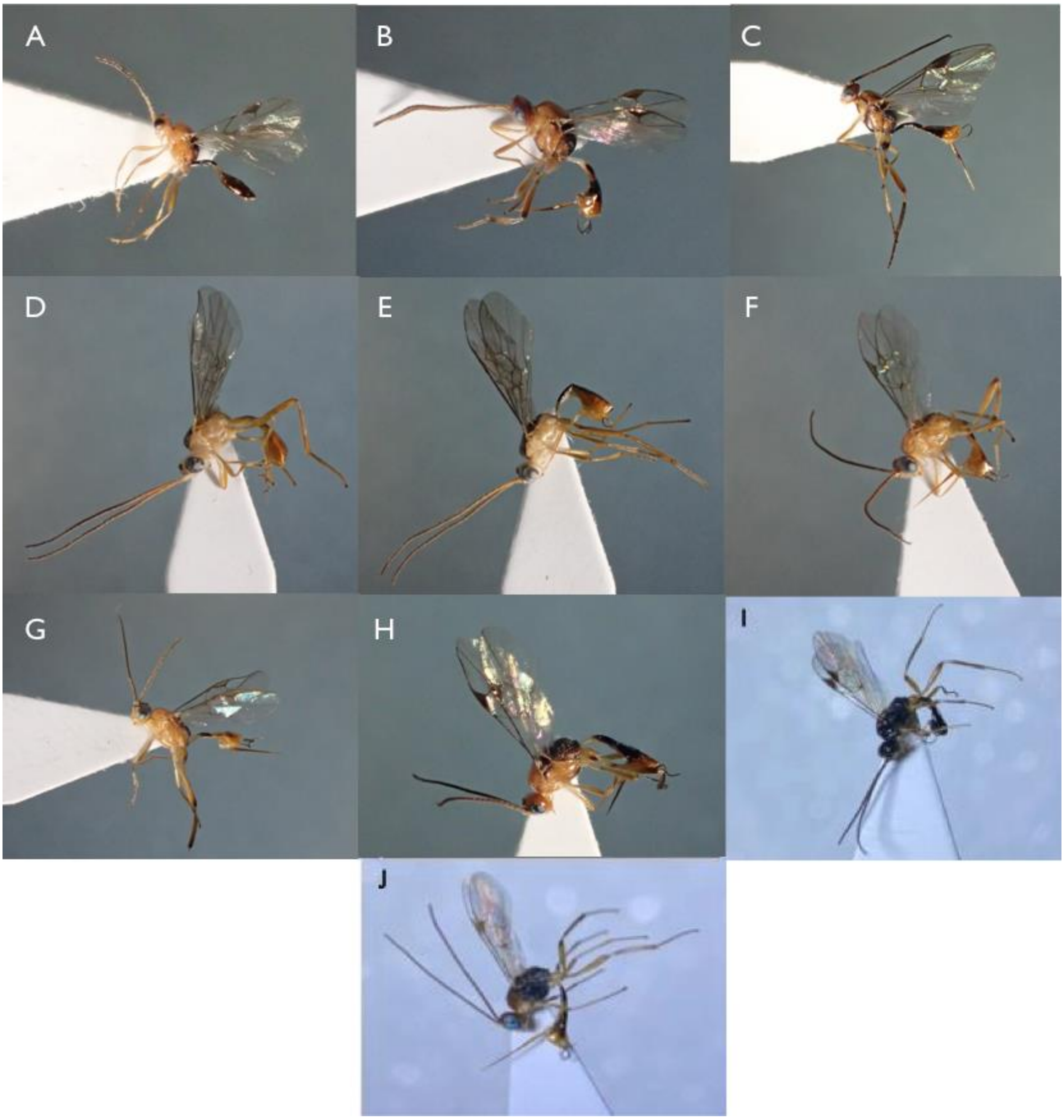

Figure 53 Photographs of the *Meteorus* species

A, *Meteorus* sp.1; B, *Meteorus* sp.2; C, *Meteorus* sp.3; D, *Meteorus* sp.4; E, *Meteorus* sp.5; F, *Meteorus* sp.6; G, *Meteorus* sp.7; H, *Meteorus* sp.8; I, *Meteorus* sp.9 and J, *Meteorus* sp.10 (not to scale)

Four morphospecies of *Streblocera* (4 specimens) were collected in this study, *Streblocera* species 1-4 which are shown in Figure 54.

The *Streblocera* Westwood, 1833 is cosmopolitan in distribution and comprises approximately 70 described species around the world (Gauld and Huddleston, 1976). The distinctive characteristics of *Streblocera* are: female antenna raptorial (Figure 55), scape with basal horn, flagellum with opposable basal section of fused flagellomeres (modified with hook-like projections), males without raptorial modifications, but elongate scape.

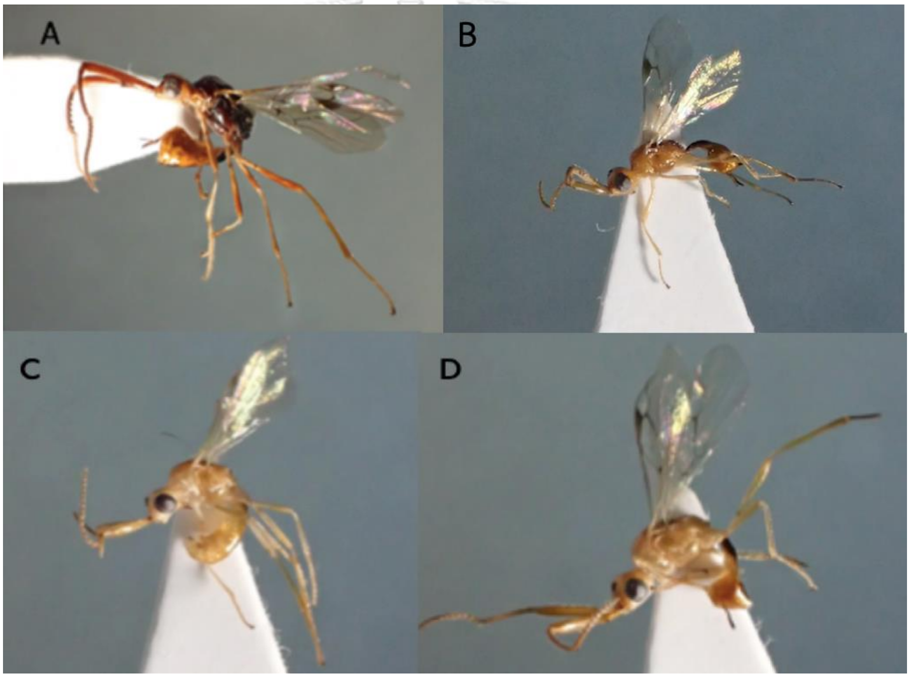

Figure 54 Photographs of the *Streblocera* species

A, *Streblocera* sp.1; B, *Streblocera* sp.2; C, *Streblocera* sp.3; D, *Streblocera* sp.4 (not to scale)

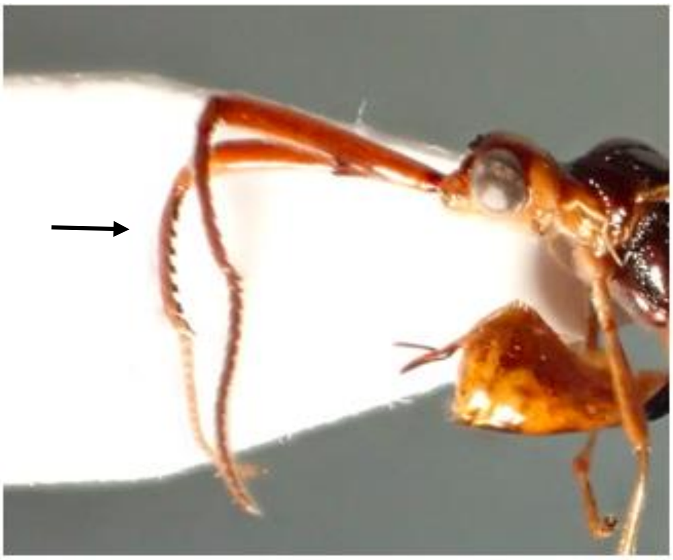

Figure 55 Light microscope photograph showing raptorial antenna of *Streblocera*

Streblocera olivera Quicke and Purvis, 2001 was collected from this study (Figure 56). It was described as a new species in 2001 from Mae Hong Son Province, Thailand. It can be distinguished from all other *Streblocera* species by the possession of a single, non-furcate, medio-posterior projection from the 5th metasomal sternite (Quicke and Purvis, 2001).

Figure 56 Photographs of the *Streblocera olivera*
(not to scale)

Only one morphospecies of *Syntretus* (1 specimen) was collected in this study, *Syntretus* species was shown in Figure 57.

The *Syntretus* Foerster, 1862 is a small genus of Euphorinae, it can be distinguished from other genera of the Euphorinae by having tarsal claws distinctly bent and bifurcate, vein M+CU1 of fore wing unsclerotised (van Achterberg and Haeselbarth, 2003).

Figure 57 Photograph of *Syntretus* sp.

(not to scale)

11 morphospecies of unidentified Euphorinae genera (35 specimens) were collected in this study, unidentified Euphorinae species 1-11 are shown in Figure 58.

Figure 58 Photographs of the unidentified Euphorinae species

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3; D, unidentified sp.4; E, unidentified sp.5; F, unidentified sp.6; G, unidentified sp.7; H, unidentified sp.8; I, unidentified sp.9; J, unidentified sp.10; K, unidentified sp.11 (not to scale)

10. Subfamily Homolobinae

Homolobinae van Achterberg, 1979 (van Achterberg, 1979)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Lepidoptera

Diagnosis: Homolobinae can be recognised by the presence of r-m in the fore wing, second submarginal cell square to rectangular and having long tibial spurs (Figure 59), with well-developed occipital carina (Wharton et al., 1997).

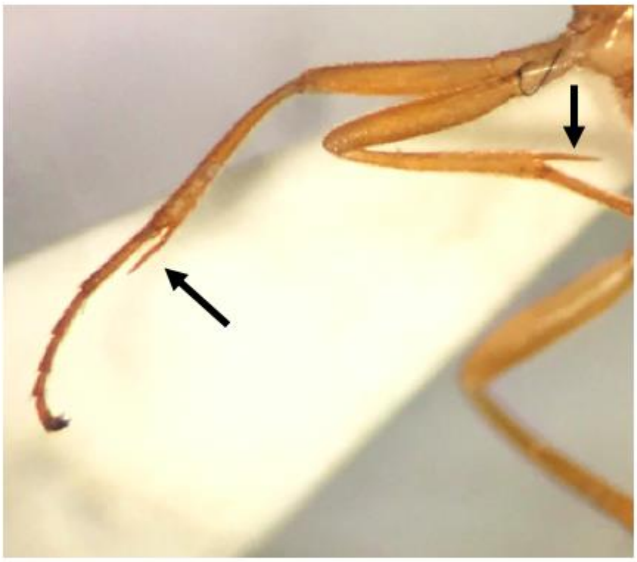

Figure 59 Light microscope photograph of Homolobinae legs (arrows show long tibial spurs)

The Homolobinae is a relatively small subfamily with about 60 described species worldwide and only one species recorded in Thailand, *Homolobus elagabalus* (Nixon, 1938) Zele (Yu et al., 2016). They are solitary, koinobiont endoparasitoids of Lepidoptera especially, Noctuidae and Geometridae (Wharton et al., 1997).

Only one morphospecies of *Homolobus* (1 specimen) (Figure 60) is recorded from this study. *Homolobus* Förster, 1862, can be recognised by the following characters: clypeus convex, more or less meeting mandibles; mandible twisted apically and with upper tooth longer than lower tooth; occipital carina well-developed medio-dorsally; antenna at least as long as fore wing (usually longer) and with over 40 segments; vein r-m in fore wing present (three submarginal cells); fore wing vein (RS+M)a straight, without distally-directed curvature; hind tibial spurs unequal and long; female ovipositor usually short and inconspicuous. Most species are orange or yellowish in colour (Shaw, 2010).

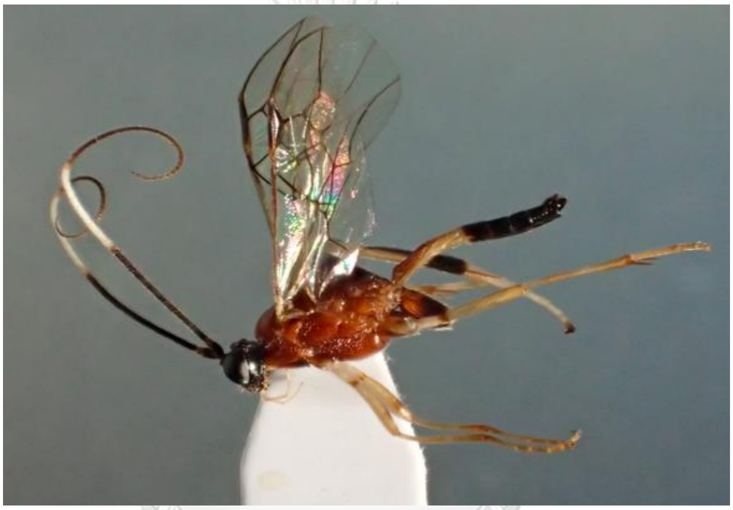

Figure 60 Photograph of the unidentified *Homolobus* sp.1 (not to scale)

11. Subfamily Hormiinae

Hormiinae Förster, 1862 (Yu et al., 2005)

Distribution: cosmopolitan

Life history: idiobiont ectoparasitoids

Hosts: Lepidoptera, Coleoptera and less commonly Hymenoptera and Diptera

Diagnosis: All species of Hormiinae have clearly defined cyclostome configuration to the shape of clypeus and labrum and often with two percurrent longitudinal carinae on first metasomal tergite (Figure 61). Hormiinae are recognised by the presence of complete occipital carina, the absence of characters associated with others cyclostomes: lack of medial longitudinal carina on the petiole, lack of a row of short thick setae on fore tibia, reduced number of maxillary palp segments to five (Wharton et al., 1997).

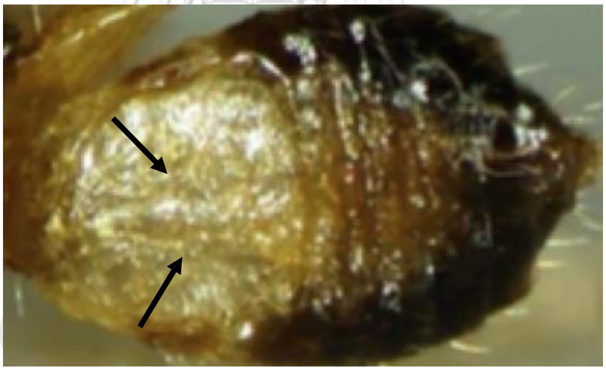

Figure 61 Light microscope photograph of Hormiinae metasoma (arrows show two percurrent longitudinal carinae)

The Hormiinae are idiobiont ectoparasitoids, which usually attacking concealed hosts. Few species of them have been used as natural enemies of leaf-mining Agromyzidae and Tenthredinidae in the classical biological control programmes (Wharton et al., 1997).

One morphospecies of *Parahormius* (2 specimens) were collected in this study, *Parahormius* (Figure 62).

Parahormius Nixon, 1940, is a small genus of Hormiinae and worldwide in distribution. The genus characteristics are loss of epicnemial carina, reduction or loss of the pleural flange and carina, occipital carina absent ventrally and petiole uniformly pigmented and heavily sclerotised throughout. Members of the genus are parasitoids of lepidopteran larvae (Belokobylskij, 1988; Whitfield and Wagner, 1991; Wharton, 1993).

Figure 62 Photograph of the *Parahormius* sp.1
(not to scale)

Four morphospecies of unidentified Hormiinae species (5 specimens) were collected in this study, unidentified species 1-4 which are shown in Figure 63.

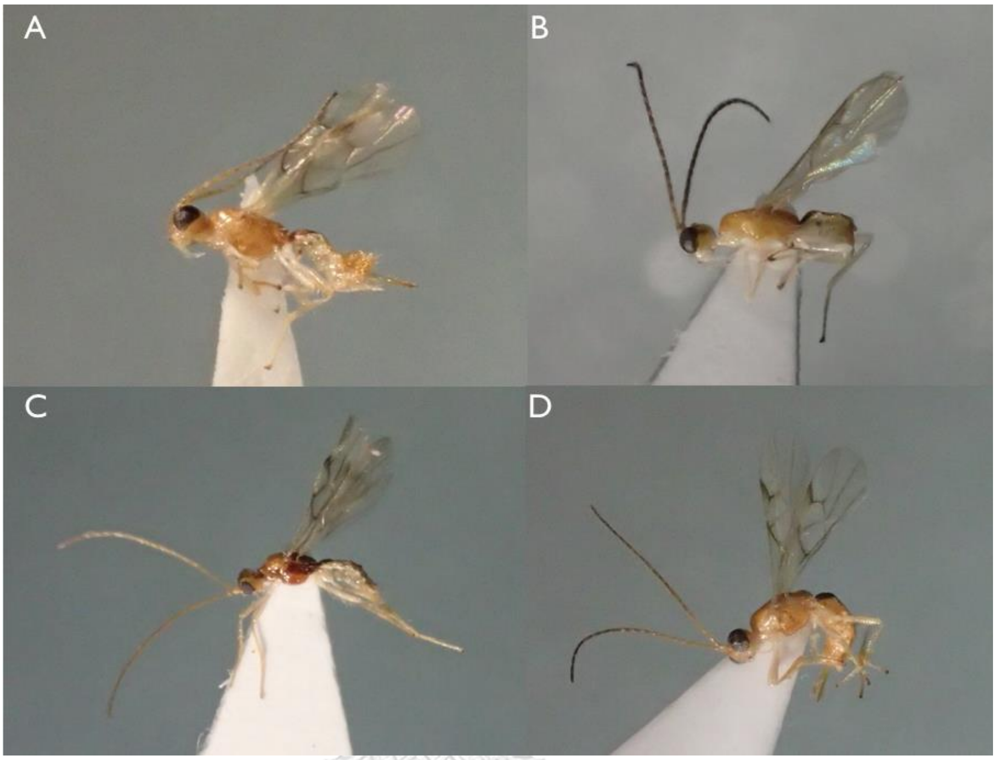

Figure 63 Photographs of the unidentified Hormiinae species

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3; D, unidentified sp.4 (not to scale)

12. Subfamily Ichneutinae

Ichneutinae Förster, 1862 (Yu et al., 2005)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Hosts: Lepidoptera and Hymenoptera

Diagnosis: They can be characterised by the presence of one or more small spines at the apex of the fore tibia and most by fore wing vein 1-M being strongly curved to be parallel to the fore wing margin before origin of (RS+M)a. The ovipositor is always shorter than the body length and barely exserted, the oral cavity is not cyclostome (Figure 64).

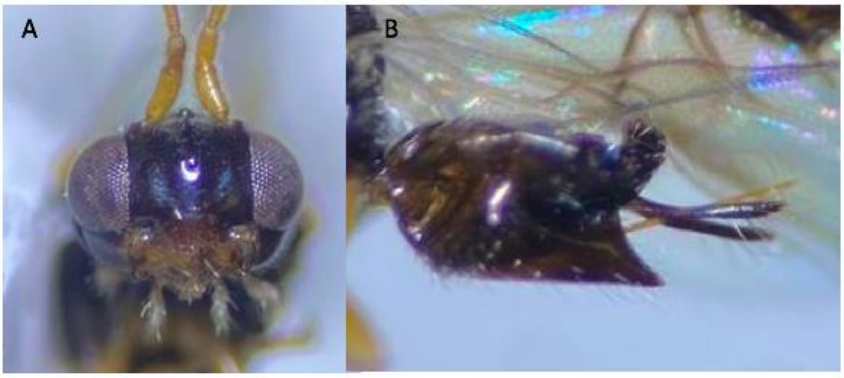

Figure 64 Light microscope photographs of Ichneutinae
A, face and B, lateral view of metasoma

Only one morphospecies of Ichneutinae (2 specimens) was collected in this study, unidentified Ichneutinae species was shown in Figure 65.

The Ichneutinae is a relatively small subfamily of the Braconidae with only 10 genera and 83 described species worldwide, and cosmopolitan in distribution (He et al., 1997; Sharkey, 1997). It is unique, and is one of only a few subfamilies of Braconidae with species known to parasitise Hymenoptera larvae (Wharton et al., 1997).

Figure 65 Photograph of the unidentified Ichneutinae species
(not to scale)

13. Subfamily Lysiterminae

Lysiterminae Tobias, 1968 (van Achterberg and Steiner, 1996)

Distribution: cosmopolitan

Life history: idiobiont ectoparasitoids

Host: Lepidoptera and Hemiptera

Diagnosis: Occipital carina complete, 1^{st} -3^{rd} metasomal tergites heavily sclerotised, first metasomal tergite without mid-longitudinal carina but with two percurrent longitudinal carinae. Ovipositor sheath distinctly protruding and slender, but the length is shorter than metasoma (Figure 66).

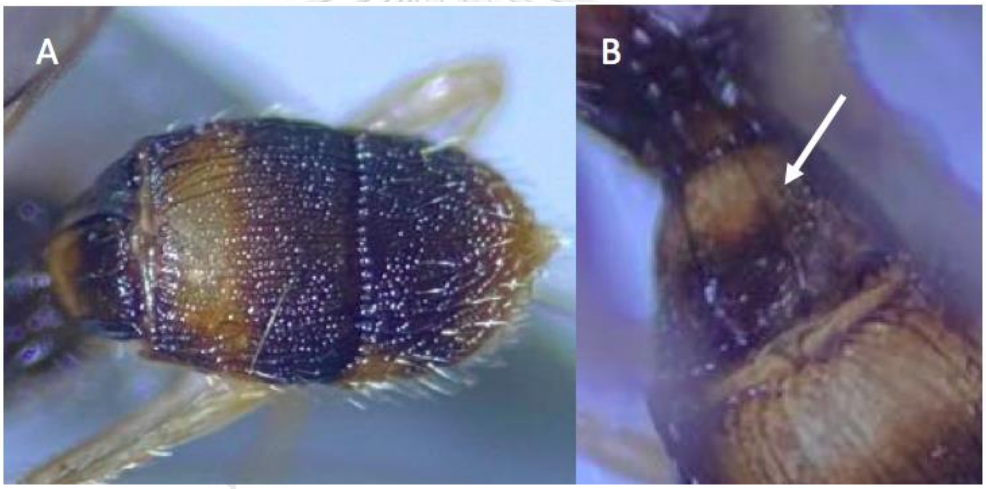

Figure 66 Light microscope photographs of Lysiterminae metasoma

A, heavily sclerotised on 1^{st} -3^{rd} metasomal tergites and B, first metasomal tergite (arrow shows two percurrent longitudinal carinae)

The Lysiterminae is a small subfamily of the cyclostomes Braconidae and is mostly found in the Old World tropics (Papp and van Achterberg, 1999). Representatives of *Aulosaphoides* and *Cedria* were collected in this study.

Four morphospecies of *Aulosaphoides* (4 specimens) were collected in this study (Figure 67).

Aulosaphoides van Achterberg, 1995 can be characterised by fore wing vein R rising toward anterior part of pterostigma, anterior part of mesoscutum with mid-carina or furrow and mandible with one tooth and third tergum with wide lamella posteriorly (Belokobylskij et al., 2007).

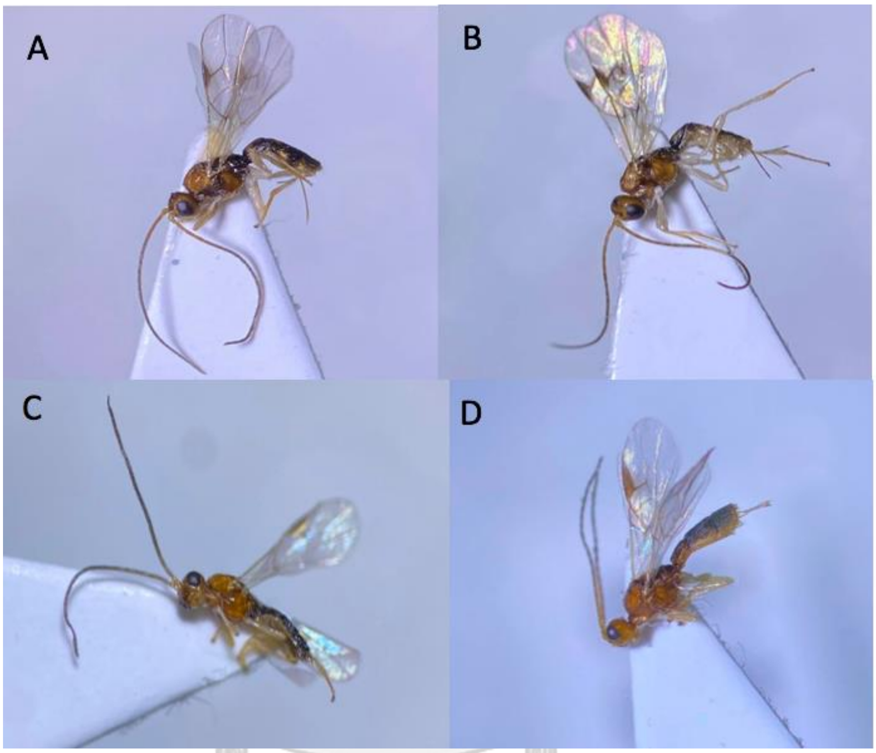

Figure 67 Photographs of the *Aulosaphoides*

A, *Aulosaphoides* sp.1; B, *Aulosaphoides* sp.2; C, *Aulosaphoides* sp.3; D. *Aulosaphoides* sp.4 (not to scale)

Only one morphospecies of *Cedria* (1 specimen) was collected in this study (Figure 68). *Cedria* Wilkinszon, 1934 is restricted to the Old World (Quicke et al., 2017a). They are gregarious ectoparasitoids of concealed Pyralidae caterpillars (Shi et al., 2004). It is one of a few parasitoids which exhibit parental care for its gregarious ectoparasitic and idiobiont larvae, the female wasp stays with her brood until they have completed development and emerged from host as adults (Chu, 1935; Belokobylskij, 1993).

The characteristics of *Cedria* are: head not enlarged posteriorly, 3rd antennal segment at least a little longer than 4th segment and much longer than pedicel, diameter of antennal sockets more than twice the distance between antennal sockets in dorsal view, 1-SR+M of forewing present, 2-SR longer than m-cu, first subdiscal cell at most slightly narrowed basally, 1st tergum of metasoma narrowed basally, 2nd tergum striate, with sharp lateral crease (Shi et al., 2004).

In 2017, genus *Cedria* is recorded from Thailand for the first time, *Cedria wichasei* Quicke, Belokobylskij & Butcher, 2017. It was collected from light trapping in Chulalongkorn University Campus, Kaeng Khoi district, Saraburi province. It can be recognised by strong carination on the head, having a deep and complete malar suture, modified flagellum with first flagellomere 2 x longer than 2nd flagellomere and the flagellum being widest at level of 2nd and 3rd flagellomeres. Body colour is mainly brownish-yellow, except for posterior half of metasoma darkened. Antenna yellowish and becoming black apically (Quicke et al., 2017a). The specimen collected from this research bring the total number of *Cedria* recorded from Thailand to two species.

Figure 68 Photograph of the unidentified *Cedria* sp. 1
(not to scale)

Three morphospecies of unidentified Lysiterminae species (3 specimens) were collected in this study, unidentified Lysiterminae species 1-3 were shown in Figure 69.

Figure 69 Photographs of the unidentified Lysiterminae species
A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3 (not to scale)

14. Subfamily Macrocentrinae

Macrocentrinae Förster, 1862 (Yu et al., 2005)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Lepidoptera

Diagnosis: It can be recognised by the absence of occipital carina and the presence of small teeth on the mid and hind trochantelli (Figure 70).

Figure 70 Light microscope photograph of Macrocentrinae leg
(arrows show small teeth on the trochantellus)

The Macrocentrinae includes both solitary and gregarious koinobiont endoparasitoids of lepidopterous larvae (Shaw and Huddleston, 1991). Members of the macrocentrines are pale coloured and crepuscular to nocturnal.

There are two common genera of Macrocentrinae in the Old World, *Macrocentrus* Curtis, 1833 and *Austrozele* Roman, 1910. The differences of their characteristics are: *Macrocentrus* have long ovipositors, nearly always at least as long as metasoma, length of inner spur of hind tibia 0.3-0.5 times length of hind basitarsus. On the other hand, *Austrozele* contain species with short ovipositors and length is about equal to apical height of metasoma and length of inner spur of hind tibia 0.5-0.8 times length of hind basitarsus (Wharton et al., 1997).

Ten morphospecies of *Macrocentrus* (36 specimens) were collected in this study (Figure 71 and 72).

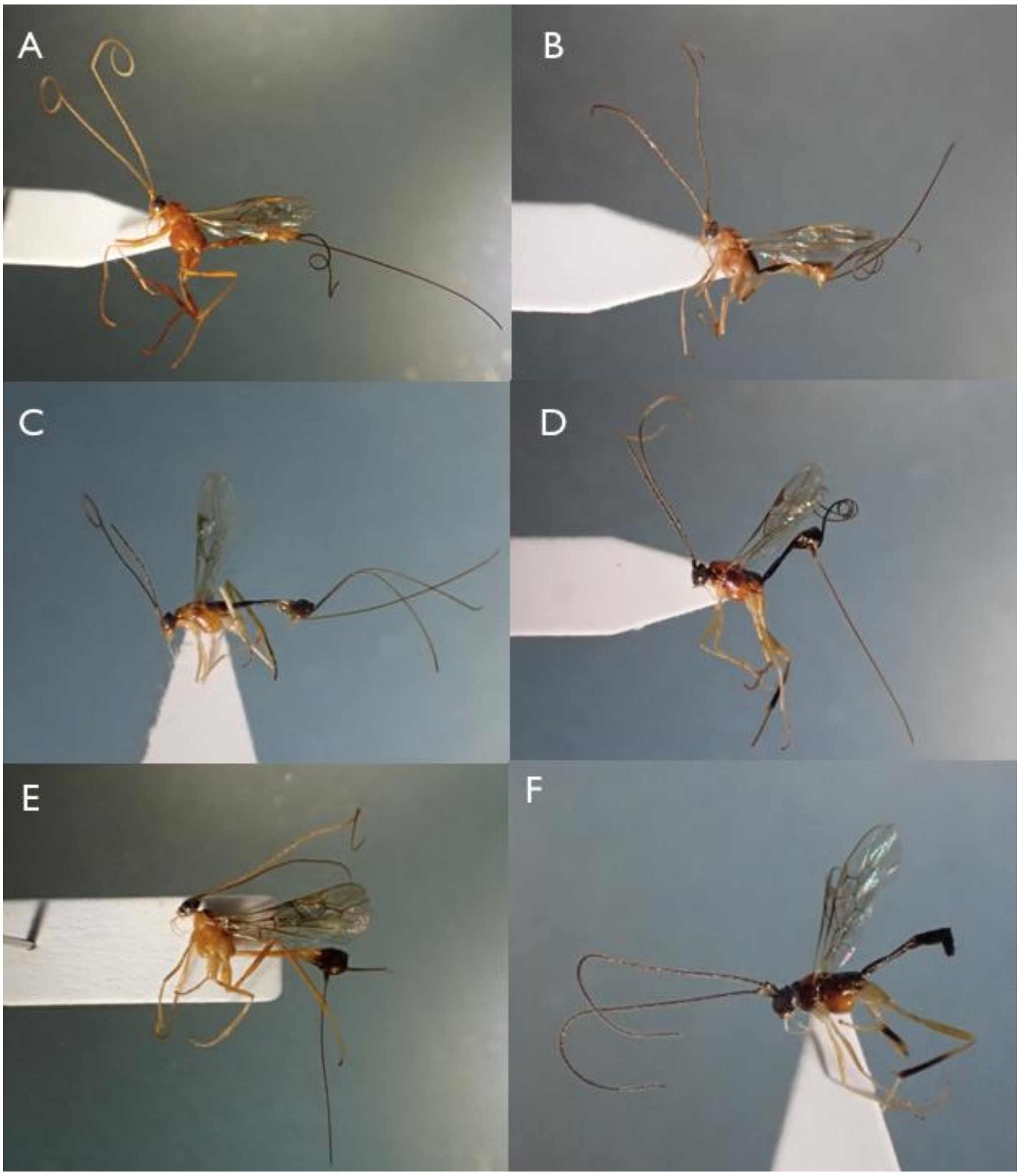

Figure 71 Photographs of the *Macrocentrus*

A, *Macrocentrus* sp.1; B, *Macrocentrus* sp.2; C, *Macrocentrus* sp.3; D, *Macrocentrus* sp.4; E, *Macrocentrus* sp.5; F, *Macrocentrus* sp.6 (not to scale)

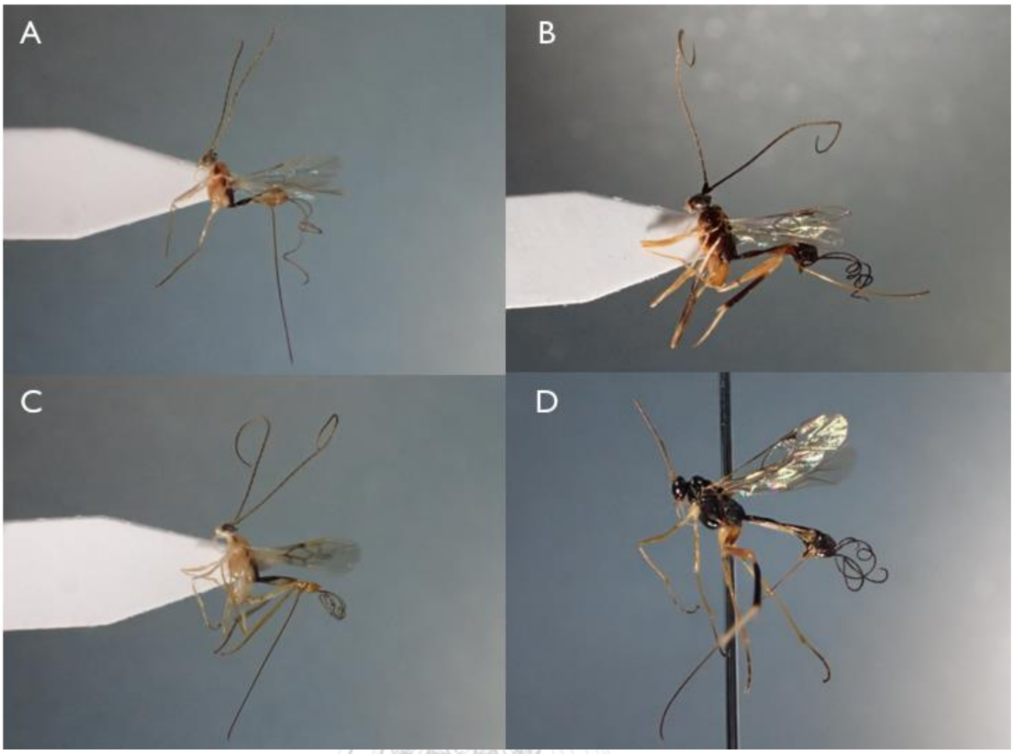

Figure 72 Photographs of the *Macrocentrus*

A, *Macrocentrus* sp.7; B, *Macrocentrus* sp.8; C, *Macrocentrus* sp.9; D, *Macrocentrus* sp.10 (not to scale)

15. Subfamily Meteorideinae

Meteorideinae Tobias, 1967 (van Achterberg, 1990)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Lepidoptera

Diagnosis: It can be recognised by hind wing with vein Cub present even often small, fore wing with second submarginal cell quadrate, terminal segment of metasoma laterally compressed and ovipositor small (Figure 73).

The members of Meteorideinae are known to be larval-pupal endoparasitoids of Lepidoptera. Eggs are laid into the host larva and the adult parasitoid emerges from the pupal stage of the host (Shaw, 1988).

Only one morphospecies of Meteorideinae (5 specimens) was collected in this study, unidentified Meteorideinae species was shown in Figure 74.

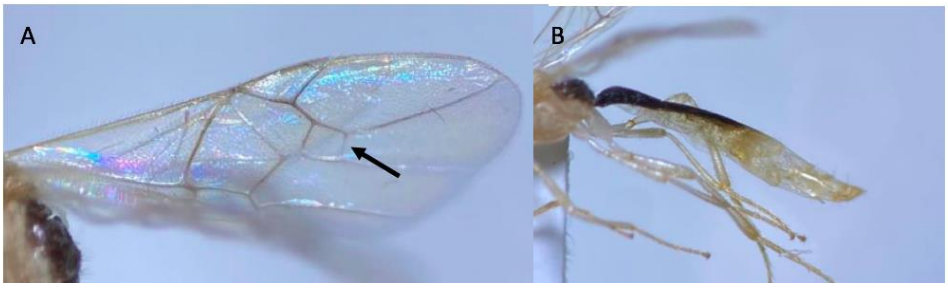

Figure 73 Light microscope photographs of Meteorideinae

A, fore wing (arrow show second submarginal cell quadrate), B, lateral side of metasoma

Figure 74 Photograph of the unidentified Meteorideinae

(not to scale)

16. Subfamily Microgastrinae

Microgastrinae Förster, 1862 (Yu et al., 2005)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Lepidoptera (>2,000 spp) and Trichoptera, *Enoicyla pusilla* (Burmeister, 1839)

Diagnosis: It can be recognised by having exactly 18 antennal segments, the spiracles of the first metasomal segment situated on the lateral tergites, with reduced wing venation apically (Figure 75).

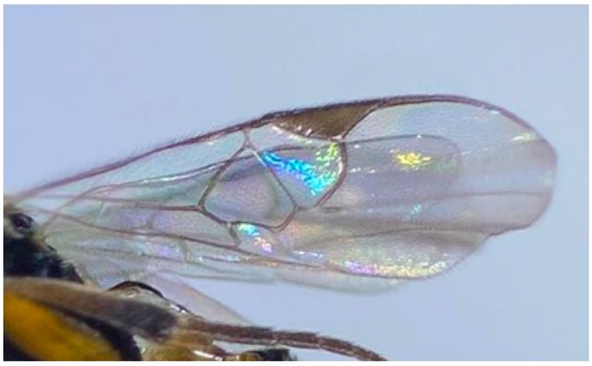

Figure 75 Light microscope photograph of Microgastrinae fore wing

The Microgastrinae is the most important group of parasitoids used to control Lepidoptera, especially noctuids, gelechiids and pyralids in the field crops (Shaw and Huddleston, 1991). Presently, over 2,999 species have been described worldwide (Fernandez-Triana et al., 2020) of which 30 species have been recorded from Thailand.

Two morphospecies of *Fornicia* (2 specimens) were collected in this study, (Figure 76).

The *Fornicia* Brulle, 1846 distributed mainly in the tropic and subtropic regions, only one species of *Fornicia* was recorded in Thailand, *Fornicia ceylonica* Wilkinson, 1928. They can be easily distinguished from others microgastrines by having complete prepectal carina, 1^{st}-3^{rd} metasomal tergites fused and disproportionately small head. The unique characteristics are the structure of the scutellar spine, finely reticulate-punctate (Wharton et al., 1997).

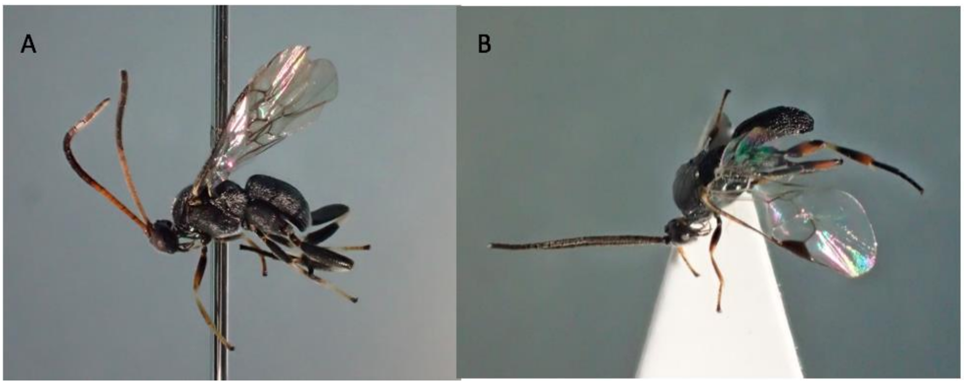

Figure 76 Photographs of the *Fornicia*

A, *Fornicia* sp.1; B, *Fornicia* sp.2 (not to scale)

Ten morphospecies of Microgastrinae (118 specimens) were collected in this study, unidentified Microgastrinae species 1- 10 which are shown in Figure 77 and 78.

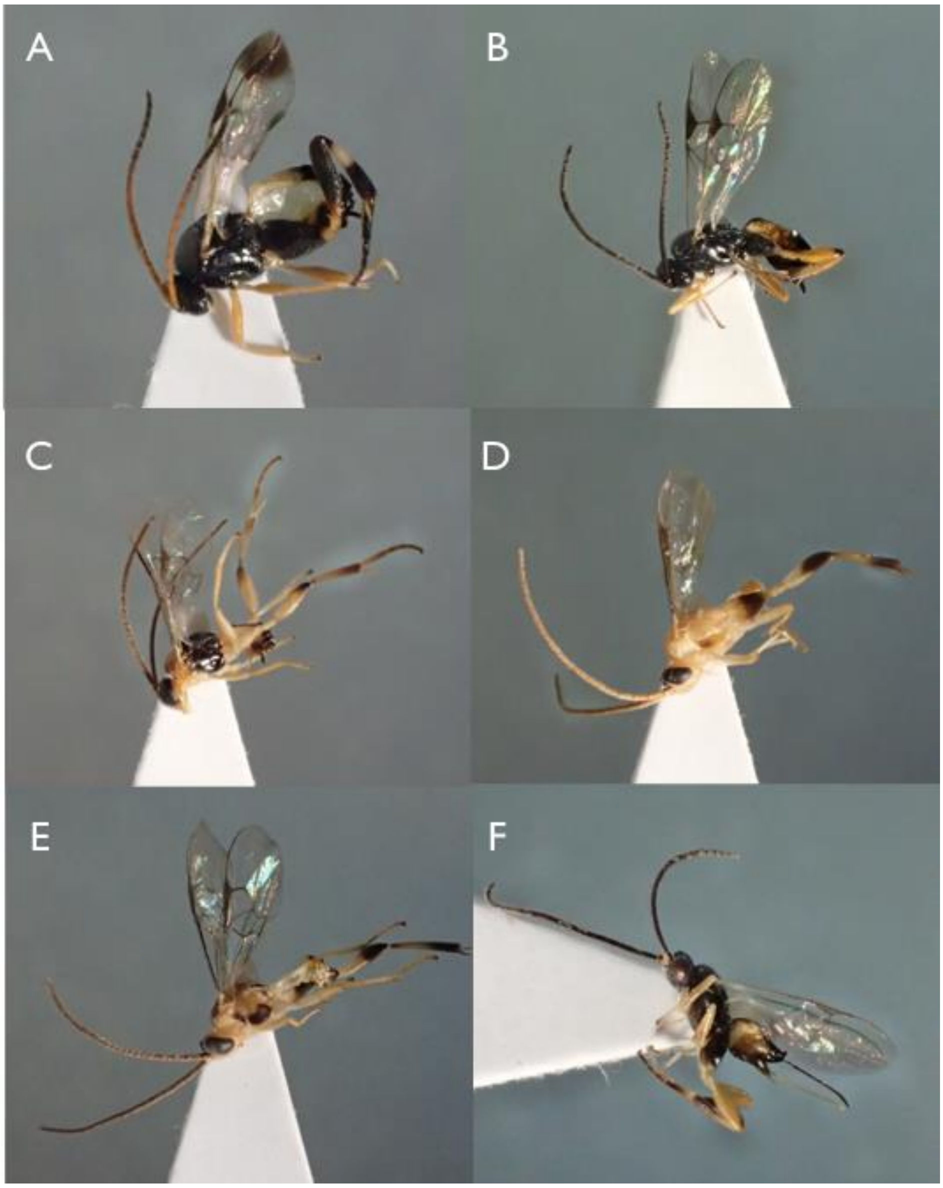

Figure 77 Photographs of the unidentified Microgastrinae

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3; D, unidentified sp.4; E, unidentified sp.5; F, unidentified sp.6 (not to scale)

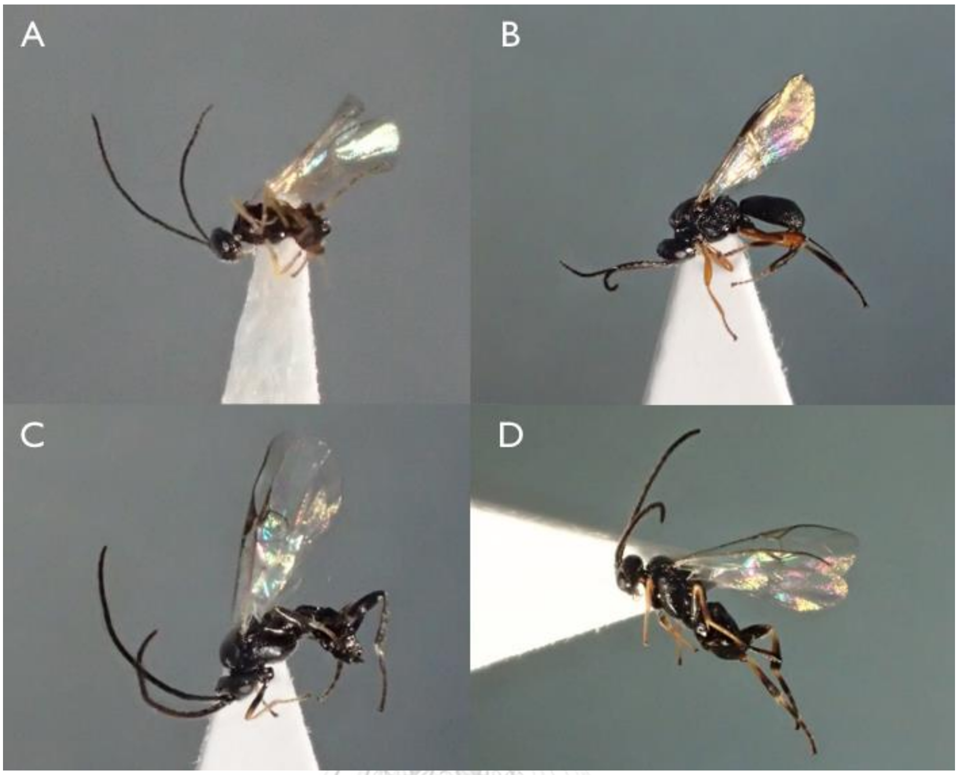

Figure 78 Photographs of the unidentified Microgastrinae

A, unidentified sp.7; B, unidentified sp.8; C, unidentified sp.9; D, unidentified sp. (not to scale)

17. Subfamily Opiinae

Opiinae Blanchard, 1845 (Wharton et al., 1997)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Diptera

Diagnosis: Opiinae are cyclostome braconids but most species have secondarily list the cyclostome condition. It can be recognised by occipital carina absent medially and epicnemial carina absent. Hind wing with vein 2m-cu (Figure 79) (Yu et al., 2012).

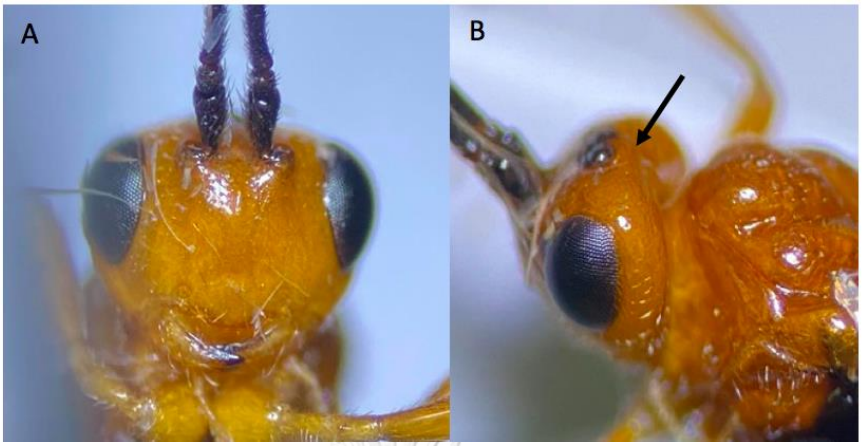

Figure 79 Light microscope photographs of Opiinae

A, face and B, lateral head (arrow shows incomplete occipital carina, absent medially)

Five morphospecies of Opiinae (10 specimens) were collected in this study, unidentified Opiinae species 1-5 which are shown in Figure 80.

The Opiinae is one of the largest subfamilies of Braconidae, with approximately 1,300 described species worldwide. They are mostly brown or blackish-coloured but some are bright yellow-coloured (Shaw and Huddleston, 1991). Opiines can oviposit in either egg or larval stage of their hosts and emerge from the host puparium (Wharton et al., 1997).

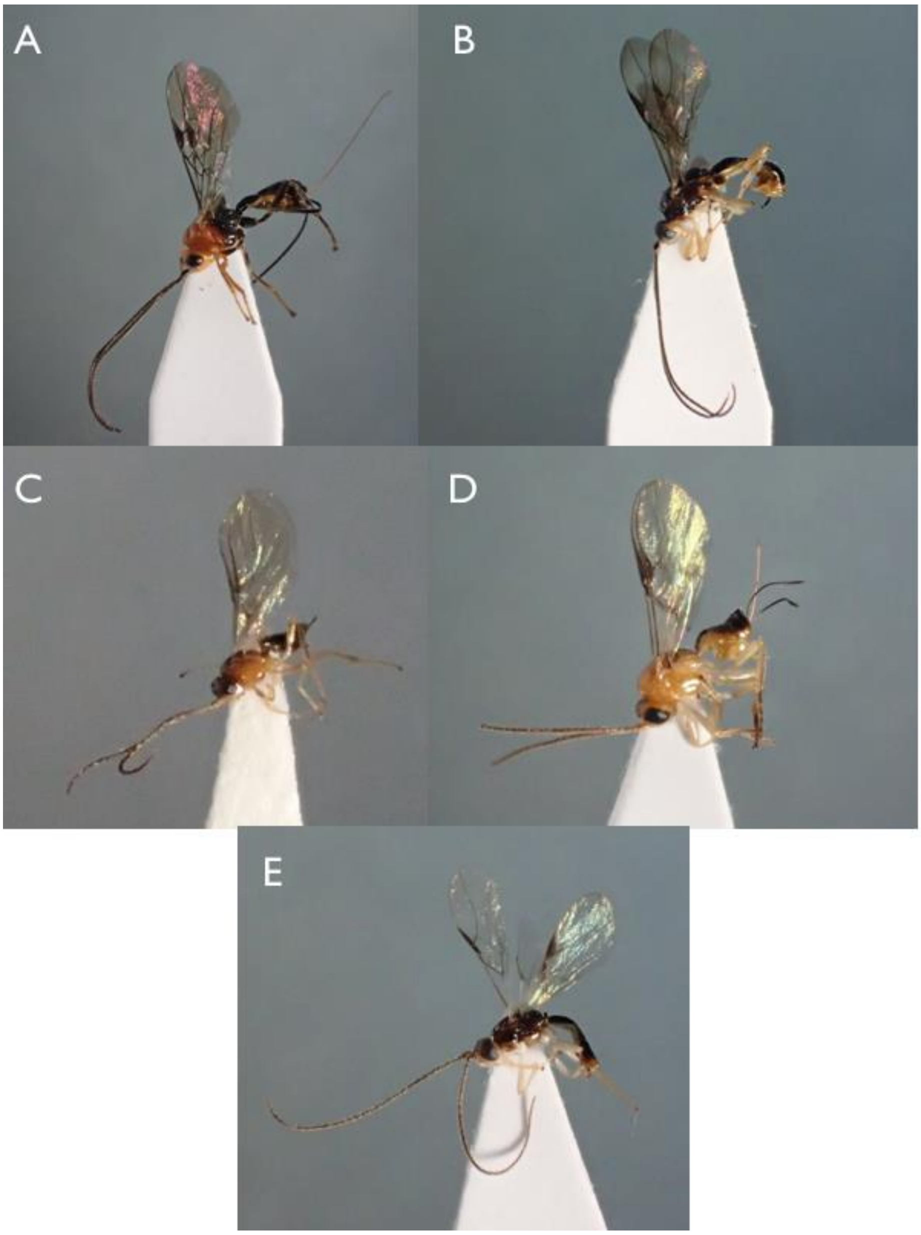

Figure 80 Photographs of the Opiinae

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3; D, unidentified sp.4; E, unidentified sp.5 (not to scale)

18. Subfamily Orgilinae

Orgilinae Ashmead, 1900 (van Achterberg and Braet, 2004)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Lepidoptera

Diagnosis: They have a slender body, moderately long antennae and a distinctly protruding ovipositor. Occipital carina present laterally, absent medially. Second submarginal cell of fore wing absent or rarely small, vein 3RS of fore wing straight and cross vein 2cu-a of fore wing present (Figure 81) (van Achterberg and Braet, 2004).

Figure 81 Light microscope photograph of Orgilinae forewing

Three morphospecies of Orgilinae (3 specimens) were collected in this study, unidentified Orgilinae species 1- 3 which are shown in Figure 82.

The Orgilinae is a small subfamily of Braconidae, cosmopolitan, with body length approximately 4-7 mm long. Most female have a long to medium-sized ovipositor. All species are solitary koinobiont endoparasitoids of lepidopteran larvae. The known hosts of Orgilinae belong to Coleophoridae, Gelechiidae, Tortricidae and Pyralidae (Wharton et al., 1997).

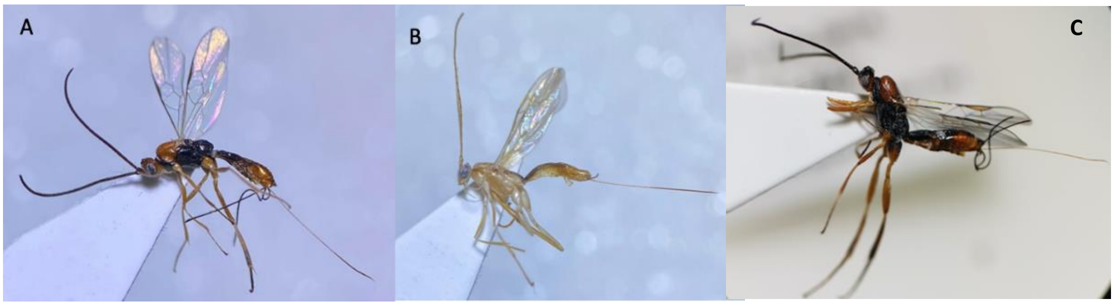

Figure 82 Photographs of the unidentified Orgilinae

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3 (not to scale)

19. Subfamily Pambolinae

Pambolinae Marshall, 1885 (Yu et al., 2005)

Distribution: cosmopolitan

Life history: idiobiont ectoparasitoids

Host: Coleoptera and Lepidoptera

Diagnosis: Cyclostome mouthparts, labrum concave. Occipital carina absent medially, epicnemial carina present. Most of Pambolinae have two lateral spines on their propodeum (Figure 83A), if lateral spines on propodem absent, first metasomal tergite greatly widened posteriorly. First metasomal tergite without mid-longitudinal carina but two percurrent longitudinal carinae present. Second and third metasomal tergites usually smooth and shiny (Figure 83B) (Papp, 1996).

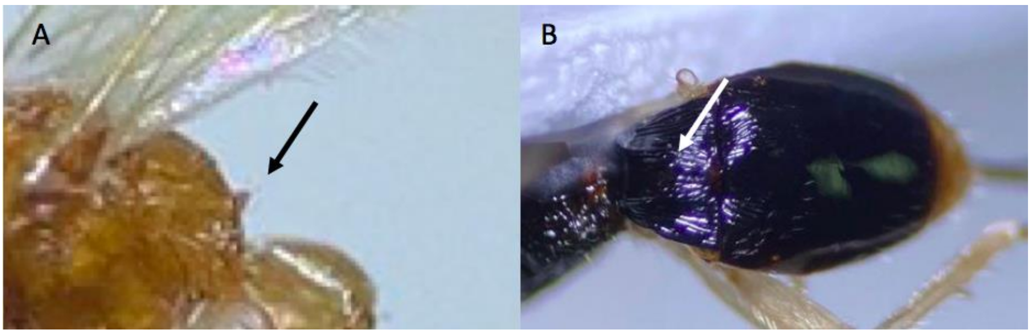

Figure 83 Light microscope photographs of Pambolinae

A, lateral side of propodeum (arrow shows lateral spines) and B, top of metasoma (arrow shows two percurrent longitudinal carina)

The Pambolinae is cosmopolitan and little is known about its biology. Pambolines are gregarious idiobiont ectoparasitoids of Coleoptera and Lepidoptera larvae (van Achterberg, 1993). They have been reared infrequently from beetle-infested wood, however, there are some records indicated that larvae of Chrysomelidae are their main host of this group (van Achterberg and Braet, 2004).

Two morphospecies of *Pambolus* (2 specimens) were collected in this study, unidentified *Pambolus* species 1- 2 were shown in Figure 84.

The genus *Pambolus* Haliday, 1836 is a small and cosmopolitan genus which particularly diverse in the Neotropics (Wharton et al., 1997). It is characterised by the presence of a pair of propodeal spines, first metasomal tergite strongly widened at the apex, largely flat labrum, postpectal carina present, malar suture absent (Braet and van Achterberg, 2003).

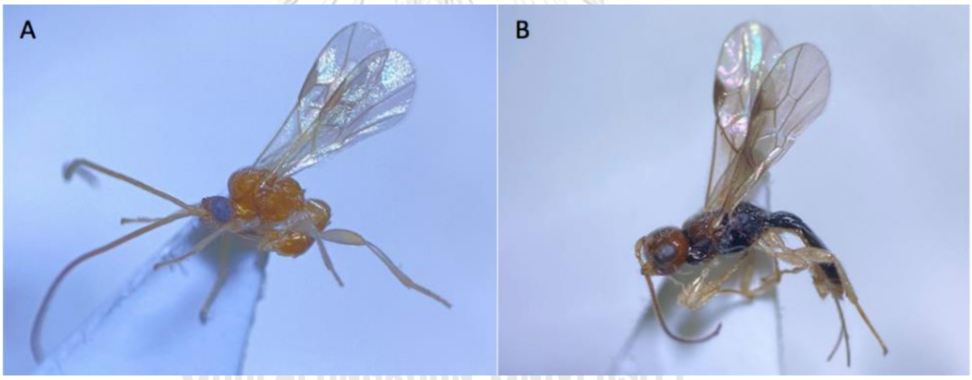

Figure 84 Photographs of the *Pambolus*

A, *Pambolus* sp.1 and B, *Pambolus* sp.2 (not to scale)

20. Subfamily Rogadinae

Rogadinae Förster, 1862 (Aydogdu and Beyarslan, 2005)

Distribution: cosmopolitan

Life history: koinobiont endoparasitoids

Host: Lepidoptera

Diagnosis: Cyclostome mouthparts, strongly emarginated clypeus and concave labrum, occipital carina present, inner side of compound eyes distinctly emarginated (Figure 85A). Median carina of propodeum present and usually as long as propodeum length, with mid-longitudinal carina on 1st and 2nd metasomal tergites (Figure 85B). Three submarginal cells in the fore wing (Aydogdu and Beyarslan, 2005).

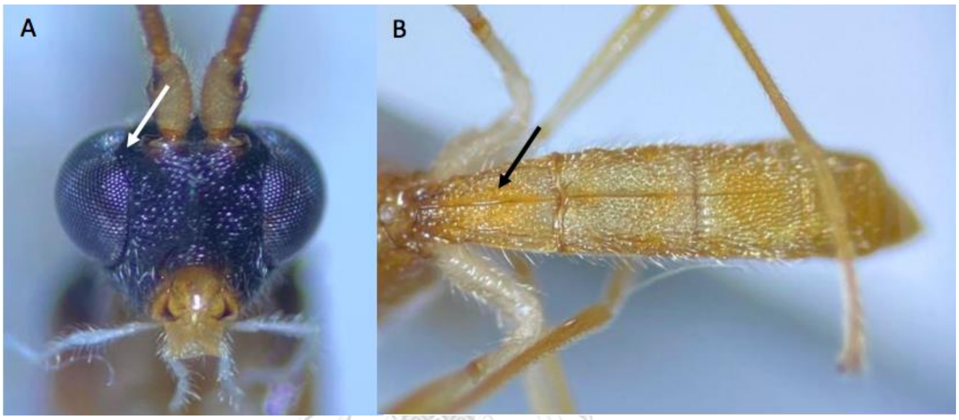

Figure 85 Light microscope photographs of Rogadinae
A, face (arrow shows inner eyes strongly emarginated) and B, top of metasoma (arrow shows mid-longitudinal carina on first and second metasomal tergites)

The Rogadinae is one of the largest subfamilies of Braconidae, cosmopolitan in distribution. It is unique in their habit of mummifying the host caterpillar, pupation is internal, within the shrunken and mummified remains of the host caterpillar. Thus, this group is easy recognised when reared from host lepidopteran (van Achterberg, 1991). Species of this subfamily consists of koinobiont endoparasitoids of lepidopteran larvae, mostly of exposed-feeding macrolepidopteran larvae (Wharton et al., 1997).

There are five genera of Rogadinae collected in this study; *Aleiodes, Heterogamus, Iporhogas, Gyroneuron* and *Clinocentrus.*

Six species of *Aleiodes* (15 specimens) were collected in this study, *A. concoronarius, A. reticulisoma, A. sophieae, A. sprurivena, A. rugoscutus* and near *A. seriatus* were shown in Figure 86.

The genus *Aleiodes* Wesmeal, 1838 is the most common and diverse genus of Rogadinae. Currently, with 431 described species worldwide (Yu et al., 2012) and 187 species recorded in Thailand (Yu et al., 2016). They can be recognised by having a strong protruding clypeal carina, wing vein 2RS nearly parallel with r-m, thus forming a roughly rectangular second submarginal cell (Figure 87). Presence of pectinate tarsal claws (Shaw, 1983; Fortier and Shaw, 1999).

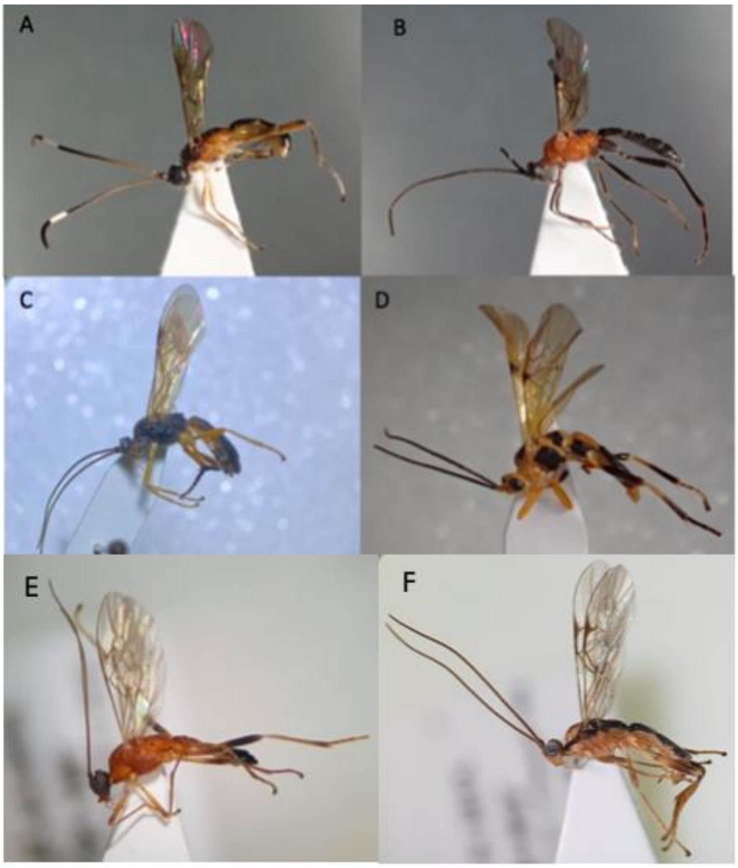

Figure 86 Photographs of the *Aleiodes sp.*

A, *A. concoronarius*; B, *A. reticulisoma*; C, *A. sophieae*; D, *A. sprurivena*; E, *A. rugoscutus*; F, near *A. seriatus* (not to scale)

Figure 87 Light microscope photograph of *Aleiodes* fore wing
(arrow shows rectangular second submarginal cell)

Aleiodes concoronarius Quicke & Butcher, 2012 was described as a new species of rogadines in 2012 (Butcher et al., 2012). It was collected in Doi Phu Kha NP, Nan province by using Malaise trap under TIGER project. Its unique characters are: terminal flagellomere pointed hardly acuminate, frons with curved ridges radiating from antennal sockets, occipital carina complete. Mesopleuron shiny, dorsally with strong longitudinal striate sculpture, mid-longitudinal carina present on anterior propodeum only, but absent on 3rd metasomal tergite. Antenna brown or yellow basally becoming black gradually, with 32-39 segments in white (Butcher et al., 2012).

Aleiodes reticulisoma Quicke & Butcher, 2012 was described as a new species in 2012. It was also collected in Doi Phu Kha NP by using Malaise trap. It can be easily recognised by the unique body colouration: body completely black except for mesosoma orange or light brown. Occipital carina complete, propodeum with complete mid-longitudinal carina. Etymology *reticulisoma* due to the presence of largely coarsely reticulate sculpture of the metasomal tergites (Butcher et al., 2012).

Aleiodes sophieae Quicke & Butcher, 2012 was recorded in Doi Inthanon NP, Chiang Mai province and was described as a new species in 2012. It can be recognised by antenna with 68 flagellomeres, terminal flagellomere pointed but not acuminate, occipital carina complete. Mid-longitudinal carina present on propodeum. Claws with 3-6 short stout pectin teeth along most of basal lobe. Body colour is black except for fore legs, mid legs and hind legs (coxa, trochanter and femur) yellow (Butcher et al., 2012).

Aleiodes spurivena species group is found in the Oriental region, *A. spurivena* Quicke & Butcher, 2011 is recorded from Vietnam, Thailand, Nepal and India, *A. spurivenaduplus* Quicke & Butcher, 2011 is recorded from Vietnam and *A. spurivenatriplus* Quicke & Butcher, 2011 is recorded from Western Malaysia. The diagnosis of this species group is occipital carina complete, large and brightly coloured yellow and black body, junction of fore wing vein M+CU, 1-CU1 and 1-M swollen, vein 1-A with posterior short or long spur and subbasal cell glabrous and distally swollen (Figure 88) (Quicke and Butcher, 2011).

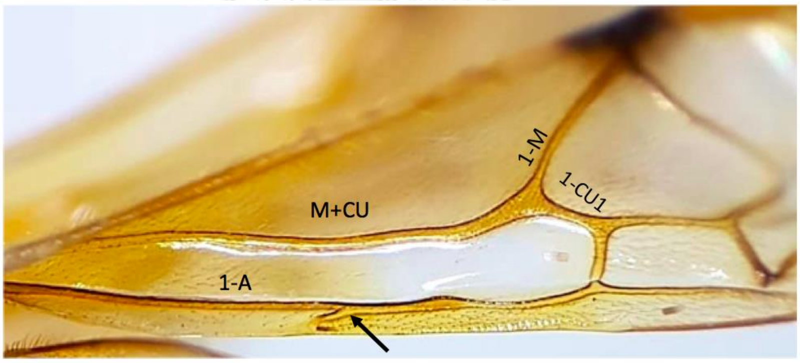

Figure 88 Light microscope photograph of *Aleiodes spurivena* fore wing (arrow shows vein 1-A with posterior spur)

Aleiodes rugoscutus Quicke & Butcher, 2012 was recorded in Khao Kaew Open Zoo, Chon Buri province and was described as a new species in 2012. It can be recognised by antenna with 43 flagellomeres, terminal flagellomere pointed but not acuminate, occipital carina complete mediodorsally. Mid-longitudinal propodeal carina interrupted post medially. Mid-longitudinal carina of third tergite indistinct. Claws with pectin 5 long slender, diverging teeth on basal lobe (Butcher et al., 2012).

Aleiodes seriatus (Herrich-Schäffer, 1838) can be recognised by antenna with 44-50 flagellomeres, inner apex of hind tibia with comb. Metasoma of female maculate, fourth tergite pale (ivory) yellowish latero-posteriorly, fourth tergites gently folded laterally and superficially transversely rugulose or aciculate, without acute lateral crease or only anteriorly developed. Propodeum laterally rugose (van Achterberg and Shaw, 2016).

Twenty morphospecies of *Aleiodes* (209 specimens) were collected in this study, unidentified *Aleiodes* species 1- 20 which are shown in Figures 89 and 90.

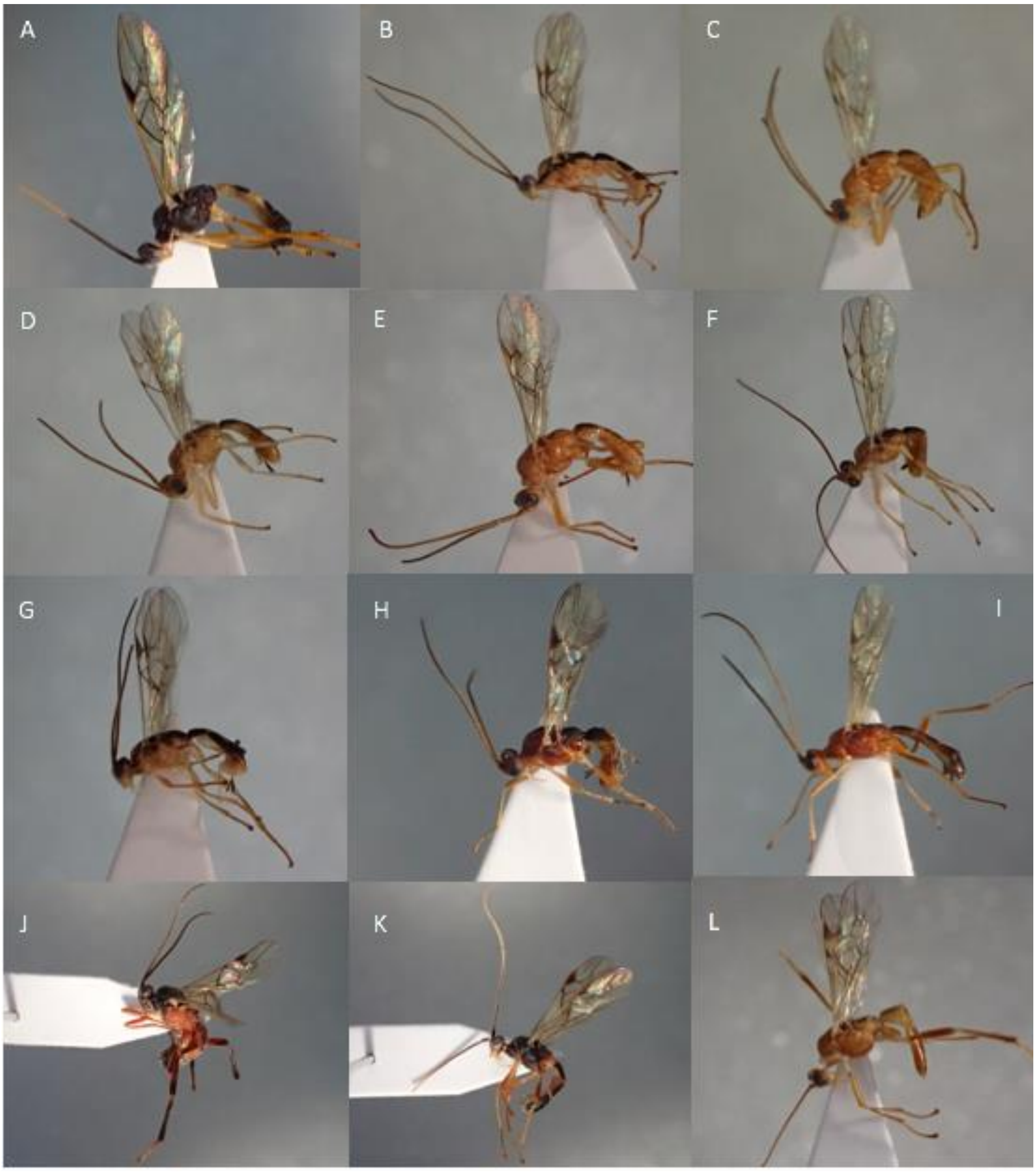

Figure 89 Photographs of the unidentified *Aleiodes*

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3; D, unidentified sp.4; E, unidentified sp.5; F, unidentified sp.6; G, unidentified sp.7; H, unidentified sp.8; I, unidentified sp.9; J, unidentified sp.10; K, unidentified sp.11; L, unidentified sp.12 (not to scale)

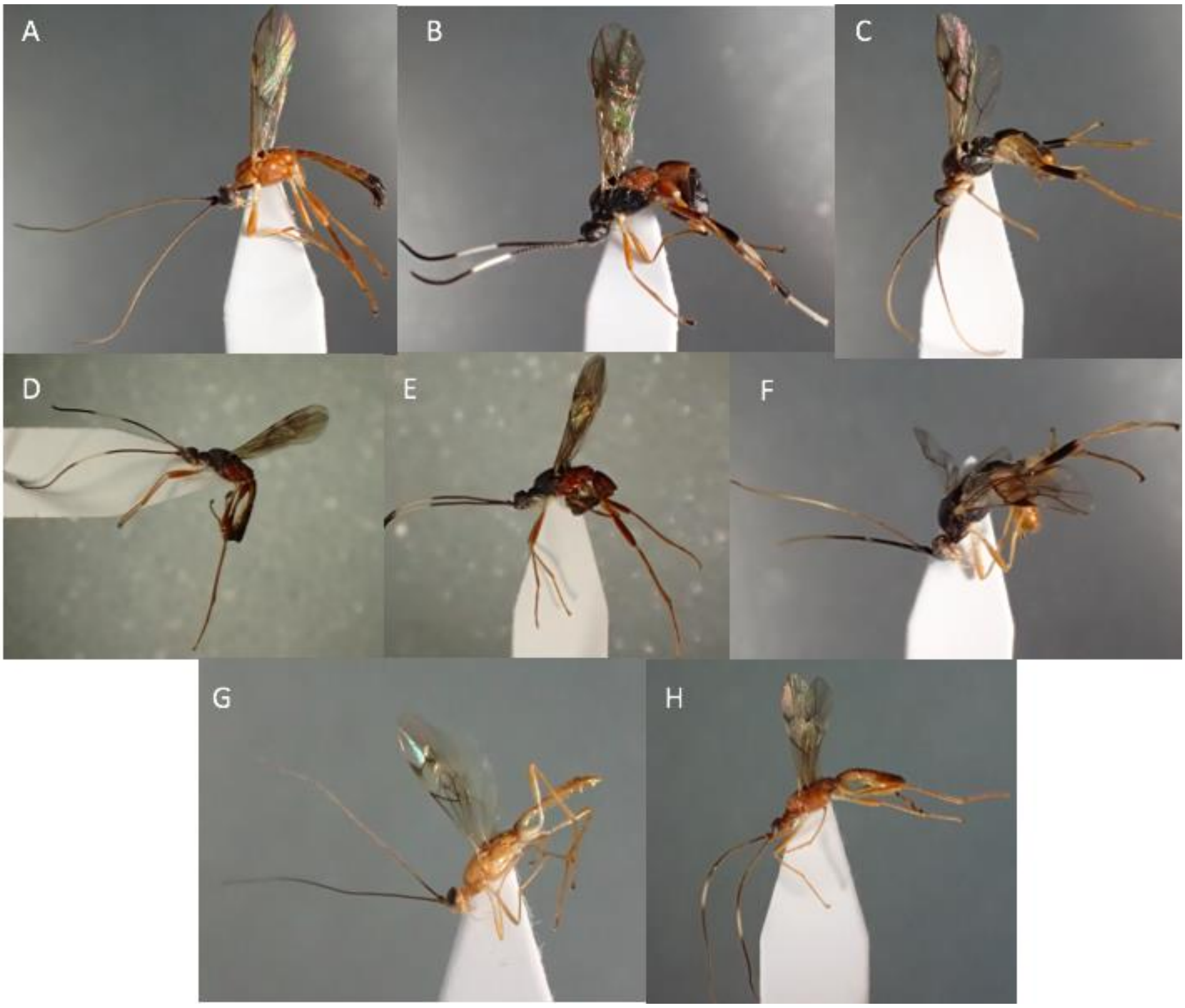

Figure 90 Photographs of the unidentified *Aleiodes*

A, unidentified sp.13; B, unidentified sp.14; C, unidentified sp.15; D, unidentified sp.16; E, unidentified sp.17; F, unidentified sp.18; G, unidentified sp.19; H, unidentified sp.20 (not to scale)

Three morphospecies of *Heterogamus* (30 specimens) were collected in this study, unidentified *Heterogamus* species 1- 3 which are shown in Figure 91.

The genus *Heterogamus* Wesmeal, 1838 is a small genus of Rogadinae, their external morphology is fairly similar to those of *Aleiodes* except for these following characteristics: hind trochantellus of female moderately elongate in *Heterogamus* while hind trochantellus of female *Aleiodes* usually moderately robust and second submarginal cell of fore wing about as long as high or distinctly shorter in *Heterogamus* but often longer than high in *Aleiodes* (Figure 92) (van Achterberg and Shaw, 2016).

Figure 91 Photographs of the *Heterogamus*
A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3 (not to scale)

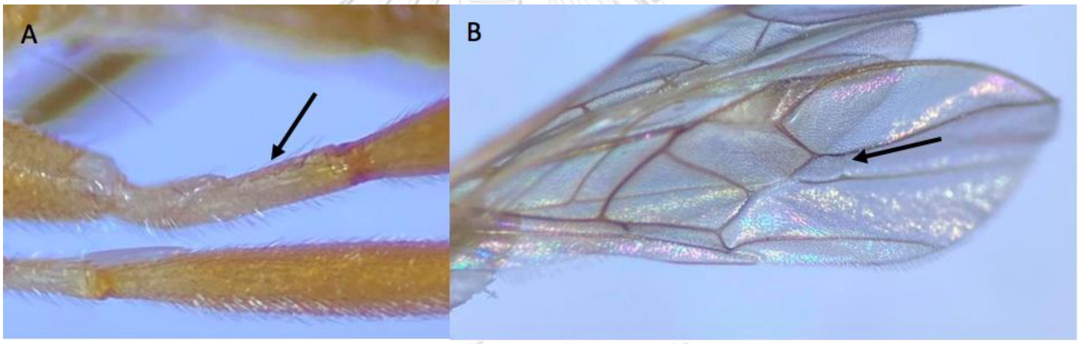

Figure 92 Light microscope photographs of *Heterogamus*
A, leg (arrow shows elongate hind trochantellus) and B, fore wing (arrow shows second submarginal cell)

Only one morphospecies of *Iporhogas* (1 specimen) was collected in this study, unidentified *Iporhogas* species was shown in Figure 93.

The genus *Iporhogas* Granger, 1949 is a small genus of the rogadine braconids, so far there are eleven species worldwide, all of them occurred in the Oriental region (Chen et al., 1997; Long, 2014) and one in the Afrotropical region (Granger, 1949). They can be characterised by apical segment of antenna with spine, occipital carina complete and concave, inner of the compound eyes emarginated. First metasomal tergite with large dorsope, fourth-fifth tergites with sharp lateral crease (Long, 2014).

Figure 93 Photograph of the *Iporhogas* sp.1
(not to scale)

Gyroneuron glabrum Long, 2018 (1 specimen) was collected in this study, this species can be recognised by second submarginal cell of fore wing distinctly narrowed apically, subbasal cell of fore wing glabrous apically. Second and third segments of maxillary palp normal. Pale yellow body-coloured, flagellum brown, stemmaticum black. *G. glabrum* was shown in Figure 94.

The genus *Gyroneuron* Kokujev, 1901 is a small genus of Rogadinae, this genus comprises five species from the Oriental region (Yu et al., 2005; Long et al., 2018). *Gyroneuron* can be recognised by these characteristics: fore wing with cu-a curved, vein M+CU apically, 1-CU1 and cu-a strongly swollen. Subbasal cell of fore wing strongly widened apically. Hind wing vein M+CU longer than vein 1+M (Figure 95).

Figure 94 Photograph of the *Gyroneuron glabrum*
(not to scale)

Figure 95 Light microscope photograph of *Gyroneuron* fore wing
(arrow shows swollen subbasal cell apically)

Two morphospecies of *Clinocentrus* (3 specimens) were collected in this study, unidentified *Clinocentrus* species 1-2 which are shown in Figure 96.

The genus *Clinocentrus* Haliday, 1833 belongs to the tribe Clinocentrini (van Achterberg, 1991). They are cosmopolitan occurring mainly in the Holarctic and Oriental regions. Members of the genus are known to be solitary endoparasitoids of larvae of Tortricidae, Pyralidae and Oecophoridae. *Clinocentrus* can be recognised by antennae with 24-40 segmented, maxillary palp medium-sized and 6-segmented, propodeum with medium- sized areola. Marginal cell of fore wing long, reaching apex of wing, second submarginal cell of fore wing medium-sized. Second metasomal suture slightly to deeply impressed (Chen and He, 1997).

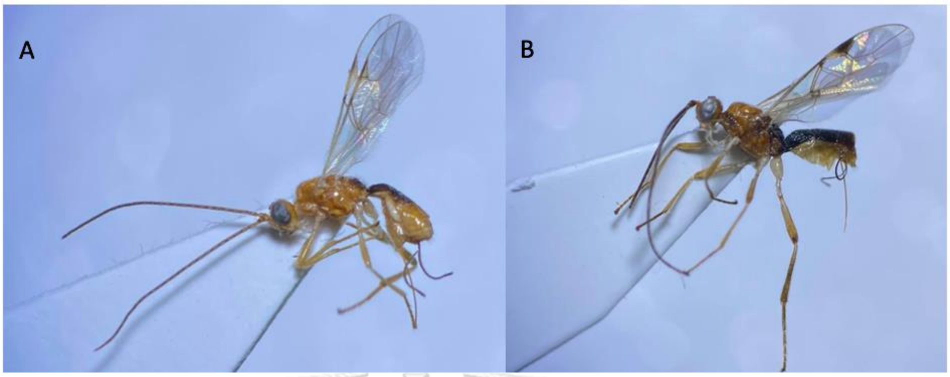

Figure 96 Photographs of the *Clinocentrus*

A, unidentified sp.1; B, unidentified sp.2 (not to scale)

21. Subfamily Rhysipolinae

Rhysipolinae Belokobylskij, 1984 (van Achterberg, 1995)

Distribution: cosmopolitan

Life history: koinobiont ectoparasitoids

Host: Lepidoptera

Diagnosis: Cyclostome mouthparts, emarginated clypeus and concave labrum, an occipital carina present (ending ventrally) (Figure 97A). First metasomal tergite without mid-longitudinal carina and not coarsely sculptured (Figure 97B). Anterior surface of protibial without spines or pegs (van Achterberg, 1995).

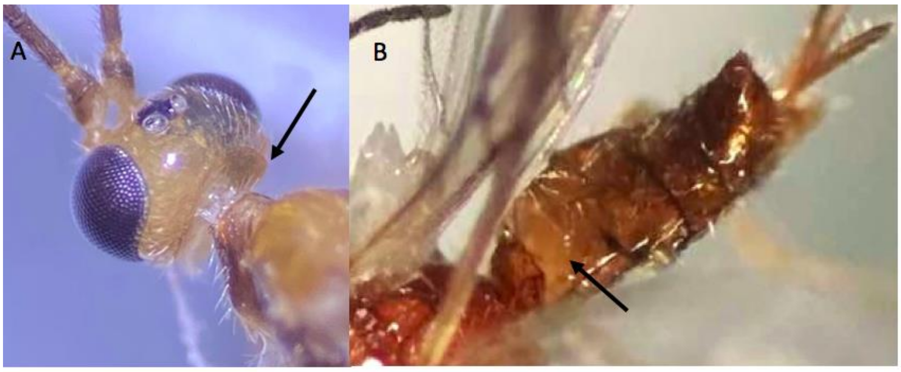

Figure 97 Light microscope photographs of Rhysipolinae

A, head (arrow shows occipital carina ending ventrally) and B, metasoma (arrow shows 1st metasomal tergite not coarsely sculptured)

One morphospecies of Rhysipolinae (1 specimen) was collected in this study, unidentified Rhysipolinae species was shown in Figure 98.

The Rhysipolinae is known to be solitary koinobiont ectoparasitoids of concealed Lepidoptera, larvae develop externally while the host continues to develop (Shaw and Huddleston, 1991). This subfamily is poorly studied and known both taxonomically and biologically at generic and species level, because most of the members are rare and small (Spencer and Whitfield, 1999).

Figure 98 Photograph of the Rhysipolinae unidentified sp.1

(not to scale)

Three morphospecies of *Rhysipolis* (6 specimens) were collected in this study, unidentified *Rhysipolis* species 1-3 are shown in Figure 99.

The genus *Rhysipolis* Förster, 1862 consists of 20 described species (Yu et al., 2012), with an unusual biology (ectoparasitic koinobiosis). The recorded hosts of *Rhysipolis* species mainly belong to the lepidopteran families Gelechiidae and Gracillariidae, which are leaf-miners and shelter-builders (Townsend and Shaw, 2009). *Rhysipolis* can be recognised by antennae 27-42 segmented, head usually wider than thorax, ocelli in equilateral triangle. Occipital carina usually lined with short, lash-like hairs directed anteriorly. Fore wing, vein r arising from middle of stigma, r-m usually unpigmented, m-cu dividing RS+Ma and RS+Mb (Spencer and Whitfield, 1999).

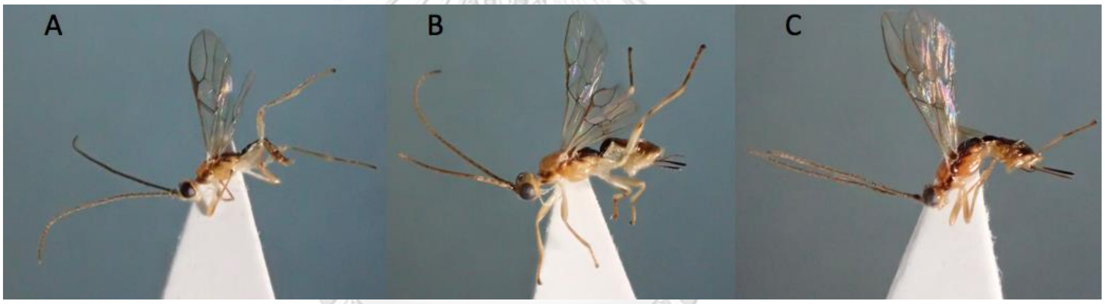

Figure 99 Photographs of the *Rhysipolis*

A, unidentified sp.1; B, unidentified sp.2; C, unidentified sp.3 (not to scale)

4.2 New species discovered from the study

In this study, a large proportion of braconid specimens collected probably represent new species to science, however to assure the accuracy of morphological identification is difficult, especially for Braconidae taxa that have not recently been revised for the region. Several specimens have been put species names and one new species of *Trigastrotheca* has been described (Raweearamwong et al., 2020), a braconine genus that was recently revised for the tropical old world (excluding Africa) by Quicke et al., 2017b.

Trigastrotheca doiphukhaensis Raweearamwong, Quicke & Butcher, 2020 was discovered and described as a new species from this study. *Trigastrotheca* Cameron is a small genus known mainly from Africa but also known from Australia (Quicke and Ingram, 1993) and Indo-Australian region (Enderlein, 1920; Quicke et al., 2017b). The unique morphological characteristics of *Trigastrotheca* are the modified posterior margin of 5th metasomal tergite with strong submedial posterior emarginations and a pair of sublateral points in the female (Quicke, 1987). Absence of these modifications led van Achterberg & Sigwalt, 1987 to erect a new genus, *Kenema*, for the males, but the existence of numerous series comprising conspecific males and females, supported by DNA barcoding, has shown this to be simply a sexually dimorphic character (van Achterberg and Sigwalt, 1987). *T. doiphukhaensis* n. sp. appears closest to *T. tridentata* from India and Indonesia using the key to South East Asian species by Quicke et al., 2017b.

The holotype is female, Thailand, Nan province, Doi Phu Kha NP, 19° 12.164’ N, 101° 04.473’ E, 19.vi.2019, M.V. light trap, col. M. Raweearamwong (CUMZ).

Description. Holotype female. Length of body 3.9 mm, of fore wing 3.8 mm, of ovipositor (part exserted beyond apex of metasoma) 1.5 mm (figure 100).

Head. Antenna broken, at least 35 flagellomeres. First flagellomere 1.3 × longer than 2nd and 3rd. Width of head: width of face: height of eye = 2.6: 1.4: 1.0. Shortest distance between posterior ocelli: transverse diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 1.5: 1.0: 3.0. Face and clypleus coriaceous with sparse setosity. Internal margin of eyes slightly emarginated. Face with weak mid-longitudinal ridge diverged from between antennal sockets and anterior tentorial pit. Malar suture weak. Occipital carina completely absent.

Mesosoma. Mesosoma 1.6 × longer than high, coriaceous, largely densely short setose. Notauli not impressed (but indicated by yellow lines. Scutellar sulcus shallow, narrow, finely crenulate. Median area of metanotum with weak complete mid-longitudinal ridge. Propodeum reticulate with long setae; midlongitudinal carina complete.

Wings. Fore wing. Lengths of fore wing veins r-rs: 3RSa: 3RSb = 1.0: 1.4: 4.8. Lengths of vein 2RS: 3RSa: rs-m = 1.2: 1.3: 1.0. Base of hind wing area vein cu-a hairless.

Legs. Lengths of fore femur: fore tibia: fore tarsus = 1.3: 1.0: 1.2. Lengths of hind femur: hind tibia: hind tarsus = 1.0: 1.1: 1.2. Claws with small acutely pointed basal lobe.

Metasoma. Lengths of first tergite 3.3 × shorter than its width (13: 43). Second tergite 1.1 x as long as third tergites (28: 26). First metasomal tergite coriaceous. Metasomal tergites 1-5 with coarse reticulate sculpture Second suture and basal grooves of tergites 4 and 5 deep, strigose. Lateral margin of 5th tergite largely straight posteriorly, curved and denticulate anteriorly. Ovipositor sheaths approximately 0.9 × length hind femur (including trochantellus).

Colour. Antenna black. Head ochraceous yellow except for large piceous mark around stemmaticum and small spot on lateral face of antennal sockets. Mesosoma largely dark brown to black except pronotum, propleuron, lines of notauli narrowly, axillae, anterodorsal corner of mesopleuron, and narrow triangle area around precoxal sulcus ochreous yellow. Metasoma bicoloured: tergites largely black medially with white laterally, 1^{st} tergite white anteriorly, 5^{th} tergite white posteriorly. Wings hyaline with dark brown venation; pterostigma brown or black. Fore legs ochreous yellow, middle legs yellowish ivory except for posterior part of femur, tibia and tarsus brown or black. Hind legs entirely black.

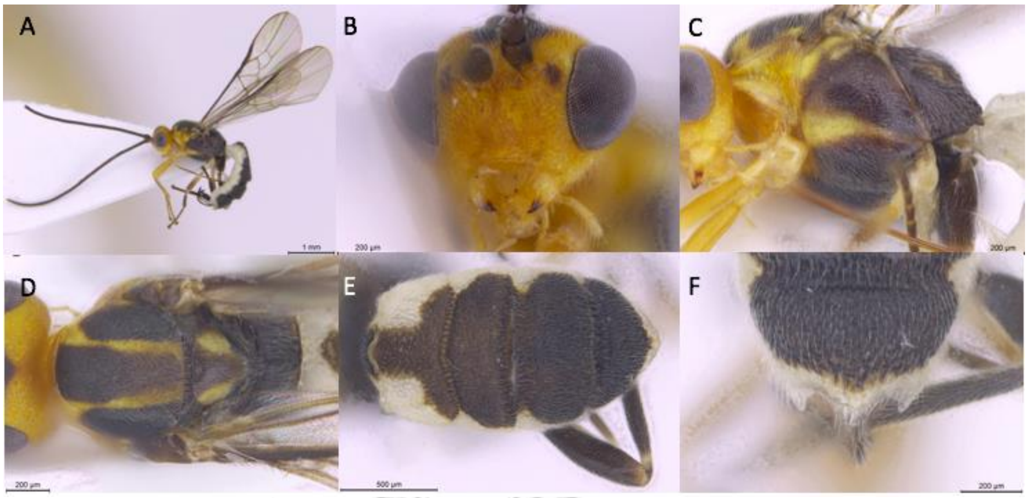

Figure 100 Light microscope photographs of *Trigastrotheca doiphukhaensis* sp. n.
A, habitus; B, face; C, lateral view of mesosoma; D, dorsal view of mesosoma; E, dorsal view of metasoma and F, fifth metasomal tergite (Raweearamwong et al., 2020)

4.3 Described species newly recorded in Thailand

In this study, one specimen of *Gyroneuron glabrum* was discovered from Doi Phu Kha National Park for the first time in Thailand.

Gyroneuron Kokujev, 1901 is a small genus of Rogadinae with extreme modification of the fore wing cell, subbasal cell massively expanded and ovoid distally and more than twice the height of the subdiscal cell (Butcher and Quicke, 2015). *G. glabrum* Long was described as a new species from Vietnam in 2018, it is easily recognised by its colouration: pale yellow, scapus brownish yellow, flagellum brown, stemmaticum black, mesoscutum pale yellow with anterior margin blackish brown, propodeum and metasoma pale yellow, legs and wing veins yellow (Long et al., 2018).

4.4 Database of nocturnal braconids from the study

Database of nocturnal braconids collected from Doi Phu Kha National Park was created, voucher numbers, subfamily name, species name, localities, collecting method, collector and date are included (Appendix).

4.5 DNA barcoding

In the absence of identification key, some preliminary identification can now be made using DNA barcoding (Hebert et al., 2003). This is an iterative process being led by Paul D.N. Hebert (University of Guelph, Canada). A large number of specimens of parasitoid wasps (though not so many from S.E. Asia as yet) have been sequenced for the barcoding region of the mitochondrial (Barcode of Life Data System, 2020). Slowly, group experts are able to examine these and assign them to genus, or occasionally species. As shown by Purvis & Quicke, 1997 the larger the reference DNA dataset, the more closely the recovered tree approximates the true phylogeny (Purvis and Quicke, 1997). Thus, we are now at the stage where many unidentified samples can be analysed together with all others in the BOLD database, and the results show various degrees of putative identification accuracy. If the barcode is matched to a BIN then it can be assumed that the species has been sequenced several times previously and it can be assigned genus name confidently but rarely species in the Braconidae case.

Tentative identification of parasitoids using DNA barcoding from Genbank and BOLD database

A total of 179 specimens of braconids wasps were sent for DNA barcoding analyses, 153 (85%) specimens could be amplified for COI. DNA barcoding revealed the diversity of parasitoids each subfamily. Morphological identification of Braconidae can be difficult for an amateur or even professional one due to high diversity of their external morphological characters and lack of dichotomous keys. Tentative identifications based on barcode were obtained by using CCDB alignment tool and BLAST on the GenBank database. The aligned sequences were analysed and tree construction was shown in Figure 101.

DNA barcoding reveals interesting results in some subfamilies of the Braconidae. First, many of the specimens are quite similar or undifferentiated from one another and identified to the same morphospecies. However, the results from DNA barcoding indicated that they are not the same species nor have the exact similarity of DNA sequence, such as a specimen of *Aleiodes,* unidentified *Aleiodes* sp.14 and *Aleiodes georgiae*. While, some specimens seem to be different species or identified into different morphospecies, but appeared to be the same species or have the exact similarity of DNA sequences, such as specimens of the Hormiinae, unidentified sp.1 and unidentified sp. 3. Obviously, DNA barcoding can be used to solve the taxonomic problems or doubts such as misidentification (especially, at the generic and species level).

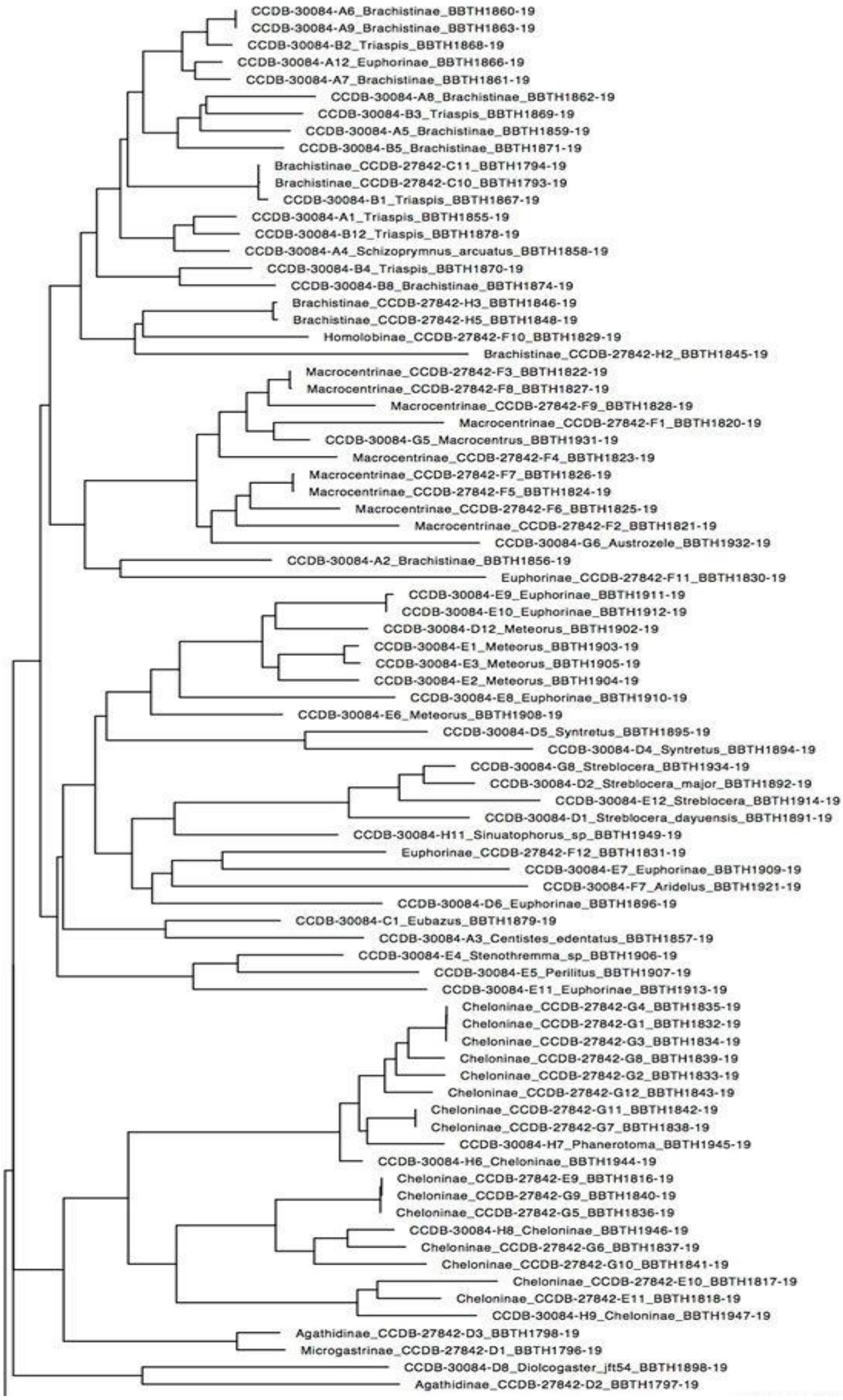

Figure 101 Tree construction from the Braconidae aligned sequences

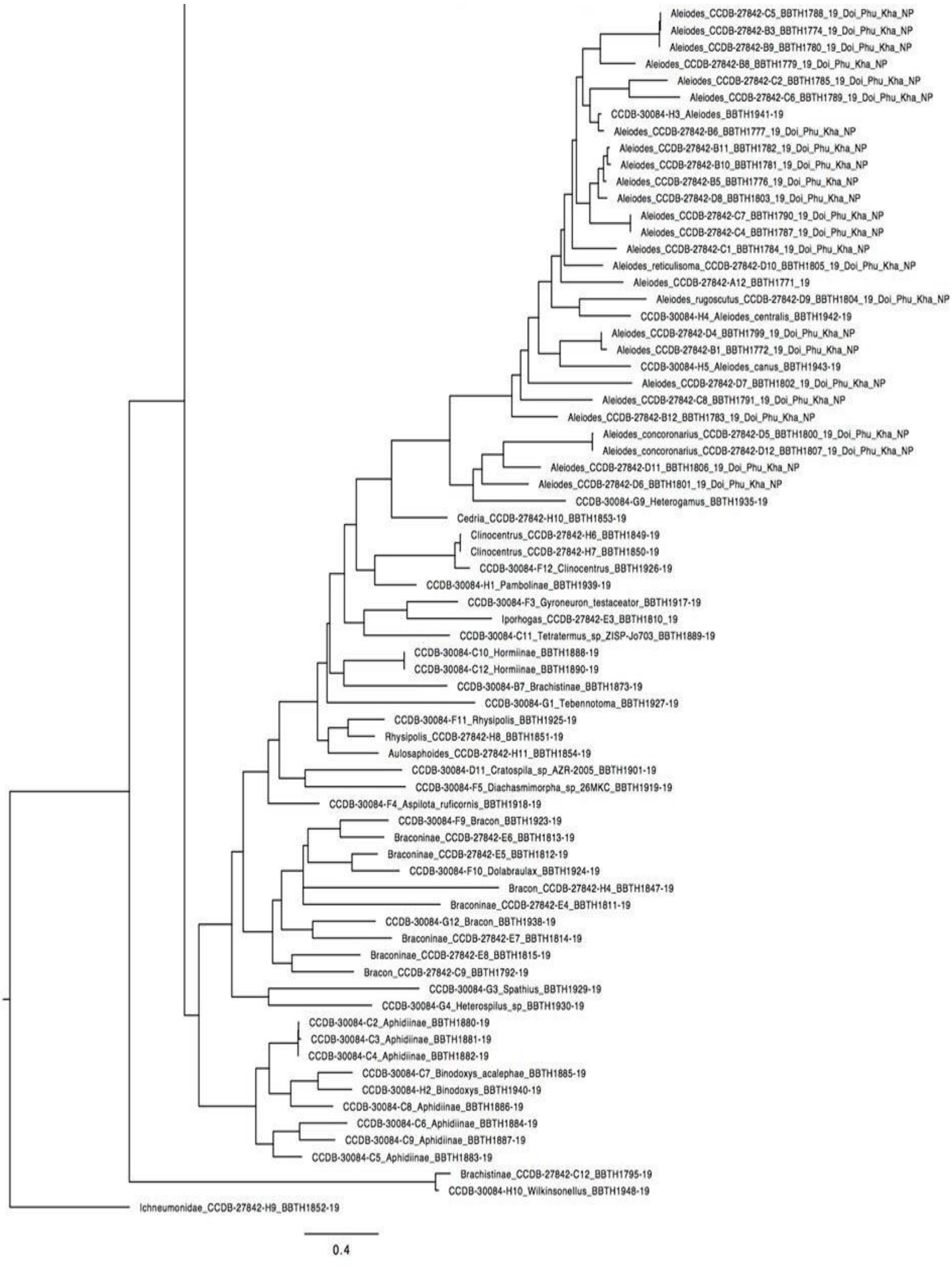

Figure 101 Tree construction from the Braconidae aligned sequences (continue)

Aphidiinae

From the result, three specimens of unidentified sp.3 of aphidiine (BBTH1880_19, BBTH1881_19 and BBTH1882_19) were identified to the same morphospecies by showing the exact morphological characteristics (Figure 102) and DNA barcoding showed result in the same way as morphological identification (Figure 101, green border). In contrast, two specimens of unidentified sp.2 (BBTH1885_19 and BBTH1884_19) of aphidinine were identified as the same morphospecies by showing the exact morphological characteristics (Figure 104) but DNA barcoding showed they were not the same species (Figure 103, red border).

Figure 102 unidentified Aphidiinae sp. 3

A, unidentified sp.3 (BBTH1880_19); B, unidentified sp.3 (BBTH1881_19) and C, unidentified sp.3 (BBTH1882_19) (not to scale)

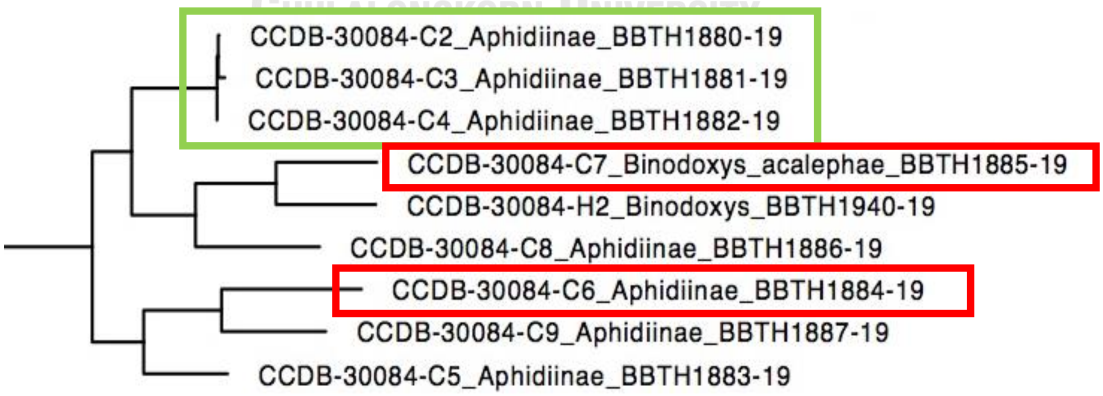

Figure 103 Partial tree from the Aphidiinae aligned sequences

(green border shows the specimens which DNA barcode results agreed with morphological identification, red border shows the specimens which DNA barcode results indicate that they are different species)

Figure 104 Two unidentified Aphidiinae

A, specimen 1 (BBTH1885_19) and B, specimen 2 (BBTH1884_19) (not to scale)

Hormiinae

From the result, unidentified sp.1 (BBTH1888-19) and unidentified sp.3 (BBTH1890-19) of the Hormiinae were identified into the different morphospecies (Figure 105), however, DNA barcoding showed that they were the same species (Figure 106).

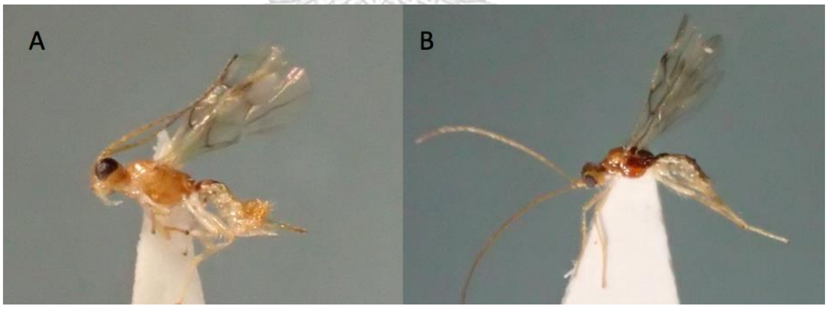

Figure 105 Two unidentified Hormiinae

A, unidentified sp.1 (BBTH1888-19) and B, unidentified sp.3 (BBTH1890-19) (not to scale)

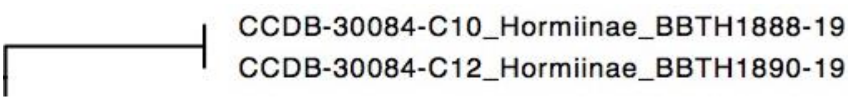

Figure 106 Partial tree from the Hormiinae aligned sequences

(the two specimens which DNA barcode results agreed with morphological identification)

Rhysipolinae

Two specimens of unidentified *Rhysipolis* sp.3 (BBTH1925-19 and BBTH1851-19) were identified as the same morphospecies (Figure 107) but DNA barcoding showed they were different species (Figure 108).

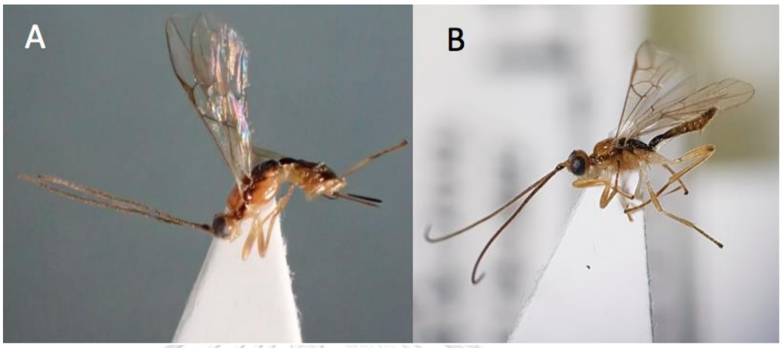

Figure 107 unidentified *Rhysipolis* sp.3

A, specimen 1 (BBTH1925-19) and B, specimen 2 (BBTH1851-19) (not to scale)

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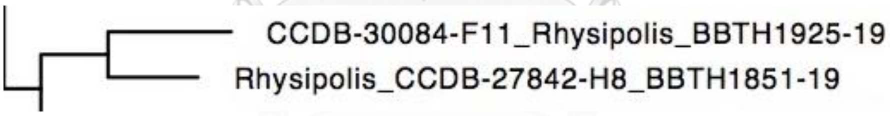

Figure 108 Partial tree from the Rhysipolinae aligned sequences

(the two specimens which DNA barcode results indicate that they are different species)

Rogadinae

Morphological Identification of *Aleiodes* species is difficult and challenging especially tropical species because many species are probably complexes of cryptic species, no morphological or coloration differences (Butcher et al., 2012). In 2012, Butcher and co-workers described one hundred and seventy-nine new species of *Aleiodes*, of these one hundred and fifty-five with DNA barcode sequences.

In this study, *Aleiodes* is a common genus and is a majority group of the collected Rogadinae (~86.5% of all rogadines specimens). Four species of *Aleiodes* were collected, *A. concoronarius, A. reticulisoma, A. sophieae* and *A. sprurivena*, all of them and others unidentified *Aleiodes* species except for *A. sprurivena* were DNA barcoded successfully. Then, aligned sequences were analysed with previous aligned sequence of Thai *Aleiodes* from TIGER project, to compare and confirm the species identification.

A. concoronarius (BBTH1880_19 and BBTH1807_19) was collected in this study and was described as a new species in 2012 (Butcher et al., 2012), it is a common species that can be found at DPKNP (Figure 109). DNA barcoding result agreed with the morphological identification (Figure 110, green border). Note that one species among the BOLD data had previously been misidentified as the closely related but distinct *A. coronopus.*

Figure 109 Photograph of the *Aleiodes concoronarius*
(not to scale)

Figure 110 Partial tree from the Thai *Aleiodes* aligned sequences
(green border shows the previous Thai *Aleiodes*'s specimens, red letters show the DPKNP's specimens which they are both morphological identified to the same species, *A. concoronarius*)

A single specimen each of *A. reticulisoma* (BBTH1805_19) (Figure 111A), *A. sophieae* (BBTH1801_19) (Figure 111B) and *A. rugoscutus* (BBTH1804) (Figure 111C) were collected from this study. DNA barcoding result agreed with the morphological identification (Figure 112, green border).

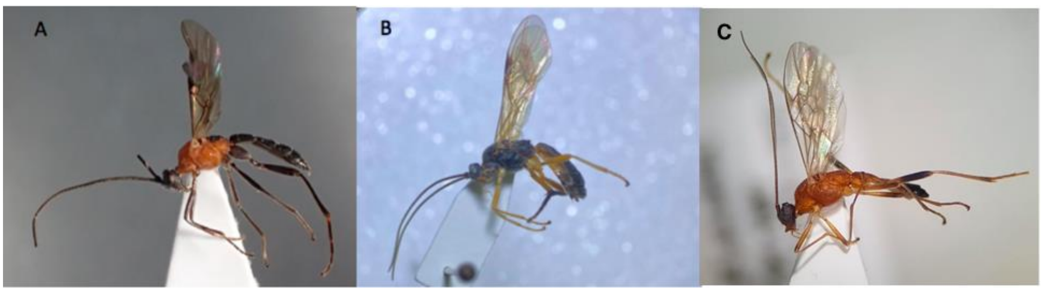

Figure 111 Photographs of the *Aleiodes*
A, *A. reticulisoma*; B, *A. sophieae*; C, *A. rugoscutus* (not to scale)

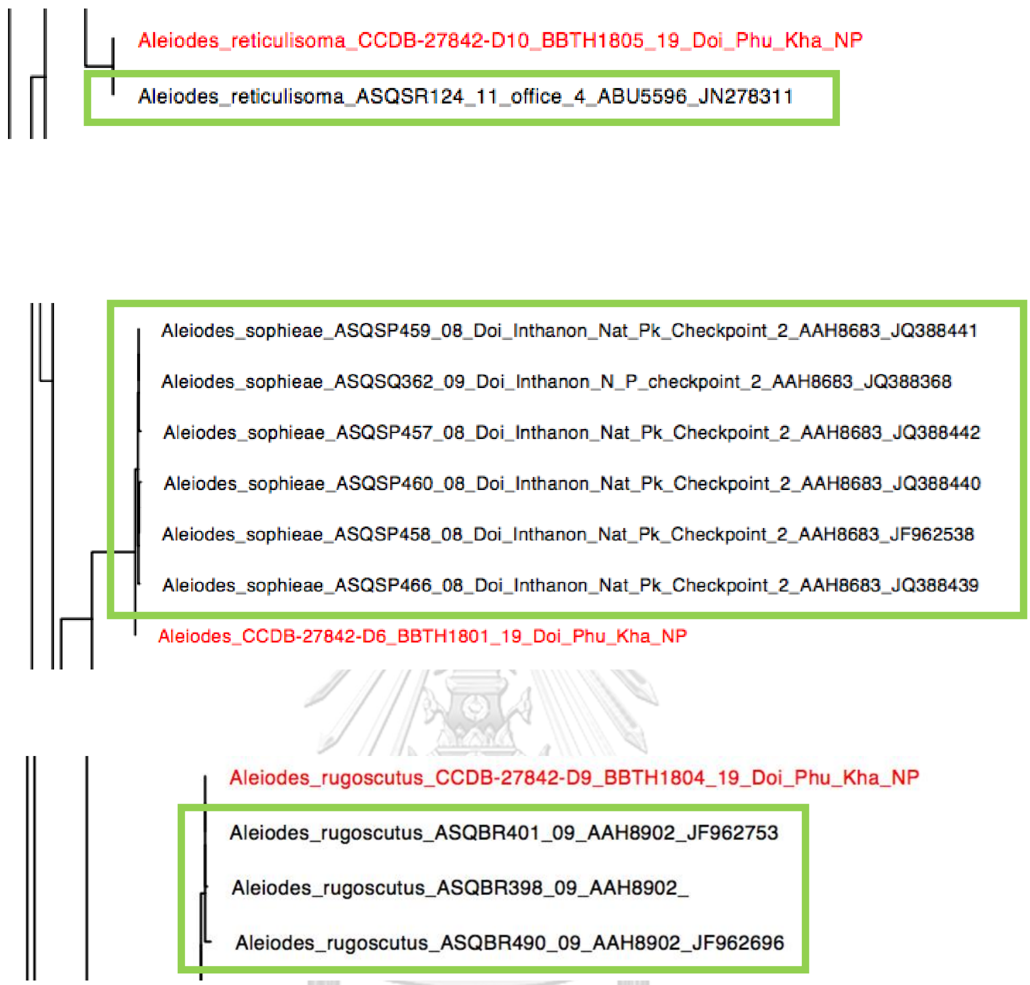

Figure 112 Partial tree from the Thai *Aleiodes* aligned sequences

(green border shows the previous Thai Aleiodes's specimens, red letters show the DPKNP's specimens which they are both morphological identified to the same species, *A. reticulisoma*, *A. sophieae* and *A. rugoscutus* respectively)

A specimen of *Aleiodes* (BBTH1806_19) (unknown sp.14) (Figure 113A) was identified to *A. georgiae* (Figure 113B) using Thai *Aleiodes* key (Butcher et al., 2012). However, DNA result showed they were different species though their morphological characters appeared to be nearly similar (Figure 114, red border), and can be concluded that DPKNP's specimen should be cryptic species of *A. georgiae*.

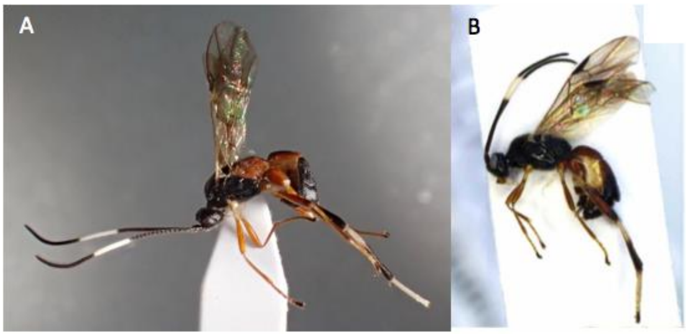

Figure 113 Photographs of the *Aleiodes*

A, unknown *Aleiodes* sp.14; B, *A. georgiae* (Butcher et al., 2012) (not to scale)

Figure 114 Partial tree from the Thai *Aleiodes* aligned sequences

(green border shows the previous Thai Aleiodes's specimens, red letters show the DPKNP's specimens which they are both morphological identified to the different species)

In conclusion, a total of 846 specimens can be classified into 21 subfamilies, 29 genera, 177 morphospecies by morphological identification. Nine specimens were put the species name on, included the new species (*Trigastrotheca doiphukhaensis* Raweearamwong, Quicke & Butcher, 2020, *Streblocera olivera* Quicke & Purvis, 2001, *Aleiodes concoronarius* Quicke & Butcher, 2012, *Aleiodes reticulisoma* Quicke & Butcher, 2012*, Aleiodes sophieae* Quicke & Butcher, 2012*, Aleiodes sprurivena* Quicke & Butcher, 2011*, Aleiodes rugoscutus* Quicke & Butcher, 2012*,* near *Aleiodes seriatus*

(Herrich-Schäffer, 1838), *Gyroneuron glabrum* Long, 2018). One hundred and sixty-seven unidentified species were collected in this study.

When compare the results of described species in this study with the previous described species of braconid wasps recorded from DPKNP, it shows that two species of *Aleiodes, A. concoronarius* and *A. reticulisoma* (~ 1% of all morphospecies, 2 species from 177) were re-sampled. Six species, *S. olivera, A. sophieae, A. sprurivena, A. rugoscutus,* near *A. seriatus* and *G. glabrum* (~3% of all morphospecies, 6 from 177) were described species which newly recorded in DPKNP. One species of Braconinae, *Trigastrotheca doiphukhaensis* was discovered as a new species collected from DPKNP. Therefore, approximately 95% of all collected morphospecies (167 from 177) could either be described species which newly recorded in DPKNP or new species in Thailand.

CHAPTER V
DISCUSSION

5.1 Parasitoid life history

Parasitoid attack strategies can be divided into two main catagories, koinobiont and idiobiont which can be recognised by whether the parasitoids allow their hosts to continue to develop after parasitisation or whether further development is prevented, respectively (Quicke, 2015). From the field experiment, 21 subfamilies of Braconidae were separated by their strategies, there are 15 koinobiont subfamilies (Agathidinae, Alysiinae, Aphidiinae, Cheloninae, Euphorinae, Homolobinae, Ichneutinae, Macrocentrinae, Meteorideinae, Microgastrinae, Opiinae, Orgilinae, Rogadinae, Rhysipolinae) and 6 idiobiont subfamilies (Braconinae, Brachistinae, Doryctinae, Hormiinae, Lysiterminae, Pambolinae).

Most koinobiont parasitoids are also endoparasitoids, parasitoid larvae live and feed within the host's body cavity. In contrast, idiobiont parasitoids are usually ectoparasitoids and their larvae feed from the outside surface of their host's body. Although, koinobionts are more host specific (utilised fewer host families) than idiobionts and parasitoid attack strategy influenced specialisation in parasitoid-host interactions within certain host communities. However, parasitoid attack strategy may direct the evolution of host specificity throughout the evolutionary history of parasitoid lineages (Althoff, 2003). In addition, Askew and Shaw, 1986 also predicted that koinobionts should have a narrower host range than idiobionts because of selection to circumvent functioning host defense.

In this study, the number of koinobiont subfamilies were collected more than twice (15 from 21 subfamilies) of number of idiobionts subfamilies (Figure 113). The possible reason would be, most idiobionts are ectoparasitoids, and they normally attack concealed hosts in this situation, the host will be permanently paralysed and parasitoid larvae can feed on externally without any risk of being predated by predators and able to be removed by host's mandible or movement (Glover, 1939). Obviously, it would be too risky a strategy with exposed hosts, and would become more easily to see by predators. And paralysing host when it is exposed to environment would be the worst. For example, Doryctinae is idiobiont ectoparasitoids that suspected to attack deeply concealed hosts such as wood-borers (Gauld and Bolton, 1988) or idiobiont braconines that attack weakly or deeply concealed larval hosts, mostly gall-forming host (Ranjith et al., 2016). Likewise, there were studies of braconids wasps using light trapping by Charoennitiwat, 2015 at Samaesan Island, Chonburi province and Raweearamwong, 2016 at Kaeng Khoi district, Saraburi province, showed that the number of koinobiont parasitoids were collected more than idiobionts in the same way as the result in this study. As discussed above, exposed hosts are obviously unsuitable for idiobiont parasitoids.

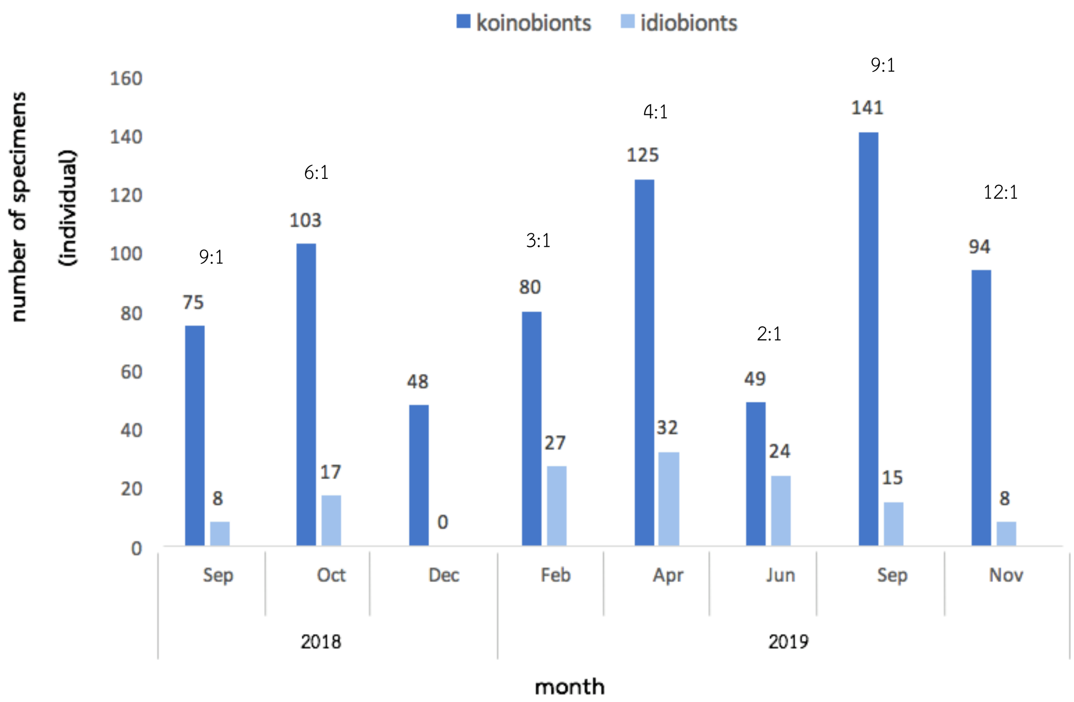

Figure 115 comparison of koinobiont and idiobiont parasitoids collected each month started from Sep 2018- Nov 2019 at DPKNP

5.2 Common braconids subfamilies collected from the light trap

Most species of Rogadinae are nocturnal, usually brownish or yellow in colouration with large eyes and ocelli and long antennae, these characters called ophionoid facies, which is the anatomical adaptations associated with nocturnal behaviour (Gauld and Huddleston, 1976). Light trapping is normally used effectively for collecting the major groups of nocturnal braconids and frequently attract parasitoids that having an ophionoid facies and yellowish, especially the Rogadinae, Cheloninae and some Euphorinae. In addition, all nocturnally active rogadines are koinobiont parasitoids of caterpillars (Quicke, 2015), and ones that hide away during the day because of the strategy to minimise the chance of being predated by birds or others diurnal predators. It is reflection from their host's life history. Consequently, to successfully find the host, it is essential to be night-active or nocturnal.

The results of this study showed that the Rogadinae is one of the most captured subfamily. While, others studies which also used light trapping for collecting parasitoids, Charoennitiwat, 2015 at Samaesan Island, Chonburi province and Raweearamwong, 2016 at Kaeng Khoi district, Saraburi province, showed that the highest number of individuals collected was in the Cheloninae which is also nocturnal parasitoids.

However, it is not all nocturnal braconids display the ophionoid facies such as many subfamilies of braconids, Euphorinae, Microgastrinae and Rhysipolinae which are regularly collected by the light trap even they are small and dark (Lozan, 2002). Some parasitoids can be found or captured from a light trap and it does not mean that they are actually nocturnal. There are various adventitious species just come to a light trap because they possibly being rest at night within the area of the trap then disturbed and flying towards the light. Another possible reason would be an advantage for being nocturnal especially in the hot tropical regions, such as avoiding unnecessary heating or evaporation which is not related to the host accessibility (Quicke, 2015).

5.3 Unusual subfamilies collected from the light trap

Twenty-one subfamilies were found so far from a year of insect collecting, minorities are idiobiont parasitoids in the subfamily Braconinae, Brachistinae, Doryctinae, Hormiinae, Lysiterminae and Pambolinae. They are mostly diurnal, however as mentioned by Quicke, (2015) some of them can be found from the light trap though they are not active nocturnally due to coincidence or other benefits that is not related to host accessibility. However, many of diurnal parasitoids have been collected from light trap, about 15% of all collected specimens, and shows that it is not supposed to be only coincidence. Therefore, it can be questioned that is their behavior acting to be nocturnal in the tropics regions or are they truly diurnal. Therefore, this is still unclear and needs to be study in the further study.

Members of Brachistinae are egg-larval and possibly larval parasitoids of concealed beetles living in wood or seeds (Charlet and Seiler, 1994). Approximately ten percent of collected specimens (87 individuals from 846) were Brachistinae, and two percent of Braconinae was collected from all (18 individuals from 846). The others are Doryctinae, Hormiinae, Lysiterminae and Pambolinae (less than one percent of collected specimens).

5.4 New recorded braconid subfamily and genera in this study

The Charmontiinae is a newly recorded subfamily in Thailand. In this study, one morphospecies of the Charmontiinae (1 specimens) was collected from Doi Phu Kha NP. Its barcode suggests that it may represent a new genus.

The cheloninae is cosmopolitan and is a large subfamily of Braconidae. They are easily recognised by having a carapace-like metasoma (Shaw and Huddleston, 1991). Members of the Cheloninae are egg-larval endoparasitoids of Lepidoptera and can be found in any vegetated habitat where its host occurred (Kittel et al., 2015). At present, there are only four species of them formally recorded from Thailand *Phanerotomella varicolorata* Zettel, 1989; *Phanerotoma sylepta* Zettel, 1990; *Phanerotoma pellucida* Zettel, 1990 and *Chelonus scrobiculatus* Szepligeti, 1900 (Yu et al., 2012).

In this study, 16 morphospecies of the Cheloninae (60 specimens) were collected. Four genera were recorded from Doi Phu Kha NP, *Adeliini* Viereck, 1918; *Ascogaster* Wesmael, 1835; *Chelonus* Panzer, 1806 and *Phanerotoma* Wesmael, 1838. Therefore, Adeliini and *Ascogaster* are new record genera from Thailand. Apparently, many specimens of *Chelonus* and *Phanerotoma* must be either new records or new species from Thailand.

5.5 How effective are DNA barcodes in the identification of Thai braconids

In this study, some of braconids specimens (153 specimens) were amplified for DNA barcoding to verify or test the separated morphospecies. DNA barcoding revealed the diversity of parasitoids each family. For example, parasitoids in the Hormiinae were identified using morphological characters only and they seem to be the different species/morphospecies but appeared to have the exact similarity of DNA sequences. The possible reasons could be there is a morphological variation or sexual dimorphism in this species. Generally, male braconids tend to display features more weakly than females or body colouration of male is much paler than females. Another possible reason is body size dimorphism, males body size tends to be smaller than females so that it is often more difficult to identify male braconids than females. In addition, it may be related to their life history that idiobiont braconids tend to be smaller than conspecific females, because development time of idiobionts often shorter than koinobionts, they emerge from host slightly before their females (Quicke, 2015). While, some of the Aphidiinae and Rhysipolinae respectively, were identified as the same morphospecies by showing the similar or exact morphological characteristics but DNA result showed they were not the same species, the possible reason for this misidentification could be, there is cryptic species between individuals which often occurs in parasitoids in the tropical region (Quicke, 2015).

Taxonomic identification can be difficult for Thai or tropical braconids because their high-diversity, and often lead to misidentification when using morphological characters only (individuals from the same species can vary morphologically or closely related species can be morphologically very similar). DNA barcoding is a helpful tool for species or genus identification and discovering new species. However, identification to a species level can be hard to deal with especially for species-rich group. The success of species identification by using barcoding approach depends on the exhaustiveness of database on BOLD or Genbank, because missing species cannot be identified, thus sequences availability in the database is very crucial for DNA barcoding. So, for taxonomic studies of Thai braconids it is important to build up or construct the database as much as it can be.

CHAPTER VI
CONCLUSION AND RECOMMENDATION

A total of 846 specimens, 177 morphospecies within 21 subfamilies of the Braconidae were collected started from September 2018 to November 2019 at Doi Phu Kha NP, Nan province. These subfamilies are Agathidinae, Alysiinae, Aphidiinae, Brachistinae, Braconinae, Charmontiinae, Cheloninae, Doryctinae, Euphorinae, Homolobinae, Hormiinae, Ichneutinae, Lysiterminae, Macrocentrinae, Meteorideinae, Microgastrinae, Opiinae, Orgilinae, Pambolinae, Rhysipolinae and Rogadinae.

Overall, the highest number of collected specimens and morphospecies is in the subfamily Rogadinae, followed by the Euphorinae and Microgastrinae, respectively. Whilst, subfamily Homolobinae is the subfamily that showed the lowest number of specimens.

As the result, the number of koinobiont subfamilies were collected more than twice (15 from 21 subfamilies) of the idiobionts subfamilies. In addition, nocturnal parasitoids were collected more than diurnal parasitoids which is expected results. However, it is still unclear that why are some of diurnal parasitoids can be caught from light trap as well. And the answer is worth to investigated.

Nine specimens were put the species name on, included the new species (*Trigastrotheca doiphukhaensis*, 2020, *Streblocera olivera*; *Aleiodes concoronarius*; *Aleiodes reticulisoma*; *Aleiodes sophieae*; *Aleiodes sprurivena*; *Aleiodes rugoscutus*; near *Aleiodes seriatus*; *Gyroneuron glabrum*). One hundred and sixty-eight unidentified species were collected in this study. DNA results show that there are only 4 specimens can be reliably identified to species on BOLD database and there are still many numbers of undescribed species (nearly 150 specimens) could be new to science. Among those specimens, there are approximately ten specimens that morphological identification and DNA barcode results are not agreed. For example, some of them can be cryptic/sibling species such as unknown *Aleiodes* sp.14 (BBTH1806-19) and *Aleiodes georgiae* and some of them were identified into the same species but DNA results show that they are different species such as unidentified Aphidiinae (BBTH1885-19 and BBTH1884-19).

Trigastrotheca doiphukhaensis Raweearamwong, Quicke & Butcher, 2020 was described as a new species from this study. Etymology is named after type locality.

Recommendations

1. Insect samplings should be done both day and night time so that both diurnal and nocturnal parasitoids will be collected to construct databases as complete as possible. Importantly, the insect collection should be conducted every year or every other year, to gain up to date information. It can lead to much more research in the future such as understanding the relationship between parasitoids and hosts for assessing conservation natural resources management.

2. DNA barcoding method is a highly effective way for identifying parasitoids and minimizing or solving misidentification which could be found by traditional identification methods (external morphological identification). However, most importantly, updating the new obtained information or database of Braconidae in Thailand is fundamental for many further studies such as co-evolution between host-parasitoids, phylogenetic reconstruction and biological control programmes.

3. Some of diurnal parasitoids were collected from light trap, this evidence leads to the question “Why diurnal parasitoids can be found from light trap?” or “Are they truly diurnal in the tropic regions?” which is worth to investigated as a further study.

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APPENDIX

Appendix. Database of nocturnal parasitic wasps subfamily Braconidae in Doi Phu Kha National Park

VOUCHER	SUBFAMILIES	SPECIES	LOCALITIES	METHOD	COLLECTOR	DATE
CUMZ-IN-HYM Bra.2019.2097	Agathidinae	*Therophilus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2098	Agathidinae	*Therophilus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2099	Agathidinae	Unknown sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2100	Alysiinae	Unknown sp.1	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2101	Alysiinae	Unknown sp.1	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vii.2019
CUMZ-IN-HYM Bra.2019.2102	Alysiinae	Unknown sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2103	Alysiinae	Unknown sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2104	Alysiinae	Unknown sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2105	Alysiinae	Unknown sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2106	Alysiinae	Unknown sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2107	Alysiinae	Unknown sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2108	Alysiinae	Unknown sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2109	Alysiinae	Unknown sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2110	Alysiinae	Unknown sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2111	Alysiinae	Unknown sp.5	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2112	Alysiinae	Unknown sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2113	Alysiinae	Unknown sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2114	Alysiinae	Unknown sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2115	Alysiinae	Unknown sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2116	Alysiinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2117	Aphidiinae	*Binodoxys* sp1.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018

CUMZ-IN-HYM Bra.2019.2118	Aphidiinae	*Binodoxys* sp1.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2119	Aphidiinae	*Binodoxys* sp1.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2120	Aphidiinae	*Binodoxys* sp2.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2121	Aphidiinae	*Binodoxys* sp2.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2122	Aphidiinae	Unknown sp1.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2123	Aphidiinae	Unknown sp1.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2124	Aphidiinae	Unknown sp1.	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2125	Aphidiinae	Unknown sp1.	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2126	Aphidiinae	Unknown sp2.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2127	Aphidiinae	Unknown sp2.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2128	Aphidiinae	Unknown sp2.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2129	Aphidiinae	Unknown sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2130	Aphidiinae	Unknown sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2131	Aphidiinae	Unknown sp3.	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2132	Aphidiinae	Unknown sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2133	Aphidiinae	Unknown sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2134	Aphidiinae	Unknown sp3.	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2135	Aphidiinae	Unknown sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2136	Aphidiinae	Unknown sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2137	Aphidiinae	Unknown sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2138	Brachistinae	*Blacus* sp1.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2139	Brachistinae	*Blacus* sp2.	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2140	Braconinae	*Trigastrotheca doiphukhaensis*	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2141	Braconinae	*Bracon sp.1*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019

CUMZ-IN-HYM Bra.2019.2142	Braconinae	*Bracon* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2143	Braconinae	*Bracon* sp.2	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2144	Braconinae	*Bracon* sp.2	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2145	Braconinae	*Bracon* sp.3	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2146	Braconinae	*Bracon* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vii.2019
CUMZ-IN-HYM Bra.2019.2147	Braconinae	*Bracon* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vii.2019
CUMZ-IN-HYM Bra.2019.2148	Braconinae	*Bracon* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vii.2019
CUMZ-IN-HYM Bra.2019.2149	Braconinae	*Dolabralux sp.1*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2150	Braconinae	*Dolabralux sp.2*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2151	Braconinae	Unknown sp.1	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2152	Braconinae	Unknown sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2153	Braconinae	Unknown sp.3	19° 12' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2154	Braconinae	Unknown sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2155	Braconinae	Unknown sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2156	Braconinae	Unknown *sp.6*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2157	Braconinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2158	Brachistinae	*Triaspis* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2159	Brachistinae	*Triaspis* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2160	Brachistinae	*Triaspis* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2161	Brachistinae	*Triaspis* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2162	Brachistinae	*Triaspis* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2163	Brachistinae	*Triaspis* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2164	Brachistinae	*Triaspis* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vii.2019
CUMZ-IN-HYM Bra.2019.2165	Brachistinae	*Triaspis* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019

CUMZ-IN-HYM Bra.2019.2166	Brachistinae	*Triaspis* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2167	Brachistinae	*Triaspis* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2168	Brachistinae	*Triaspis* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vii.2019
CUMZ-IN-HYM Bra.2019.2169	Brachistinae	*Triaspis* sp.3	19° 12' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2170	Brachistinae	*Triaspis* sp.3	19° 12' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2171	Brachistinae	*Triaspis* sp.3	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2172	Brachistinae	*Triaspis* sp.3	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2173	Brachistinae	*Triaspis* sp.3	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2174	Brachistinae	*Triaspis* sp.3	19° 12' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2175	Brachistinae	*Triaspis* sp.4	19° 12' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2176	Brachistinae	*Triaspis* sp.4	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2177	Brachistinae	*Triaspis* sp.4	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2178	Brachistinae	*Triaspis* sp.5	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2179	Brachistinae	*Triaspis* sp.5	19° 12' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2180	Brachistinae	*Triaspis* sp.5	19° 12' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2181	Brachistinae	*Triaspis* sp.5	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2182	Brachistinae	*Triaspis* sp.5	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2183	Brachistinae	*Triaspis* sp.5	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2184	Brachistinae	*Triaspis* sp.5	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2185	Brachistinae	*Triaspis* sp.5	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2186	Brachistinae	*Triaspis* sp.5	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2187	Brachistinae	*Triaspis* sp.5	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2188	Brachistinae	*Triaspis* sp.6	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2189	Brachistinae	*Triaspis* sp.6	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019

CUMZ-IN-HYM Bra.2019.2190	Brachistinae	Unknown sp.1	19° 12' 831" N, 101° 04' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2191	Brachistinae	Unknown sp.1	19° 12' 831" N, 101° 04' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2192	Brachistinae	Unknown sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2193	Brachistinae	Unknown sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2194	Brachistinae	Unknown sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2195	Brachistinae	Unknown sp.4	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2196	Brachistinae	Unknown sp.4	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2197	Brachistinae	Unknown sp.4	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2198	Brachistinae	Unknown sp.4	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2199	Brachistinae	Unknown sp.4	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vii.2019
CUMZ-IN-HYM Bra.2019.2200	Brachistinae	Unknown sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vii.2019
CUMZ-IN-HYM Bra.2019.2201	Brachistinae	Unknown sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2202	Brachistinae	Unknown sp.4	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2203	Brachistinae	Unknown sp.4	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2204	Brachistinae	Unknown sp.4	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vii.2019
CUMZ-IN-HYM Bra.2019.2205	Brachistinae	Unknown sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vii.2019
CUMZ-IN-HYM Bra.2019.2206	Brachistinae	Unknown sp.5	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2207	Brachistinae	Unknown sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2208	Brachistinae	Unknown sp.5	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.ix.2019
CUMZ-IN-HYM Bra.2019.2209	Brachistinae	Unknown sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vii.2019
CUMZ-IN-HYM Bra.2019.2210	Brachistinae	Unknown sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vii.2019
CUMZ-IN-HYM Bra.2019.2211	Brachistinae	Unknown sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vii.2019
CUMZ-IN-HYM Bra.2019.2212	Brachistinae	Unknown sp.5	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2213	Brachistinae	Unknown sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vii.2019

CUMZ-IN-HYM Bra.2019.2214	Brachistinae	Unknown sp.5	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2215	Brachistinae	Unknown sp.5	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2216	Brachistinae	Unknown sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2217	Brachistinae	Unknown sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2218	Brachistinae	Unknown sp.6	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2219	Brachistinae	Unknown sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2220	Brachistinae	Unknown sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2221	Brachistinae	Unknown sp.6	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2222	Brachistinae	Unknown sp.6	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2223	Brachistinae	Unknown sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2224	Brachistinae	Unknown sp.7	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2225	Brachistinae	Unknown sp.7	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2226	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2227	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2228	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2229	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2230	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2231	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2232	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2233	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2234	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2235	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2236	Orgilinae	Unknown sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2237	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019

CUMZ-IN-HYM Bra.2019.2238	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2239	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2240	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2241	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2242	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2243	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2244	Brachistinae	Unknown sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2245	Cheloninae	*Adeliini* sp.	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2246	Cheloninae	*Ascogaster* sp.	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.vi.2019
CUMZ-IN-HYM Bra.2019.2247	Cheloninae	*Chelonus* sp1.	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vii.2019
CUMZ-IN-HYM Bra.2019.2248	Cheloninae	*Chelonus* sp1.	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.ix.2019
CUMZ-IN-HYM Bra.2019.2249	Cheloninae	*Chelonus* sp2.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2250	Cheloninae	*Chelonus* sp3	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vii.2019
CUMZ-IN-HYM Bra.2019.2251	Cheloninae	*Phanerotoma* sp1.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2252	Cheloninae	*Phanerotoma* sp2.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2253	Cheloninae	*Phanerotoma* sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2254	Cheloninae	*Phanerotoma* sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2255	Cheloninae	*Phanerotoma* sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2256	Cheloninae	*Phanerotoma* sp3.	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2257	Cheloninae	*Phanerotoma* sp4.	19° 12' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2258	Cheloninae	*Phanerotoma* sp4.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vii.2019
CUMZ-IN-HYM Bra.2019.2259	Cheloninae	*Phanerotoma* sp4.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2260	Cheloninae	*Phanerotoma* sp4.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.x.2018
CUMZ-IN-HYM Bra.2019.2261	Cheloninae	*Phanerotoma* sp4.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019

CUMZ-IN-HYM Bra.2019.2262	Cheloninae	*Phanerotoma* sp4.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2263	Cheloninae	*Phanerotoma* sp4.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2264	Cheloninae	*Phanerotoma* sp4.	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2265	Cheloninae	*Phanerotoma* sp4.	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2266	Cheloninae	*Phanerotoma* sp4.	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2267	Cheloninae	*Phanerotoma* sp4.	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2268	Cheloninae	*Phanerotoma* sp4.	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.ix.2019
CUMZ-IN-HYM Bra.2019.2269	Cheloninae	*Phanerotoma* sp4.	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2270	Cheloninae	*Phanerotoma* sp5.	19° 12' 831" N, 101° 04' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2271	Cheloninae	*Phanerotoma* sp5.	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2272	Cheloninae	*Phanerotoma* sp5.	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2273	Cheloninae	*Phanerotoma* sp5.	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2274	Cheloninae	*Phanerotoma* sp5.	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2275	Cheloninae	*Phanerotoma* sp5.	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2276	Cheloninae	*Phanerotoma* sp5.	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2277	Cheloninae	*Phanerotoma* sp5.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2278	Cheloninae	*Phanerotoma* sp5.	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2279	Cheloninae	*Phanerotoma* sp5.	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2280	Cheloninae	*Phanerotoma* sp5.	19° 12' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2281	Cheloninae	*Phanerotoma* sp5.	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2282	Cheloninae	*Phanerotoma* sp6.	19° 12' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2283	Cheloninae	*Phanerotoma* sp6.	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2284	Cheloninae	*Phanerotoma* sp7.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2285	Cheloninae	*Phanerotoma* sp7.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	6.xi.2019

CUMZ-IN-HYM Bra.2019.2286	Cheloninae	*Phanerotoma* sp7.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vii.2019
CUMZ-IN-HYM Bra.2019.2287	Cheloninae	*Phanerotoma* sp8.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2288	Cheloninae	*Phanerotoma* sp8.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2289	Cheloninae	*Phanerotoma* sp8.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2290	Cheloninae	*Phanerotoma* sp8.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2291	Cheloninae	*Phanerotoma* sp8.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2292	Cheloninae	*Phanerotoma* sp8.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2293	Cheloninae	*Phanerotoma* sp8.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2294	Cheloninae	*Phanerotoma* sp8.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2295	Cheloninae	*Phanerotoma* sp8.	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.ix.2019
CUMZ-IN-HYM Bra.2019.2296	Cheloninae	*Phanerotoma* sp9.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2297	Cheloninae	*Phanerotoma* sp10.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2298	Cheloninae	*Phanerotoma* sp10.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2299	Cheloninae	*Phanerotoma* sp10.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2300	Cheloninae	*Phanerotoma* sp.9.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vii.2019
CUMZ-IN-HYM Bra.2019.2301	Cheloninae	*Phanerotoma* sp11.	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2302	Cheloninae	*Phanerotoma* sp11.	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2303	Cheloninae	*Phanerotoma* sp11.	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2304	Cheloninae	*Phanerotoma* sp11.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2305	Doryctinae	*Heterospilus* sp.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2306	Doryctinae	Unknown sp1.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2307	Doryctinae	Unknown sp2.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2308	Doryctinae	Unknown sp3.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2309	Doryctinae	Unknown sp3.	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019

CUMZ-IN-HYM Bra.2019.2310	Doryctinae	Unknown sp4.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2311	Doryctinae	Unknown sp5.	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vii.2019
CUMZ-IN-HYM Bra.2019.2312	Euphorinae	*Aridelus* sp.1	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2313	Euphorinae	*Streblocera* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2314	Euphorinae	*Streblocera* sp.2	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2315	Euphorinae	*Streblocera* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2316	Euphorinae	*Streblocera* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2317	Euphorinae	*Streblocera* olivera	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.ix.2019
CUMZ-IN-HYM Bra.2019.2318	Euphorinae	*Syntretus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2319	Euphorinae	*Meteorus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2320	Euphorinae	*Meteorus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2321	Euphorinae	*Meteorus* sp.1	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2322	Euphorinae	*Meteorus* sp.1	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2323	Euphorinae	*Meteorus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2324	Euphorinae	*Meteorus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2325	Euphorinae	*Meteorus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2326	Euphorinae	*Meteorus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2327	Euphorinae	*Meteorus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2328	Euphorinae	*Meteorus* sp.1	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2329	Euphorinae	*Meteorus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2330	Euphorinae	*Meteorus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2331	Euphorinae	*Meteorus* sp.1	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2332	Euphorinae	*Meteorus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2333	Euphorinae	*Meteorus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018

CUMZ-IN-HYM Bra.2019.2334	Euphorinae	*Meteorus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2335	Euphorinae	*Meteorus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2336	Euphorinae	*Meteorus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2337	Euphorinae	*Meteorus* sp.2	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2338	Euphorinae	*Meteorus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.iv.2019
CUMZ-IN-HYM Bra.2019.2339	Euphorinae	*Meteorus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vii.2019
CUMZ-IN-HYM Bra.2019.2340	Euphorinae	*Meteorus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2341	Euphorinae	*Meteorus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2342	Euphorinae	*Meteorus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2343	Euphorinae	*Meteorus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2344	Euphorinae	*Meteorus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2345	Euphorinae	*Meteorus* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2346	Euphorinae	*Meteorus* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2347	Euphorinae	*Meteorus* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2348	Euphorinae	*Meteorus* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2349	Euphorinae	*Meteorus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2350	Euphorinae	*Meteorus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2351	Euphorinae	*Meteorus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2352	Euphorinae	*Meteorus* sp.3	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2353	Euphorinae	*Meteorus* sp.3	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2354	Euphorinae	*Meteorus* sp.3	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2355	Euphorinae	*Meteorus* sp.3	19° 10' 817" N, 101° 06' 908" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2356	Euphorinae	*Meteorus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2357	Euphorinae	*Meteorus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018

CUMZ-IN-HYM Bra.2019.2358	Euphorinae	*Meteorus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2359	Euphorinae	*Meteorus* sp.4	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2360	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2361	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2362	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2363	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2364	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2365	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2366	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2367	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2368	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2369	Euphorinae	*Meteorus* sp.4	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2370	Euphorinae	*Meteorus* sp.4	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2371	Euphorinae	*Meteorus* sp.4	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2372	Euphorinae	*Meteorus* sp.4	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2373	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2374	Euphorinae	*Meteorus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2375	Euphorinae	*Meteorus* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2376	Euphorinae	*Meteorus* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2377	Euphorinae	*Meteorus* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2378	Euphorinae	*Meteorus* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2379	Euphorinae	*Meteorus* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2380	Euphorinae	*Meteorus* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2381	Euphorinae	*Meteorus* sp.5	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019

CUMZ-IN-HYM Bra.2019.2382	Euphorinae	*Meteorus* sp.5	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2383	Euphorinae	*Meteorus* sp.5	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2384	Euphorinae	*Meteorus* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2385	Euphorinae	*Meteorus* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2386	Euphorinae	*Meteorus* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2387	Euphorinae	*Meteorus* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2388	Euphorinae	*Meteorus* sp.6	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2389	Euphorinae	*Meteorus* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2390	Euphorinae	*Meteorus* sp.6	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2391	Euphorinae	*Meteorus* sp.6	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2392	Euphorinae	*Meteorus* sp.6	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2393	Euphorinae	*Meteorus* sp.6	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2394	Euphorinae	*Meteorus* sp.6	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2395	Euphorinae	*Meteorus* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2396	Euphorinae	*Meteorus* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2397	Euphorinae	*Meteorus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2398	Euphorinae	*Meteorus* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2399	Euphorinae	*Meteorus* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2400	Euphorinae	*Meteorus* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2401	Euphorinae	*Meteorus* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2402	Euphorinae	*Meteorus* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2403	Euphorinae	*Meteorus* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2404	Euphorinae	*Meteorus* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2405	Euphorinae	*Meteorus* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019

CUMZ-IN-HYM Bra.2019.2406	Euphorinae	*Meteorus* sp.7	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2407	Euphorinae	*Meteorus* sp.7	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2408	Euphorinae	*Meteorus* sp.7	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2409	Euphorinae	*Meteorus* sp.7	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2410	Euphorinae	*Meteorus* sp.8	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2411	Euphorinae	*Meteorus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2412	Euphorinae	*Meteorus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2413	Euphorinae	*Meteorus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2414	Euphorinae	*Meteorus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2415	Euphorinae	*Meteorus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2416	Euphorinae	*Meteorus* sp.8	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2417	Euphorinae	*Meteorus* sp.8	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2418	Euphorinae	*Meteorus* sp.8	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2419	Euphorinae	*Meteorus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2420	Euphorinae	*Meteorus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2421	Euphorinae	*Meteorus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2422	Euphorinae	*Meteorus* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2423	Euphorinae	*Meteorus* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2424	Euphorinae	*Meteorus* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2425	Euphorinae	*Meteorus* sp.9	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2426	Euphorinae	*Meteorus* sp.9	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2427	Euphorinae	*Meteorus* sp.9	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2428	Euphorinae	*Meteorus* sp.9	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2429	Euphorinae	*Meteorus* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018

CUMZ-IN-HYM Bra.2019.2430	Euphorinae	*Meteorus* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2431	Euphorinae	*Meteorus* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2432	Euphorinae	*Meteorus* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2433	Euphorinae	*Meteorus* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2434	Euphorinae	*Meteorus* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2435	Euphorinae	*Meteorus* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2436	Euphorinae	*Meteorus* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2437	Euphorinae	*Meteorus* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2438	Euphorinae	*Meteorus* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2439	Euphorinae	*Meteorus* sp.10	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2440	Euphorinae	*Meteorus* sp.10	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2441	Euphorinae	*Meteorus* sp.10	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2442	Euphorinae	*Meteorus* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2443	Euphorinae	*Meteorus* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2444	Euphorinae	*Meteorus* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2445	Euphorinae	*Meteorus* sp.10	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2446	Euphorinae	*Meteorus* sp.10	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2447	Euphorinae	*Meteorus* sp.10	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2448	Euphorinae	*Meteorus* sp.10	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2449	Euphorinae	*Unknonwn* sp.1	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2450	Euphorinae	*Unknonwn* sp.1	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2451	Euphorinae	*Unknonwn* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2452	Euphorinae	*Unknonwn* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2453	Euphorinae	*Unknonwn* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019

CUMZ-IN-HYM Bra.2019.2454	Euphorinae	*Unknonwn* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2455	Euphorinae	*Unknonwn* sp.3	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2456	Euphorinae	*Unknonwn* sp.3	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2457	Euphorinae	*Unknonwn* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2458	Euphorinae	*Unknonwn* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2459	Euphorinae	*Unknonwn* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2460	Euphorinae	*Unknonwn* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2461	Euphorinae	*Unknonwn* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2462	Euphorinae	*Unknonwn* sp.5	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2463	Euphorinae	*Unknonwn* sp.6	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2464	Euphorinae	*Unknonwn* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2465	Euphorinae	*Unknonwn* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2466	Euphorinae	*Unknonwn* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2467	Euphorinae	*Unknonwn* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2468	Euphorinae	*Unknonwn* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2469	Euphorinae	*Unknonwn* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2470	Euphorinae	*Unknonwn* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2471	Euphorinae	*Unknonwn* sp.7	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2472	Euphorinae	*Unknonwn* sp.7	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2473	Euphorinae	*Unknonwn* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2474	Euphorinae	*Unknonwn* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2475	Euphorinae	*Unknonwn* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2476	Euphorinae	*Unknonwn* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2477	Euphorinae	*Unknonwn* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018

CUMZ-IN-HYM Bra.2019.2478	Euphorinae	*Unknonwn* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2479	Euphorinae	*Unknonwn* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2480	Euphorinae	*Unknonwn* sp.9	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2481	Euphorinae	*Unknonwn sp.9*	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2482	Euphorinae	*Unknonwn* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2483	Euphorinae	*Unknonwn* sp.11	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2484	Homolobinae	*Unknown* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2485	Hormiinae	*Parahormius* sp.1	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2486	Hormiinae	*Parahormius* sp.1	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2487	Hormiinae	*Unknown* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2488	Hormiinae	*Unknown* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2489	Hormiinae	*Unknown* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2490	Hormiinae	*Unknown* sp.4	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2491	Hormiinae	*Unknown* sp.4	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2492	Ichneutinae	*Unknown* sp.1	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2493	Ichneutinae	*Unknown* sp.1	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2494	Lysiterminae	*Aulosaphoides* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2495	Lysiterminae	*Aulosaphoides* sp.2	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2496	Lysiterminae	*Aulosaphoides* sp.3	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2497	Lysiterminae	*Aulosaphoides* sp.4	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2498	Lysiterminae	*Cedria* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2499	Lysiterminae	*Unknown* sp.1	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2500	Lysiterminae	*Unknown* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2501	Lysiterminae	*Unknown* sp.3	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019

CUMZ-IN-HYM Bra.2019.2502	Macrocentrinae	*Macrocentrus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2503	Macrocentrinae	*Macrocentrus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2504	Macrocentrinae	*Macrocentrus* sp.1	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2505	Macrocentrinae	*Macrocentrus* sp.1	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2506	Macrocentrinae	*Macrocentrus* sp.1	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2507	Macrocentrinae	*Macrocentrus sp.1*	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2508	*Macrocentrus* sp.1	*Macrocentrus* sp.1	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2509	Macrocentrinae	*Macrocentrus* sp.1	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2510	Macrocentrinae	*Macrocentrus* sp.2	19° 10' 1831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2511	Macrocentrinae	*Macrocentrus* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2512	Macrocentrinae	*Macrocentrus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2513	Macrocentrinae	*Macrocentrus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2514	Macrocentrinae	*Macrocentrus* sp.3	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2515	Macrocentrinae	*Macrocentrus* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2516	Macrocentrinae	*Macrocentrus* sp.4	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2517	Macrocentrinae	*Macrocentrus* sp.4	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2518	Macrocentrinae	*Macrocentrus* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2519	Macrocentrinae	*Macrocentrus* sp.6	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2520	Macrocentrinae	*Macrocentrus* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2521	Macrocentrinae	*Macrocentrus* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2522	Macrocentrinae	*Macrocentrus* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2523	Macrocentrinae	*Macrocentrus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2524	Macrocentrinae	*Macrocentrus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2525	Macrocentrinae	*Macrocentrus* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019

CUMZ-IN-HYM Bra.2019.2526	Macrocentrinae	*Macrocentrus* sp.8	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2527	Macrocentrinae	*Macrocentrus* sp.8	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2528	Macrocentrinae	*Macrocentrus* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2529	Macrocentrinae	*Macrocentrus* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2530	Macrocentrinae	*Macrocentrus* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2531	Macrocentrinae	*Macrocentrus* sp.9	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2532	Macrocentrinae	*Macrocentrus* sp.10	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2533	Macrocentrinae	*Macrocentrus* sp.10	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2534	Macrocentrinae	*Macrocentrus* sp.10	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2535	Macrocentrinae	*Macrocentrus* sp.10	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2536	Macrocentrinae	*Macrocentrus* sp.10	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2537	Macrocentrinae	*Macrocentrus* sp.10	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2538	Meteorideinae	*Unknown* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2539	Meteorideinae	*Unknown* sp.1	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2540	Meteorideinae	*Unknown* sp.1	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2541	Meteorideinae	*Unknown* sp.1	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2542	Meteorideinae	*Unknown* sp.1	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2543	Microgastrinae	*Fornicia* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2544	Microgastrinae	*Fornicia* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2545	Microgastrinae	*Unknown* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2546	Microgastrinae	*Unknown* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2547	Microgastrinae	*Unknown* sp.1	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2548	Microgastrinae	*Unknown* sp.1	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2549	Microgastrinae	*Unknown* sp.1	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018

CUMZ-IN-HYM Bra.2019.2550	Microgastrinae	*Unknown* sp.1	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2551	Microgastrinae	*Unknown* sp.1	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2552	Microgastrinae	*Unknown* sp.1	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2553	Microgastrinae	*Unknown* sp.1	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2554	Microgastrinae	*Unknown* sp.2	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2555	Microgastrinae	*Unknown* sp.2	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2556	Microgastrinae	*Unknown* sp.2	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2557	Microgastrinae	*Unknown* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2558	Microgastrinae	*Unknown* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2559	Microgastrinae	*Unknown* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2560	Microgastrinae	*Unknown* sp.2	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2561	Microgastrinae	*Unknown* sp.3	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2562	Microgastrinae	*Unknown* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2563	Microgastrinae	*Unknown* sp.3	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2564	Microgastrinae	*Unknown* sp.3	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2565	Microgastrinae	*Unknown* sp.3	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2566	Microgastrinae	*Unknown* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2567	Microgastrinae	*Unknown* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2568	Microgastrinae	*Unknown* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	1.vi.2019
CUMZ-IN-HYM Bra.2019.2569	Microgastrinae	*Unknown* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2570	Microgastrinae	*Unknown* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2571	Microgastrinae	*Unknown* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2572	Microgastrinae	*Unknown* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2573	Microgastrinae	*Unknown* sp.3	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019

CUMZ-IN-HYM Bra.2019.2574	Microgastrinae	*Unknown* sp.4	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2575	Microgastrinae	*Unknown* sp.4	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2576	Microgastrinae	*Unknown* sp.4	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2577	Microgastrinae	*Unknown* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2578	Microgastrinae	*Unknown* sp.4	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2579	Microgastrinae	*Unknown* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2580	Microgastrinae	*Unknown* sp.5	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2581	Microgastrinae	*Unknown* sp.5	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2582	Microgastrinae	*Unknown* sp.5	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2583	Microgastrinae	*Unknown* sp.5	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2584	Microgastrinae	*Unknown* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2585	Microgastrinae	*Unknown* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2586	Microgastrinae	*Unknown* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2587	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2588	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2589	Microgastrinae	*Unknown* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2590	Microgastrinae	*Unknown* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2591	Microgastrinae	*Unknown* sp.5	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2592	Microgastrinae	*Unknown* sp.5	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2593	Microgastrinae	*Unknown* sp.5	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2594	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2595	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2596	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2597	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019

CUMZ-IN-HYM Bra.2019.2598	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2599	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2600	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2601	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2602	Microgastrinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2603	Microgastrinae	*Unknown* sp.6	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2604	Microgastrinae	*Unknown* sp.6	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2605	Microgastrinae	*Unknown* sp.6	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2606	Microgastrinae	*Unknown* sp.6	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2607	Microgastrinae	*Unknown* sp.6	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2608	Microgastrinae	*Unknown* sp.6	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2609	Microgastrinae	*Unknown* sp.6	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2610	Microgastrinae	*Unknown* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2611	Microgastrinae	*Unknown* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2612	Microgastrinae	*Unknown* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2613	Microgastrinae	*Unknown* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2614	Microgastrinae	*Unknown* sp.7	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2615	Microgastrinae	*Unknown* sp.7	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2616	Microgastrinae	*Unknown* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2617	Microgastrinae	*Unknown* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2618	Microgastrinae	*Unknown* sp.7	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2619	Microgastrinae	*Unknown* sp.7	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2620	Microgastrinae	*Unknown* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2621	Microgastrinae	*Unknown* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019

CUMZ-IN-HYM Bra.2019.2622	Microgastrinae	*Unknown* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2623	Microgastrinae	*Unknown* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2624	Microgastrinae	*Unknown* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2625	Microgastrinae	*Unknown* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2626	Microgastrinae	*Unknown* sp.9	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2627	Microgastrinae	*Unknown* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2628	Microgastrinae	*Unknown* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2629	Microgastrinae	*Unknown* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2630	Microgastrinae	*Unknown* sp.9	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2631	Microgastrinae	*Unknown* sp.9	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2632	Microgastrinae	*Unknown* sp.9	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2633	Microgastrinae	*Unknown* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2634	Microgastrinae	*Unknown* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2635	Microgastrinae	*Unknown* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2636	Microgastrinae	*Unknown* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2637	Microgastrinae	*Unknown* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2638	Microgastrinae	*Unknown* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2639	Microgastrinae	*Unknown* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2640	Microgastrinae	*Unknown* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2641	Microgastrinae	*Unknown* sp.10	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2642	Microgastrinae	*Unknown* sp.10	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2643	Microgastrinae	*Unknown* sp.10	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2644	Microgastrinae	*Unknown* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2645	Microgastrinae	*Unknown* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019

CUMZ-IN-HYM Bra.2019.2646	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2647	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2648	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2649	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2650	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2651	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2652	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2653	Microgastrinae	*Unknown* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2654	Microgastrinae	*Unknown* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2655	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2656	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2657	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2658	Microgastrinae	*Unknown* sp.10	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2659	Microgastrinae	*Unknown* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2660	Microgastrinae	*Unknown* sp.10	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2661	Microgastrinae	*Unknown* sp.10	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2662	Microgastrinae	*Unknown* sp.10	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2663	Opiinae	*Unknown* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2664	Opiinae	*Unknown* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2665	Opiinae	*Unknown* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2666	Opiinae	*Unknown* sp.3	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2667	Opiinae	*Unknown* sp.3	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2668	Opiinae	*Unknown* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2669	Opiinae	*Unknown* sp.4	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019

CUMZ-IN-HYM Bra.2019.2670	Opiinae	*Unknown* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2671	Opiinae	*Unknown* sp.5	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2672	Opiinae	*Unknown* sp.5	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2673	Orgilinae	*Unknown* sp.1	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2674	Orgilinae	*Unknown* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2675	Pambolinae	*Pambolus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2676	Pambolinae	*Pambolus* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2677	Rhysipolinae	*Rhysipolis* sp.1	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2678	Rhysipolinae	*Rhysipolis* sp.1	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2679	Rhysipolinae	*Rhysipolis* sp.1	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2680	Rhysipolinae	*Rhysipolis* sp.1	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2681	Rhysipolinae	*Rhysipolis* sp.2	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2682	Rhysipolinae	*Rhysipolis* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2683	Rhysipolinae	*Unknown* sp.1	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2684	Rogadinae	*Iporhogas* sp.1	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2685	Rogadinae	*Gyroneuron glabrum*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2686	Rogadinae	*Clinocentrus* sp.1	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2687	Rogadinae	*Clinocentrus* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2688	Rogadinae	*Clinocentrus* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2689	Rogadinae	*Heterogamus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2690	Rogadinae	*Heterogamus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2691	Rogadinae	*Heterogamus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2692	Rogadinae	*Heterogamus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2693	Rogadinae	*Heterogamus* sp.1	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018

CUMZ-IN-HYM Bra.2019.2694	Rogadinae	*Heterogamus* sp.1	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2695	Rogadinae	*Heterogamus* sp.1	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2696	Rogadinae	*Heterogamus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2697	Rogadinae	*Heterogamus* sp.1	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2698	Rogadinae	*Heterogamus* sp.1	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2699	Rogadinae	*Heterogamus* sp.1	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2700	Rogadinae	*Heterogamus* sp.2	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2701	Rogadinae	*Heterogamus* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2702	Rogadinae	*Heterogamus* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2703	Rogadinae	*Heterogamus* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2704	Rogadinae	*Heterogamus* sp.2	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2705	Rogadinae	*Heterogamus* sp.2	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2706	Rogadinae	*Heterogamus* sp.2	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2707	Rogadinae	*Heterogamus* sp.2	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2708	Rogadinae	*Heterogamus* sp.2	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2709	Rogadinae	*Heterogamus* sp.3	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2710	Rogadinae	*Heterogamus* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2711	Rogadinae	*Heterogamus* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2712	Rogadinae	*Heterogamus* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	4.xi.2019
CUMZ-IN-HYM Bra.2019.2713	Rogadinae	*Heterogamus* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2714	Rogadinae	*Heterogamus* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2715	Rogadinae	*Heterogamus* sp.3	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2716	Rogadinae	*Heterogamus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2717	Rogadinae	*Heterogamus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019

CUMZ-IN-HYM Bra.2019.2718	Rogadinae	*Heterogamus* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2719	Rogadinae	*Aleiodes concoronarius*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2720	Rogadinae	*Aleiodes concoronarius*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2721	Rogadinae	*Aleiodes concoronarius*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2722	Rogadinae	*Aleiodes concoronarius*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2723	Rogadinae	*Aleiodes concoronarius*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2724	Rogadinae	*Aleiodes concoronarius*	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2725	Rogadinae	*Aleiodes concoronarius*	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2726	Rogadinae	*Aleiodes concoronarius*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2727	Rogadinae	*Aleiodes concoronarius*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2728	Rogadinae	*Aleiodes concoronarius*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2729	Rogadinae	*Aleiodes reticulisoma*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	10.x.2018
CUMZ-IN-HYM Bra.2019.2730	Rogadinae	*Aleiodes sophieae*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2731	Rogadinae	*Aleiodes sprurivena*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2732	Rogadinae	*Aleiodes rugoscutus*	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2733	Rogadinae	*Aleiodes seriatus*	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2734	Rogadinae	*Aleiodes* sp.1	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2735	Rogadinae	*Aleiodes* sp.2	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2736	Rogadinae	*Aleiodes* sp.2	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2737	Rogadinae	*Aleiodes* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2738	Rogadinae	*Aleiodes* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2739	Rogadinae	*Aleiodes* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2740	Rogadinae	*Aleiodes* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2741	Rogadinae	*Aleiodes* sp.2	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019

CUMZ-IN-HYM Bra.2019.2742	Rogadinae	*Aleiodes* sp.2	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2743	Rogadinae	*Aleiodes* sp.2	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2744	Rogadinae	*Aleiodes* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2745	Rogadinae	*Aleiodes* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2746	Rogadinae	*Aleiodes* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	17.vi.2019
CUMZ-IN-HYM Bra.2019.2747	Rogadinae	*Aleiodes* sp.2	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2748	Rogadinae	*Aleiodes* sp.2	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2749	Rogadinae	*Aleiodes* sp.2	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2750	Rogadinae	*Aleiodes* sp.2	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2751	Rogadinae	*Aleiodes* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2752	Rogadinae	*Aleiodes* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2753	Rogadinae	*Aleiodes* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2754	Rogadinae	*Aleiodes* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2755	Rogadinae	*Aleiodes* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2756	Rogadinae	*Aleiodes* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2757	Rogadinae	*Aleiodes* sp.2	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2758	Rogadinae	*Aleiodes* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2759	Rogadinae	*Aleiodes* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2760	Rogadinae	*Aleiodes* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2761	Rogadinae	*Aleiodes* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2762	Rogadinae	*Aleiodes* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2763	Rogadinae	*Aleiodes* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2764	Rogadinae	*Aleiodes* sp.2	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2765	Rogadinae	*Aleiodes* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019

CUMZ-IN-HYM Bra.2019.2766	Rogadinae	*Aleiodes* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2767	Rogadinae	*Aleiodes* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2768	Rogadinae	*Aleiodes* sp.2	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2769	Rogadinae	*Aleiodes* sp.3	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2770	Rogadinae	*Aleiodes* sp.3	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2771	Rogadinae	*Aleiodes* sp.3	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2772	Rogadinae	*Aleiodes* sp.3	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2773	Rogadinae	*Aleiodes* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2774	Rogadinae	*Aleiodes* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2775	Rogadinae	*Aleiodes* sp.3	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	11.ix.2018
CUMZ-IN-HYM Bra.2019.2776	Rogadinae	*Aleiodes* sp.3	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2777	Rogadinae	*Aleiodes* sp.3	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2778	Rogadinae	*Aleiodes* sp.3	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2779	Rogadinae	*Aleiodes* sp.3	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2780	Rogadinae	*Aleiodes* sp.3	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2781	Rogadinae	*Aleiodes* sp.3	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2782	Rogadinae	*Aleiodes* sp.3	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2783	Rogadinae	*Aleiodes* sp.4	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2784	Rogadinae	*Aleiodes* sp.4	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2785	Rogadinae	*Aleiodes* sp.4	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2786	Rogadinae	*Aleiodes* sp.4	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2787	Rogadinae	*Aleiodes* sp.4	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2788	Rogadinae	*Aleiodes* sp.4	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2789	Rogadinae	*Aleiodes* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018

CUMZ-IN-HYM Bra.2019.2790	Rogadinae	*Aleiodes* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2791	Rogadinae	*Aleiodes* sp.4	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2792	Rogadinae	*Aleiodes* sp.4	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2793	Rogadinae	*Aleiodes* sp.4	19° 11' 996" N, 101° 04' 865" E	Light trap	M. Raweearamwong	6.ii.2019
CUMZ-IN-HYM Bra.2019.2794	Rogadinae	*Aleiodes* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2795	Rogadinae	*Aleiodes* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2796	Rogadinae	*Aleiodes* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2797	Rogadinae	*Aleiodes* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2798	Rogadinae	*Aleiodes* sp.4	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2799	Rogadinae	*Aleiodes* sp.4	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2800	Rogadinae	*Aleiodes* sp.4	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2801	Rogadinae	*Aleiodes* sp.4	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2802	Rogadinae	*Aleiodes* sp.5	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2803	Rogadinae	*Aleiodes* sp.5	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2804	Rogadinae	*Aleiodes* sp.5	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2805	Rogadinae	*Aleiodes* sp.5	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2806	Rogadinae	*Aleiodes* sp.5	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2807	Rogadinae	*Aleiodes* sp.5	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2808	Rogadinae	*Aleiodes* sp.5	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2809	Rogadinae	*Aleiodes* sp.6	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2810	Rogadinae	*Aleiodes* sp.6	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2811	Rogadinae	*Aleiodes* sp.6	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	18.vi.2019
CUMZ-IN-HYM Bra.2019.2812	Rogadinae	*Aleiodes* sp.6	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2813	Rogadinae	*Aleiodes* sp.6	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018

CUMZ-IN-HYM Bra.2019.2814	Rogadinae	*Aleiodes* sp.6	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2815	Rogadinae	*Aleiodes* sp.6	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2816	Rogadinae	*Aleiodes* sp.6	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2817	Rogadinae	*Aleiodes* sp.6	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2818	Rogadinae	*Aleiodes* sp.6	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2819	Rogadinae	*Aleiodes* sp.6	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2820	Rogadinae	*Aleiodes* sp.6	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2821	Rogadinae	*Aleiodes* sp.6	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2822	Rogadinae	*Aleiodes* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2823	Rogadinae	*Aleiodes* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2824	Rogadinae	*Aleiodes* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2825	Rogadinae	*Aleiodes* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2826	Rogadinae	*Aleiodes* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	12.ix.2018
CUMZ-IN-HYM Bra.2019.2827	Rogadinae	*Aleiodes* sp.6	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	13.ix.2018
CUMZ-IN-HYM Bra.2019.2828	Rogadinae	*Aleiodes* sp.6	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2829	Rogadinae	*Aleiodes* sp.6	19° 12' 120" N, 101° 04' 669" E	Light trap	M. Raweearamwong	8.x.2018
CUMZ-IN-HYM Bra.2019.2830	Rogadinae	*Aleiodes* sp.7	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2831	Rogadinae	*Aleiodes* sp.7	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2832	Rogadinae	*Aleiodes* sp.7	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2833	Rogadinae	*Aleiodes* sp.7	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2834	Rogadinae	*Aleiodes* sp.7	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2835	Rogadinae	*Aleiodes* sp.7	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2836	Rogadinae	*Aleiodes* sp.7	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2837	Rogadinae	*Aleiodes* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019

CUMZ-IN-HYM Bra.2019.2838	Rogadinae	*Aleiodes* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.iv.2019
CUMZ-IN-HYM Bra.2019.2839	Rogadinae	*Aleiodes* sp.7	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2840	Rogadinae	*Aleiodes* sp.7	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2841	Rogadinae	*Aleiodes* sp.7	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2842	Rogadinae	*Aleiodes* sp.7	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2843	Rogadinae	*Aleiodes* sp.7	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2844	Rogadinae	*Aleiodes* sp.7	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2845	Rogadinae	*Aleiodes* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2846	Rogadinae	*Aleiodes* sp.7	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	5.xi.2019
CUMZ-IN-HYM Bra.2019.2847	Rogadinae	*Aleiodes* sp.7	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2848	Rogadinae	*Aleiodes* sp.7	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2849	Rogadinae	*Aleiodes* sp.7	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2850	Rogadinae	*Aleiodes* sp.7	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2851	Rogadinae	*Aleiodes* sp.7	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2852	Rogadinae	*Aleiodes* sp.7	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2853	Rogadinae	*Aleiodes* sp.8	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2854	Rogadinae	*Aleiodes* sp.8	19° 12' 137" N, 101° 04' 381" E	Light trap	M. Raweearamwong	26.xii.2018
CUMZ-IN-HYM Bra.2019.2855	Rogadinae	*Aleiodes* sp.8	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2856	Rogadinae	*Aleiodes* sp.8	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2857	Rogadinae	*Aleiodes* sp.8	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2858	Rogadinae	*Aleiodes* sp.8	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2859	Rogadinae	*Aleiodes* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2860	Rogadinae	*Aleiodes* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2861	Rogadinae	*Aleiodes* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019

CUMZ-IN-HYM Bra.2019.2862	Rogadinae	*Aleiodes* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2863	Rogadinae	*Aleiodes* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2864	Rogadinae	*Aleiodes* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2865	Rogadinae	*Aleiodes* sp.8	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2866	Rogadinae	*Aleiodes* sp.8	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2867	Rogadinae	*Aleiodes* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2868	Rogadinae	*Aleiodes* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2869	Rogadinae	*Aleiodes* sp.9	19° 12' 284" N, 101° 04' 132" E	Light trap	M. Raweearamwong	6.xi.2019
CUMZ-IN-HYM Bra.2019.2870	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2871	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2872	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2873	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2874	Rogadinae	*Aleiodes* sp.9	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2875	Rogadinae	*Aleiodes* sp.9	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2876	Rogadinae	*Aleiodes* sp.9	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2877	Rogadinae	*Aleiodes* sp.9	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2878	Rogadinae	*Aleiodes* sp.9	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2879	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2880	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2881	Rogadinae	*Aleiodes* sp.9	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2882	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2883	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2884	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2885	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019

CUMZ-IN-HYM Bra.2019.2886	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2887	Rogadinae	*Aleiodes* sp.9	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2888	Rogadinae	*Aleiodes* sp.9	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2889	Rogadinae	*Aleiodes* sp.9	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2890	Rogadinae	*Aleiodes* sp.9	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2891	Rogadinae	*Aleiodes* sp.10	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2892	Rogadinae	*Aleiodes* sp.11	19° 12' 164" N, 101° 04' 473" E	Light trap	M. Raweearamwong	19.vi.2019
CUMZ-IN-HYM Bra.2019.2893	Rogadinae	*Aleiodes* sp.12	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2894	Rogadinae	*Aleiodes* sp.12	19° 13' 000" N, 101° 04' 160" E	Light trap	M. Raweearamwong	25.xii.2018
CUMZ-IN-HYM Bra.2019.2895	Rogadinae	*Aleiodes* sp.12	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2896	Rogadinae	*Aleiodes* sp.12	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2897	Rogadinae	*Aleiodes* sp.12	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2898	Rogadinae	*Aleiodes* sp.12	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2899	Rogadinae	*Aleiodes* sp.12	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2900	Rogadinae	*Aleiodes* sp.12	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2901	Rogadinae	*Aleiodes* sp.12	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2902	Rogadinae	*Aleiodes* sp.12	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2903	Rogadinae	*Aleiodes* sp.12	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	4.ix.2019
CUMZ-IN-HYM Bra.2019.2904	Rogadinae	*Aleiodes* sp.13	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2905	Rogadinae	*Aleiodes* sp.14	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2906	Rogadinae	*Aleiodes* sp.15	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2907	Rogadinae	*Aleiodes* sp.16	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2908	Rogadinae	*Aleiodes* sp.16	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2909	Rogadinae	*Aleiodes* sp.16	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	5.ii.2019

CUMZ-IN-HYM Bra.2019.2910	Rogadinae	*Aleiodes* sp.16	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2911	Rogadinae	*Aleiodes* sp.16	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2912	Rogadinae	*Aleiodes* sp.17	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2913	Rogadinae	*Aleiodes* sp.18	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2914	Rogadinae	*Aleiodes* sp.19	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2915	Rogadinae	*Aleiodes* sp.19	19° 12' 155" N, 101° 04' 482" E	Light trap	M. Raweearamwong	4.ii.2019
CUMZ-IN-HYM Bra.2019.2916	Rogadinae	*Aleiodes* sp.19	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2917	Rogadinae	*Aleiodes* sp.19	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2918	Rogadinae	*Aleiodes* sp.19	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2919	Rogadinae	*Aleiodes* sp.19	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2920	Rogadinae	*Aleiodes* sp.19	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2921	Rogadinae	*Aleiodes* sp.19	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2922	Rogadinae	*Aleiodes* sp.19	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2923	Rogadinae	*Aleiodes* sp.19	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	5.ii.2019
CUMZ-IN-HYM Bra.2019.2924	Rogadinae	*Aleiodes* sp.19	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2925	Rogadinae	*Aleiodes* sp.19	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2926	Rogadinae	*Aleiodes* sp.19	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2927	Rogadinae	*Aleiodes* sp.19	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2928	Rogadinae	*Aleiodes* sp.19	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2929	Rogadinae	*Aleiodes* sp.19	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	2.ix.2019
CUMZ-IN-HYM Bra.2019.2930	Rogadinae	*Aleiodes* sp.19	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2931	Rogadinae	*Aleiodes* sp.19	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2932	Rogadinae	*Aleiodes* sp.19	19° 12' 283" N, 101° 04' 802" E	Light trap	M. Raweearamwong	3.ix.2019
CUMZ-IN-HYM Bra.2019.2933	Rogadinae	*Aleiodes* sp.19	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019

CUMZ-IN-HYM Bra.2019.2934	Rogadinae	*Aleiodes* sp.19	19° 12' 226" N, 101° 04' 739" E	Light trap	M. Raweearamwong	1.iv.2019
CUMZ-IN-HYM Bra.2019.2935	Rogadinae	*Aleiodes* sp.19	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2936	Rogadinae	*Aleiodes* sp.19	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2937	Rogadinae	*Aleiodes* sp.19	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2938	Rogadinae	*Aleiodes* sp.19	19° 12' 866" N, 101° 04' 400" E	Light trap	M. Raweearamwong	3.iv.2019
CUMZ-IN-HYM Bra.2019.2939	Rogadinae	*Aleiodes* sp.19	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2940	Rogadinae	*Aleiodes* sp.19	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2941	Rogadinae	*Aleiodes* sp.19	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018
CUMZ-IN-HYM Bra.2019.2942	Rogadinae	*Aleiodes* sp.20	19° 10' 831" N, 101° 05' 737" E	Light trap	M. Raweearamwong	9.x.2018

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