

Ascalaphid Studies VII. On the ascalaphid fauna of Taiwan (Neuroptera: Ascalaphidae)

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ÁBRAHÁM, L.: *Ascalaphid Studies VII. On the ascalaphid fauna of Taiwan (Neuroptera: Ascalaphidae)*.

Abstract: Ascalaphid fauna of Formosa is presented and as a result of species revision, four new synonym names are established. *Glyptobasis brunnea* Esben-Petersen, 1913 **syn n.** is junior synonym of *Ascalohybris subjacens* (Walker, 1853), *Ascalohybris kolthoffi* (Navás, 1927) (original combination *Hybris kolthoffi* Navás, 1927) **syn n.** is junior synonym of *Acheron trux* (Walker, 1853), *Suhalpacsia longialata* Yang, 1992 **syn n.** is junior synonym of *Maezous umbrosa* (Esben-Petersen, 1913) **comb. n.**, and *Suphalomitus lutemaculatus* Yang, 1992 **syn n.** is junior synonym of *Suphalomitus formosanus* Esben-Petersen, 1913. *Maezous formosana* (Okamoto, 1910) **comb. n.** is a new combination. Checklist, faunistical data of the studied material, distribution and their flight period are given.

Keywords: Ascalaphidae, new synonym, faunistics, ownfly, Taiwan,

Introduction

The area of Taiwan is 35.800 km² lying on the Southeast Asiatic continental shelf (Sunda shelf), formed in the subduction zone of the Eurasian continental and the Philippines oceanic plate. The island is separated from mainland China by the 130 km wide Taiwan Strait. In geological aspect, Taiwan is approximately a 5 million years old, relatively young island. Earlier, it was connected to the Chinese coastal region. Others assume, that it was also connected to the Philippines either (ANDERSON 2001). Two-third of its territory is mountainous area, with 1000 m altitude in average. Its highest point is the Yu Shan peak, 3952 m, this is the highest islander altitude in Earth.

Taiwan belongs to the tropical zone. Its oceanic and subtropical climate is characterized by monsoon. The monthly average temperature is above 18 °C in all 12 months of the year, and the amount of the annual rainfall is 2500 mm. Taiwan, and the surrounding smaller islands, was discovered by European travelers in the early 16th century. They named it "Ilha Formosa" that means "Beautiful Island". This refers to the all year green of this area. The proportion of forests is still high even nowadays (58%): the higher areas have coniferous forests, while downwards the deciduous or evergreen broad-leaved forests dominate.

As a result of the palaeogeographic history of the island and its various geological forms, the fauna is exceptionally rich with high number of endemic species. The

Formosan-Taiwanese fauna has Palaearctic and Oriental elements, the latest is related to the fauna of Philippines, and Indo-Australia.

The Neuropteran fauna of Taiwan is only partly described. Few monographs are published in the last decades (STANGE & WANG 1997, 1998; NEW 2003 and SZIRÁKI 2000) presenting data on the Neuroptera fauna.

Hungarian zoologists has important role in surveying the Formosan fauna: more than 20 collecting Hungarian expeditions were done in this region.

The neuropteran material studied below is deposited in the collection of Somogy County Museum, Kaposvár, Hungary.

Material and methods

This material was collected by Hungarian zoologists in the late 1990s. Beyond the taxon-specific collecting methods, lamp and portable light traps were applied. For light traps, HMLI lamps and black light fluorescent tubes were used. Their emitted light spectrum is rich in UV rays. The collected material was conserved in the field, and it was transferred to the collection of the Somogy County Museum.

Results and discussion

The Neuroptera collection of the Somogy County Museum contains 98 Formosan Ascalaphidae specimens mostly from the end of the 1990s including 1 Haplogleniinae, and 4 Ascalaphinae species. The most frequent species is *Acheron trux* (Walker, 1853), that amounts more than 50% of the total collected material.

The species list is completed with faunistic data, brief description of morphological features, fly periods and distribution area (in and also out of Taiwan).

Abbreviations: Mon - Monograph, Dist - Distribution, Odescr - Original description, Chlist - Checklist

List of species:

Haplogleniinae

Protidricerus elwesi (McLachlan, 1891)

Protidricerus sp. - Stange & Wang H. 1997 (Chlist), 1998 (Mon);

Material examined: 1♀ Prov. Taoyuan; 16 km E of Fusing 870m 22.08.1996. 121°24'E; 24°50'N leg. T. Csövári & L. Mikus; 1♂ 2♀ Prov. Taitung; 3 km W of Hungyeh village 120°52'E; 22°28' N 550m 05.11.1996. leg. Cs. Szabóky; 1♀ Prov. Nantou; Huisun Forest Area 500m 15 km N of Puli 07-08.06.1997. leg. B. Herczig & L. Ronkay; 1♂ Prov. Taipei; Pi Hu 500m 122°45'61"E; 24°54'97"N 02.08.1999. leg. A. Kun & O. Juhász; 2♀ Prov. Yilan; Fushau 121°24'E; 24°45'N 700m 09.09.1999. leg. G. Csorba & B. Herczig; 2♀ Prov. Yilan; Ming Chyr Forest Recreation Area 121°28'E; 24°39'N 1150m 11-12.09.1999. leg. G. Csorba & B. Herczig

Taiwanese specimens exactly look alike those which collected in China. Fly period: from June to mid of November. It occurs in the SE part of Palaearctic region and in the Oriental region as well. Known from India, China and Pakistan (GHOSH 1985, 1988, SZIRÁKI 2000, WEELE 1909, YANG 1999).

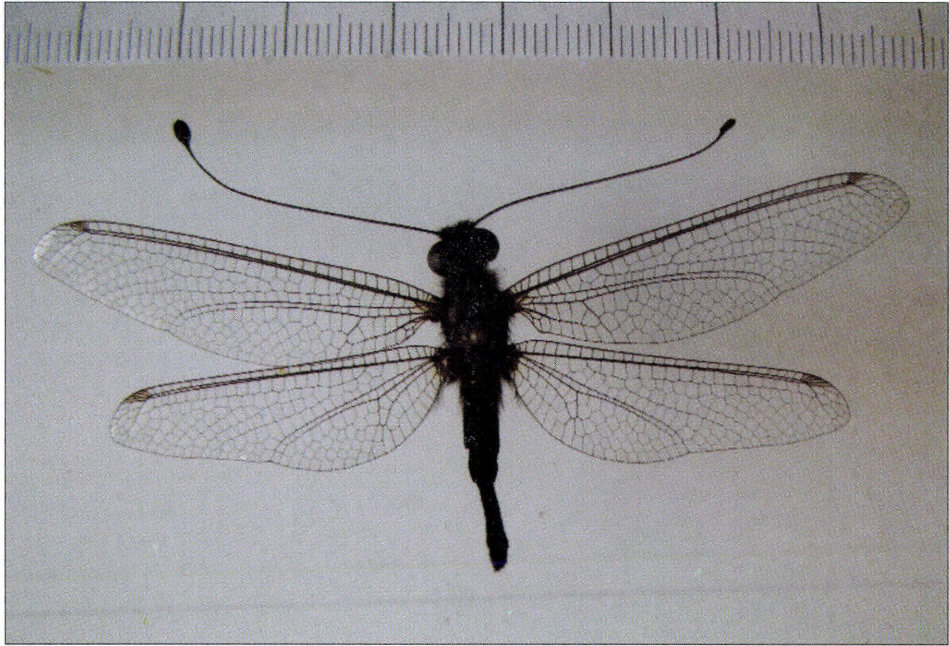


Fig. 1: *Protidricerus elwesi* (McLachlan, 1891)

***Protidricerus philippinensis* (Esben-Petersen, 1927)**

Protidricerus philippinensis - Sziráki 2000 (Dist).

Till recently, it has been considered to be endemic in the Philippines. The identification of the Taiwanese specimens shall be checked since two new species, namely *Protidricerus palliventralis* Yang, 1999 and *Protidricerus steropterus* Wang et Yang, 2002 have recently been described in China.

Ascalaphinae

***Acheron trux* (Walker, 1853)**

Hybris kolthoffi Navás, 1927 **syn. nov.**

Acheron trux - Weele 1909 (Mon); Esben-Petersen 1913 (Dist); Navás 1913 (Mon); Banks 1937 (Dist); Stange & Wang H. 1997 (Chlist), 1998 (Mon), Sziráki 2000 (Dist); New 2003 (Mon)

Ascalohybris kolthoffi - Sziráki 2000 (Dist)

Material examined: Lectotype ♀ "Provins Kiangsu, China Kolthoff" and "Hybris kolthoffi Nav. P. Navas S. J. det", "Lectotypus ♀ Hybris kolthoffi Navás, 1927 designed: L. Ábrahám 2008", "*Acheron trux* (Walker, 1853) det: L. Ábrahám" in coll: The Swedish Museum of Natural History (Stockholm); 7♂ 5♀ Prov. Taitung; 2 km N of Tupau 500m 29.05.1995. 120°52'E;22°29'N leg. M. Hreblay & P. Stéger; 1♂ (abdomen broken) 6♂ 1♀ Prov. Nantou; 15 km N of Puli Uirsun Forest Area 500m 09.07.1996. leg. G. Csorba & L. Németh; 3♂ 3♀ Prov. Hualien; 3 km W of Hua Juan 150m 02.07.1996. leg. G. Csorba & L. Németh; 1♀ Prov. Pingtung; 10 km SE of Mutan 470m 04.07.1996. leg. G. Csorba & L. Németh; 2♂ Prov. Nantou; Uirsun Forest Area 500m 16 km E of Kuohsing 29-30.10.1996. leg. Cs. Szabóky; 2♂ Prov. Nantou; 23 km NE of Puli 500m 11.05.1997. leg. Gy. M. László & G. László; 1♂ Prov. Nantou; Uirsun Forest camping 17 km E of Kuoshing 560m 23.05.1997. 121°00'E;24°05'N leg. Cs. Szabóky; 3♂, Prov. Nantou 3 km E of Tili 120°58'E;23°47'N

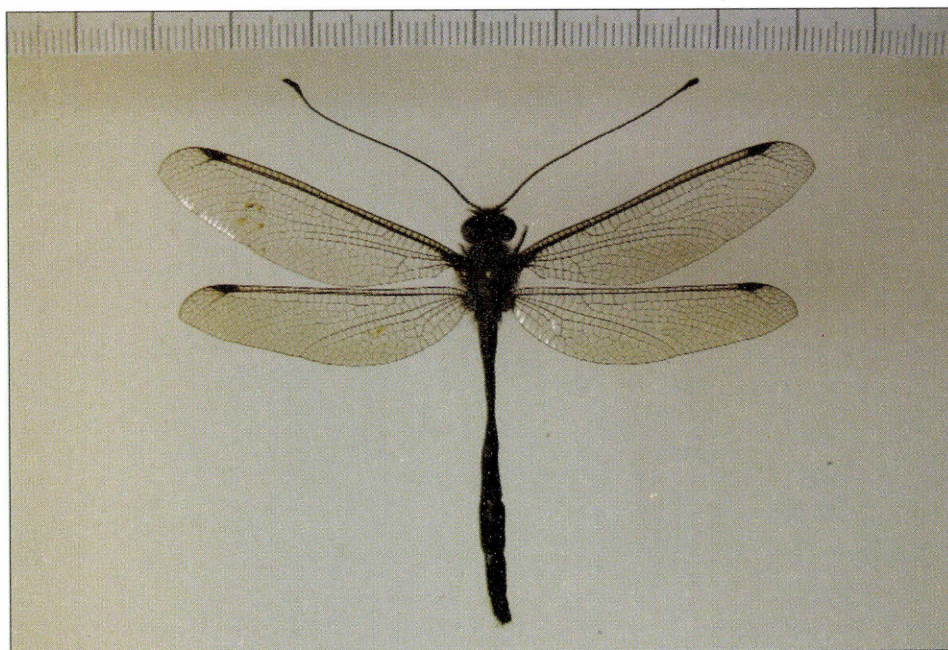


Fig. 2: Male of *Acheron trux* (Walker, 1853)

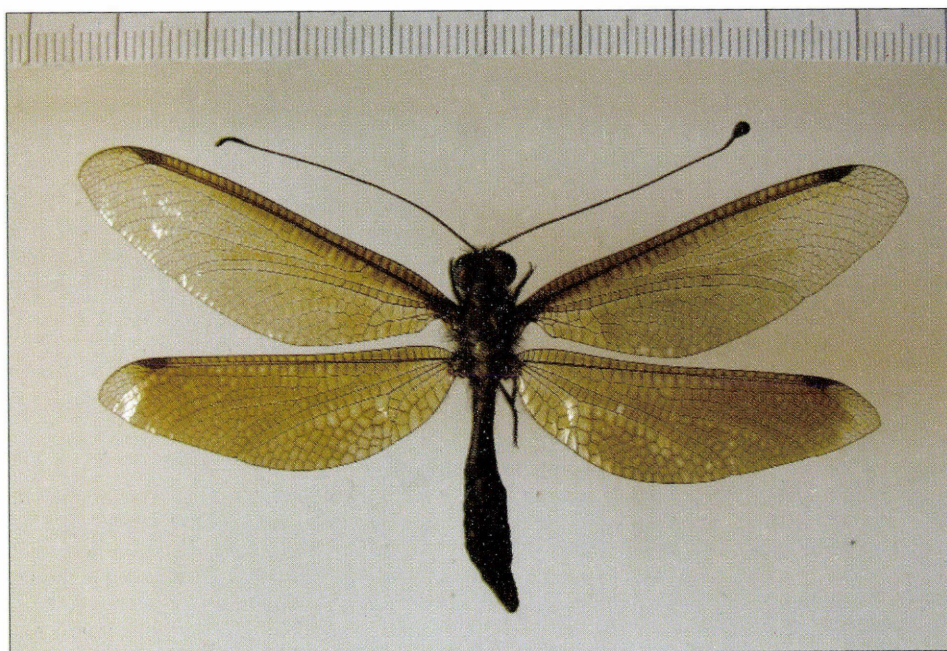


Fig. 3: Female of *Acheron trux* (Walker, 1853)

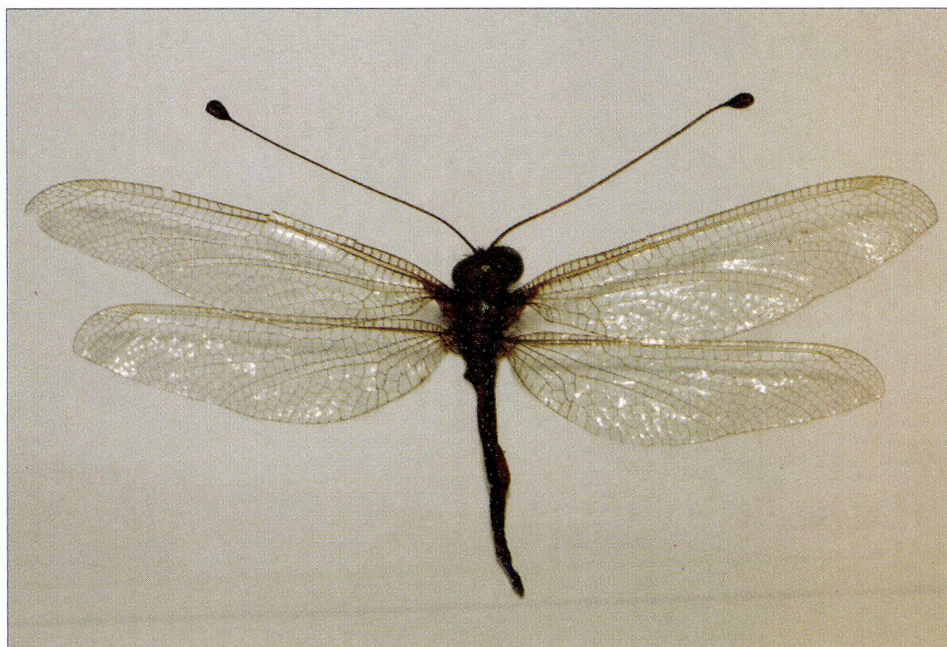


Fig. 4: Lectotype of *Hybris kolthoffi* Navás, 1927 syn. nov.

555m 27-28.05.1997. leg. Cs. Szabóky; 2♂ Prov. Taitung; 4 km N of Tupau 390m 31.05.1997. 120°52'E;22°28'N leg. Cs. Szabóky; 1♂ Prov. Taitung; 3 km W of Hungyeh village 120°52'E;22°28' N 350m 01.06.1997. leg. Cs. Szabóky; 1♂ Prov. Nantou; Uirsun Forest camping 17 km E of Kuoshing 560m 06-07.06.1997. 121°00'E;24°05'N leg. Cs. Szabóky; 14♂ Prov. Nantou; Huisun Forest Area 500m 15 km N of Puli 07-08.06.1997. leg. B. Herczig & L. Ronkay; 4♂ Prov. Hsinchu; Nei Wan Mts. Litung-Scharf 17-21.05.2004. leg. Jar. Dalihod & Jana Dalihodová Baštová

Acheron trux is a widespread species in SE Asia. WALKER (1853) described four species (*Ascalaphus trux* Walker, 1853, *Ascalaphus loquax* Walker, 1853, *Ascalaphus anticus* Walker, 1853 and *Ascalaphus longus* Walker, 1853) which were combined with *Acheron* by McLACHLAN (1873). Later, WEELE (1909) synonymised them with *Ascalaphus trux*. GHOSH (1988) re-examined the populations, revised the species from SE India and divided them into two taxa namely *A. trux trux* and *A. trux loquax* based on wing coloration. Since the wing-coloration is very variable from light brown to dark furthermore it depends on the age of specimens (as older as darker) additionally sexual dimorphism is significant in this species therefore the 2 subspecies needs revision.

Ascalohybris kolthoffi (Navás, 1927) (original combination *Hybris kolthoffi* Navás, 1927) was known only from China (NAVÁS 1927) recently SZIRÁKI (2000) reported it from Taiwan. I checked the type material preserved in the Swedish Museum of Natural History (Stockholm) and found that *Hybris kolthoffi* Navás, 1927 is a junior synonym of *Acheron trux* (Walker, 1853). (Lectotype designation see above.)

I asked Dr. Wang Xinli (China) to reidentify the specimens from China which were originally identified as *Ascalohybris kolthoffi* (Navás, 1927). She found that all specimens belong to *Ascalohybris subjacens* (Dr. Wang Xinli pers. comm.).

It flies from May to October. Known from Bangladesh, Bhutan, Burma, Cambodia,

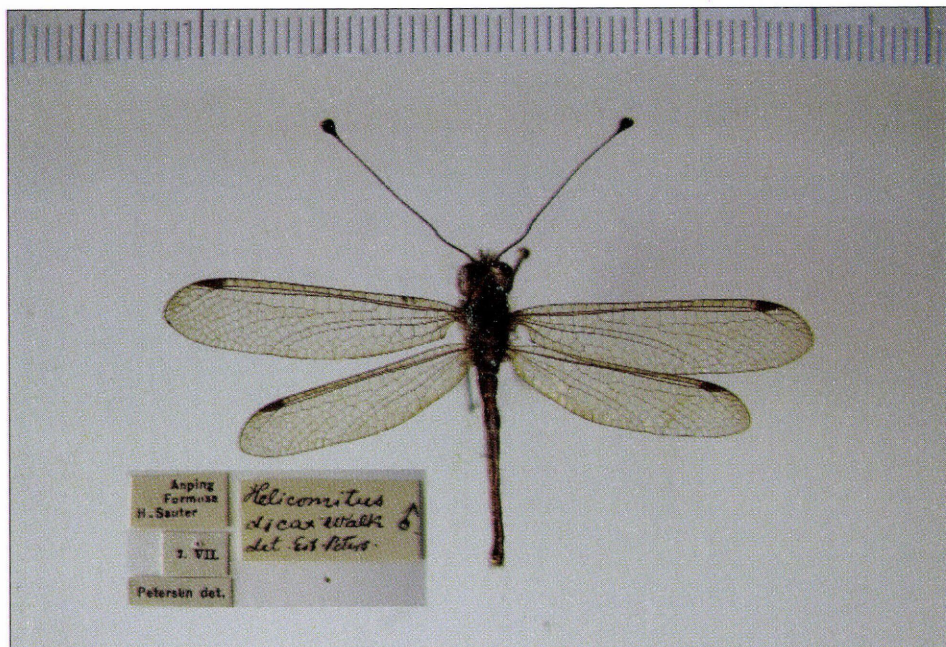


Fig. 5: Male of *Helicomitus placidus* (Gerstaecker, 1894)

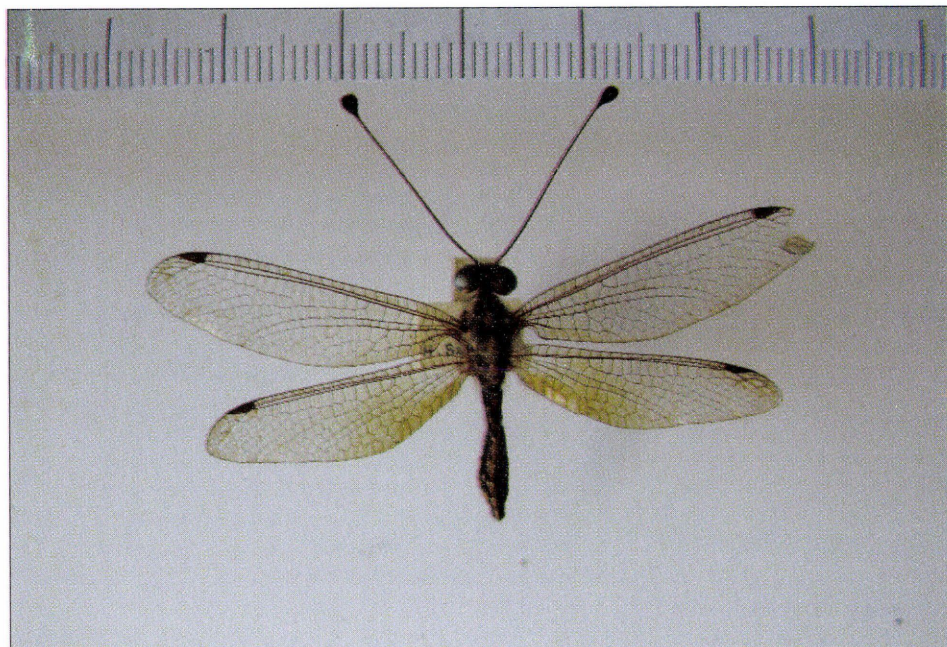


Fig. 6: Female of *Helicomitus placidus* (Gerstaecker, 1894)

China, India, Japan, Laos, Malaysia, Thailand and Vietnam (GHOSH 1988, MICHEL 2005, SZIRÁKI 2000).

***Helicomitus placidus* (Gerstaecker, 1894)**

Helicomitus dicax - New 2003 (Mon) and misid in Esben-Petersen 1913 (Dist)

Ascalaphus dicax - Stange & Wang H. 1997 (Chlist), 1998 (Mon) - misidentification

Material examined: 1♂ - "Anping Formosa H. Sauter; 7. VII; *Helicomitus dicax* Walk. ♂ det. Esb. Pet." 2♀ - "Anping Formosa H. Sauter; 7. VIII; *Helicomitus dicax* Esben-Petersen det." 1♀ - "Anping Formosa H. Sauter; ♀; 7. VII; *Helicomitus dicax* Esben-Petersen det.", "*Helicomitus placidus* (Gerstaecker, 1894) det: L. Ábrahám" In coll: Deutsche Entomologische Institut (DEI - Müncheberg)

ESBEN-PETERSEN (1913) mentioned it firstly from Taiwan. STANGE & WANG H. (1998, Fig. 85) quoted ESBEN-PETERSEN (1913) without checking his material (collected by Sauter). A female of *Acheron trux* (Walker, 1853) with light pterostigma visible on the picture of their monograph. I checked the identification of four specimens from Sauter's collection (DEI - Müncheberg). The wings of *Helicomitus* (partim *Ascalaphus*) and *Acheron* species are different in shape. *Acheron* species has apex rounded but definitely not pointed. On the other hand, base of forewing angular but that of *Helicomitus* is obtuse. The mesonotal pattern are also different in the 2 genera.

WALKER (1853) described numerous new *Helicomitus* (partim *Ascalaphus*) species in his catalogue. Later, McLACHLAN (1873) revised Walker's types and found 5 valid species. WEELE (1909) synonymised all *Helicomitus* species described by Walker, Hagen, Westwood and Gerstaecker under *Helicomitus dicax* (*Ascalaphus dicax*). KIMMINS (1949) revised the type material of British Museum Natural History and found some several differences in the Asian species on their prothorax. GHOSH 1988, SZIRÁKI 1998 and NEW 2003 confirmed Kimmins's revision in which I also agree. On the other hand, the above mentioned authors have different opinion on the validity of genus *Helicomitus*. The revision of the Asiatic and Afrotropical species is a task of future research.

I checked numerous photos of Chinese specimens of *Helicomitus dicax* found that all of them were actually *Helicomitus placidus* (Gerstaecker, 1894). *Helicomitus placidus* probably distributed in the whole territory of SE Asia (e.g. Laos and Thailand in coll.: SCM, Kaposvár) and the distribution of *Helicomitus dicax* is surely restricted to India, Sri Lanka (KIMMINS 1949), and Nepal (new record for Nepal, in coll. of SCM, Kaposvár).

***Ascalohybris subjacens* (Walker, 1853)**

Glyptobasis brunnea Esben-Petersen, 1913 **syn. nov.**

Glyptobasis brunnea - Esben-Petersen 1913 (Odescr); Stange & Wang H. 1997 (Chlist), 1998 (Mon); Sziráki 1998 (Chlist); New 2003 (Mon)

Ascalohybris subjacens - Sziráki 1998 (Chlist), 2000 (Dist); New 2003 (Mon)

Hybris subjacens - McLachlan 1873 (Mon); Weele 1909 (Mon); Navás 1913 (Mon); Sonan 1938 (Dist) Kuwayama 1962 (Mon); Stange & Wang H. 1998 (Mon)

Material examined: 1♀, Lectotype of *Glyptobasis brunnea* Esben-Petersen, 1913: "Banskoryo-Distr, Sokkutsa (Formosa) H. Sauter VI. 1912"; "Holotype; ♀"; "*Glyptobasis brunnea* E. Peters", "Lectotypus ♀ *Glyptobasis brunnea* Esben-Petersen, 1913 designed: L. Ábrahám 2008", "*Ascalohybris subjacens* (Walker, 1853) det: L. Ábrahám" - in coll. Deutsche Entomologische Institut (DEI - Müncheberg); 1♀ Prov. Nantou; Uirsun Forest camping 16 km E of Kuoshing 560m 20-21.08.1996. leg. T. Csövári; L. Mikus; 1♂, 2♀ Prov. Nantou 3 km E of Tili 120°58'E; 23°47'N 555m 27-28.05.1997. leg. Cs. Szabóky; 1♂ Prov. Nantou; Huisun Forest Area 500m 15 km N of Puli 07-08.06.1997. leg. B. Herczig & L. Ronkay; 1♀ Prov. Nantou; Uirsun

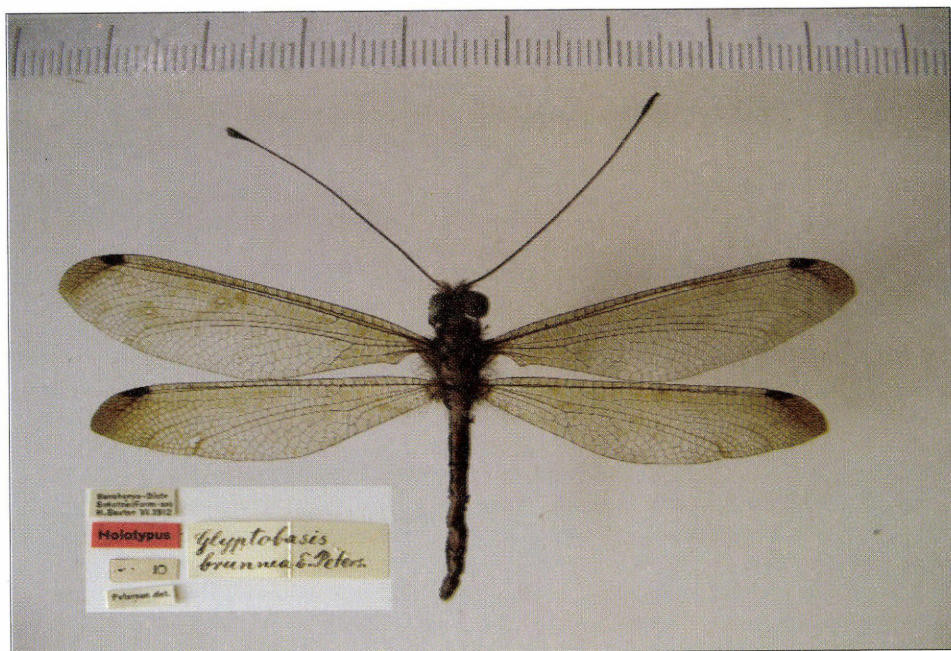


Fig. 7: Lectotype female of *Glyptobasis brunnea* Esben-Petersen, 1913 syn. nov.

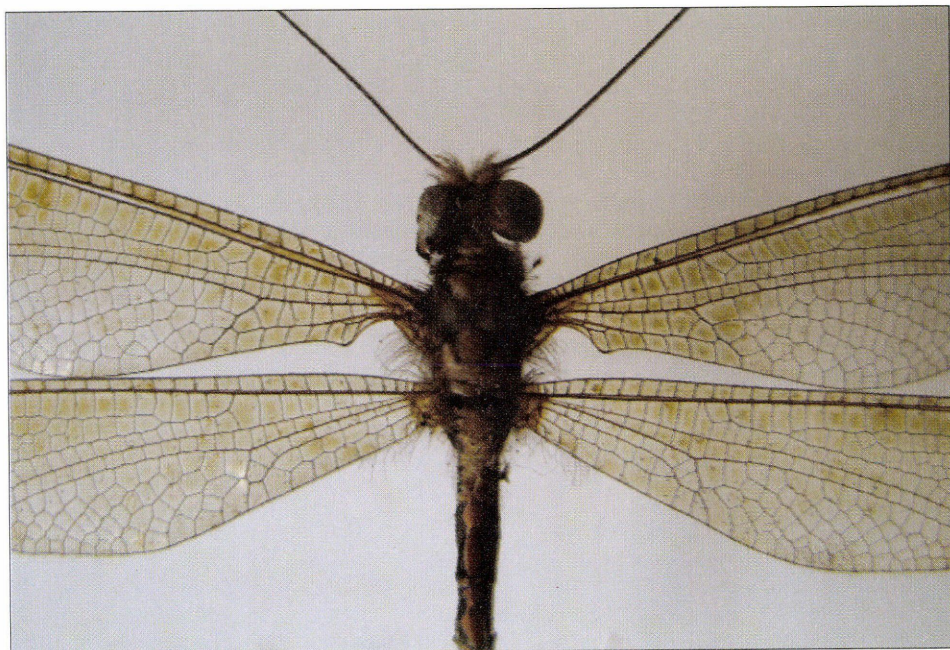


Fig. 8: Lectotype female of *Glyptobasis brunnea* Esben-Petersen, 1913 syn. nov.

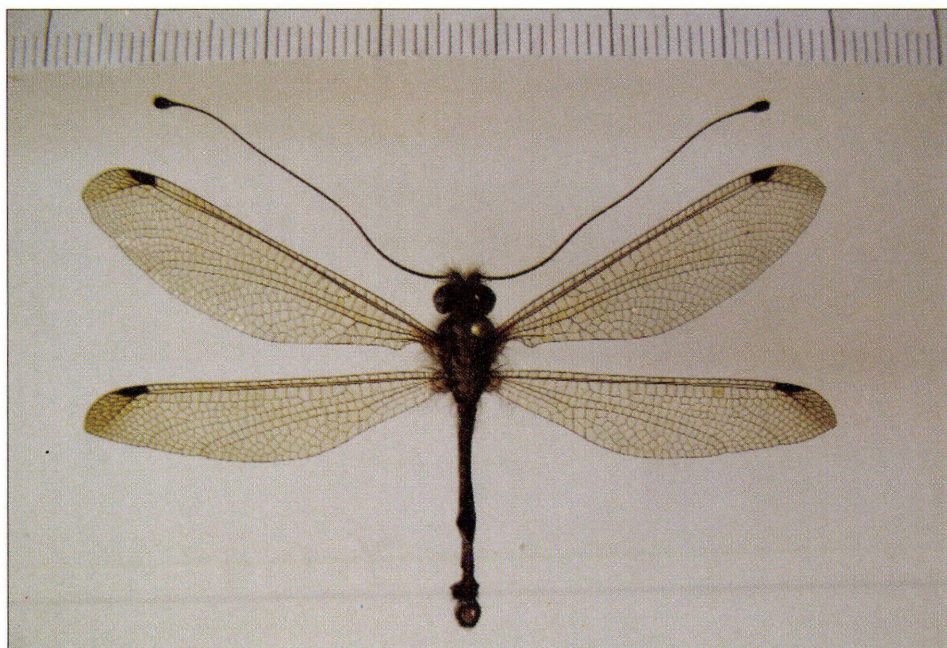


Fig. 9: Male of *Ascalohybris subjacens* (Walker, 1853)

Forest Area 5 km N of Puli 500m 07.09.1996. leg. G. Csorba; L. Németh; 10° Prov. Nantou; 3 km SW of Tsuifeng 2100m 121°10'E; 24°06'N 25.05.1997. leg. Cs. Szabóky

The specimen of *Glyptobasis brunnea* that illustrated in STANGE & WANG H. (1998 Fig. 87w) is a female of *Ascalohybris subjacens* (Walker, 1853). I loaned the *G. brunnea* specimens from the Sauter's collection preserved in DEI (Müncheberg). I found that *Glyptobasis brunnea* Esben-Petersen, 1913 is a junior synonym of *Ascalohybris subjacens* (Walker, 1853).

Esben-Petersen's original description fits very well to *Ascalohybris subjacens* and his illustration shows this species either.

The base of fore wing in genus *Glyptobasis* has pointed and triangular axillary lobe but this is obtuse in genus *Ascalohybris*. The apical brown spots are not specific features (although they are considered to be by Esben-Petersen), it is only individual variation widespread in genera *Ascalohybris*, *Acheron*, *Protacheron* and *Maezous* (ÁBRAHÁM 2008) as well. Furthermore the wing coloration depends on the age of the specimens. Older specimens have darker wings.

As a result of misunderstanding, several authors (like STANGE & WANG H. 1998) identified all brown winged species of *Ascalohybris subjacens* (Walker, 1853) as *Acheron trux* or even *Glyptobasis brunnea* (*brunnea* means brown).

FRASER (1922) also described a new species from Burma namely *Glyptobasis brunnea* Fraser, 1922. This homonymy was recognized by OSWALD and PENNY (1991) and the name was replaced by SZIRÁKI (1998) to *Glyptobasis fraseri*. Unfortunately, I could not check the validity of this species since its deposition is unknown.

It flies from end of May till September. Distribution: Cambodia, China, Japan, South Korea, Taiwan and Vietnam (McLACHLAN 1873, KUWAYAMA 1962, SZIRÁKI 2000, WEELE 1909).



Fig. 10: Male of *Maezous formosana* (Okamoto, 1910) comb. n.



Fig. 11: Female of *Maezous formosana* (Okamoto, 1910) comb. n.



Fig. 12: Male of *Maezous umbrosa* (Esben-Petersen, 1913) comb. n.

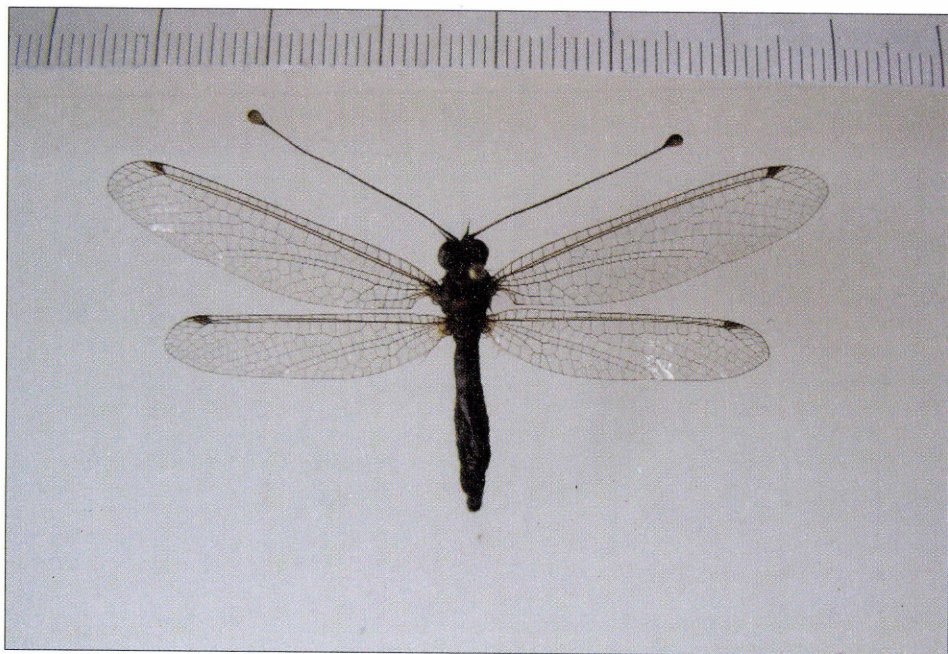


Fig. 13: Female of *Maezous umbrosa* (Esben-Petersen, 1913) comb. n.

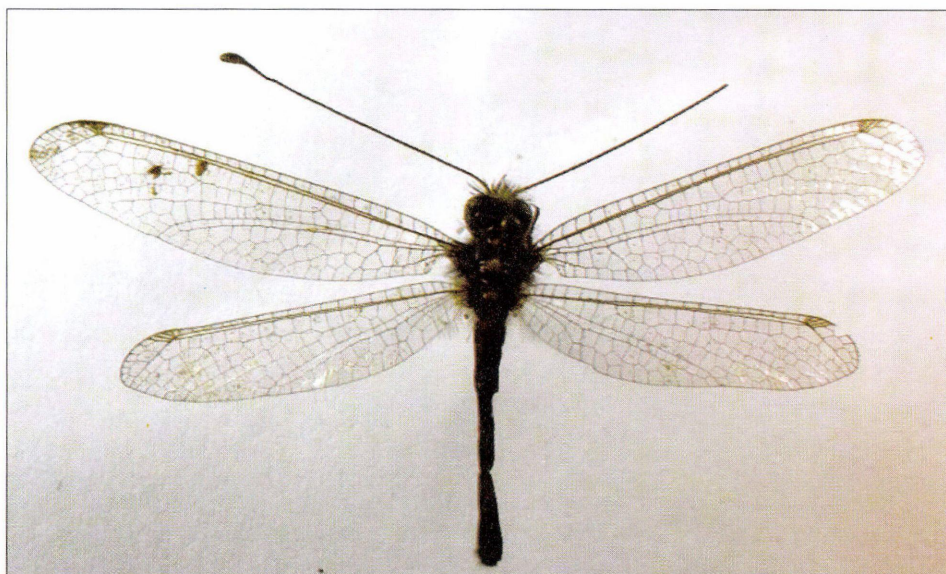


Fig. 14: Holotype female of *Suhpalacsa longialata* Yang, 1992 syn. nov.

***Maezous formosana* (Okamoto, 1910) comb. n.**

Suphalasca formosana - Navás 1913 (Mon); Stange & Wang H. 1997 (Chlist), 1998 (Mon)

Suhpalacsa formosana - Banks 1937 (Dist); Sziráki 1998 (Chlist); New 2003 (Mon)

Material examined: 6♀ Prov. Taitung 2 km N of Tupau 500m 29.05.1995. 120°52'E;22°29'N leg. M. Hreblay & P. Stéger; 1♀ Prov. Taoyuan 14 km E of Fusing 800m 31.05.1995. 121°23'E;24°30'N leg. M. Hreblay & P. Stéger; 1♀ Prov. Hualien 3 km W of Hua Juan 150m 02.07.1996. leg. G. Csorba & L. Németh; 1♂ 1♀ Prov. Nantou 3 km S Hoshe Yu-Shan National Park 1400m 08.07.1996. leg. G. Csorba & L. Németh; 3♂ Prov. Taitung 5 km W Chipen 350m 24.04.1997. leg. Gy. Fábán & S. Kovács; 1♂ 4♀ Prov. Nantou 23 km NE of Puli 500m 11.05.1997. leg. Gy. M. László & G. László; 1♂ Prov. Nantou; Uirsun Forest camping 17 km E of Kuoshing 560m 23.05.1997. 121°00'E;24°05'N leg. Cs. Szabóky; 1♀ Prov. Taitung; 4 km N of Tupau 390m 31.05.1997. 120°52'E;22°28'N leg. Cs. Szabóky

The new genus was recently separated (ÁBRAHÁM 2008) from *Suhpalacsa* which spreads in the Australian realms. It seems to be an endemic in Taiwan. Imagoes fly from end of April till early July.

***Maezous umbrosa* (Esben-Petersen, 1913) comb. n.**

Suhpalacsa longialata Yang, 1992 syn. nov.

Suphalasca umbrosa - Esben-Petersen 1913 (Odescrip); Stange & Wang H. 1997 (Chlist), 1998 (Mon)

Suhpalacsa umbrosa - Banks 1937 (Dist); Sziráki 1998 (Chlist); New 2003 (Mon)

Material examined: Holotype ♀ Hunan Prov. Qianyang Pr. 1981-VI-1. - Synonymisation is based on the description and the colour photo of holotype. - Synonymisation not labelled; 2♀ Prov. Taoyuan; 14 km E of Fusing 800m 24-25.05.1995. 121°23'E;24°50'N leg. M. Hreblay & P. Stéger; 1♂ 1♀ Prov. Nantou; 15 km N of Puli Uirsun Forest Area 500m 09.07.1996. leg. G. Csorba & L. Németh; 1♂ Prov. Nantou; 15 km N of Puli 500m 14-15.10.1996. leg. Gy. Fábán & F. Nemes; 1♀ Prov. Nantou ;3 km S Hosha Yu-Shan National Park 1900m 16.10. 1996. leg. Gy. Fábán & F. Nemes; 1♂ 1♀ Prov. Nantou; 23 km NE of Puli 500m 11.05.1997. leg. Gy. M. László & G. László; 2♀ Prov. Taipei; 10 km NE Pingliu Pi Hu 550m 01.06.1997. leg. Gy. M.

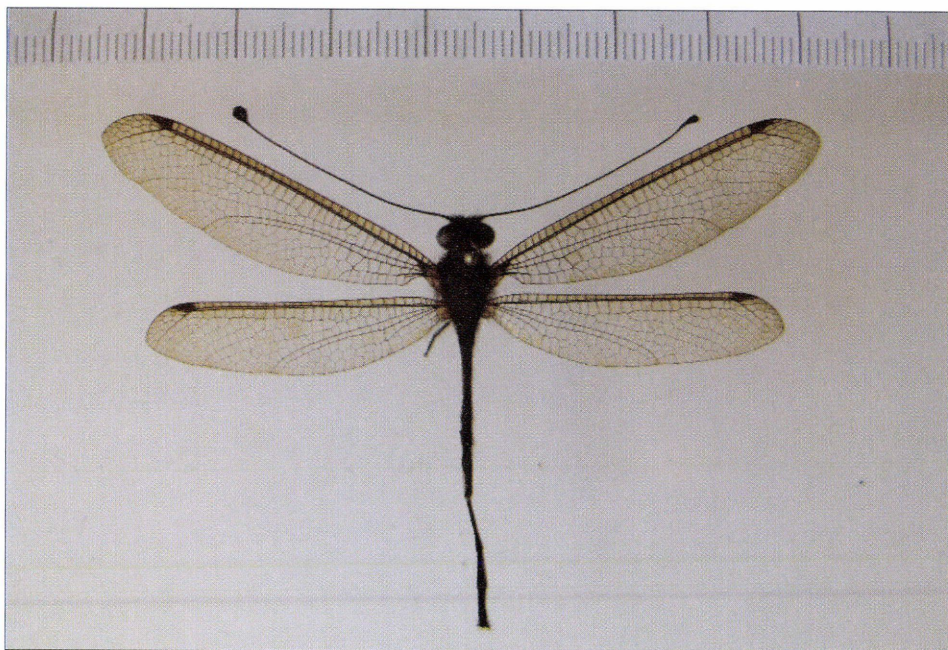


Fig. 15: Male of *Suphalomitus formosanus* Esben-Petersen, 1913



Fig. 16: Female of *Suphalomitus formosanus* Esben-Petersen, 1913

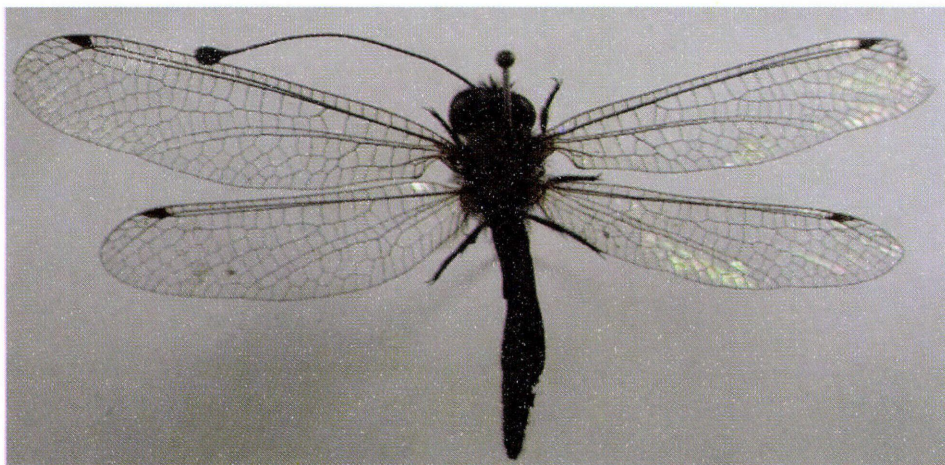


Fig. 17: Holotype female of *Suphalomitus lutemaculatus* Yang, 1992 syn. nov.

László & G. László; 3♂ Prov. Nantou; Uirsun Forest camping 17 km E of Kuoshing 560m 06-07.06.1997. 121°00'E; 24°05'N leg. Cs. Szabóky; 1♂ Prov. Taipei; Pi Hu 500m 122°45'61"E; 24°54'97"N 02.08.1999. leg. A. Kun & O. Juhász

It does not seem to be an endemic species in Taiwan but occurs in the continent of Asia. Fly from May till mid of October.

Suphalomitus formosanus Esben-Petersen, 1913

Suphalomitus lutemaculatus Yang, 1992 syn. nov.

Suphalomitus formosanus - Esben-Petersen 1913 (Odescr); Banks 1937 (Dist); Stange & Wang H. 1997 (Chlist), 1998 (Mon); Sziráki 1998 (Chlist), 2000 (Dist); New 2003 (Mon)

Material examined: Holotype: ♀ Hunan Prov. Yiyang Co. 1981-VII-12. - Synonymisation is based on the description and the colour photo of holotype.; 1♀ Prov. Taitung 2 km N of Tupau 500m 29.05.1995. 120°52'E; 22°29'N leg. M. Hreblay & P. Stéger; 1♂ Prov. Taoyuan 14 km E of Fusing 800m 31.05.1995. 121°23'E; 24°30'N leg. M. Hreblay & P. Stéger; 1♀ Prov. Hualien 3 km W of Hua Juan 150m 02.07.1996. leg. G. Csorba & L. Németh; 1♂ Prov. Taitung 5 km W Chipen 350m 24.04.1997. leg. Gy. Fábán & S. Kovács; 2♂, Prov. Nantou 3 km E of Tili 120°58'E; 23°47'N 555m 27-28.05.1997. leg. Cs. Szabóky; 2♂ Prov. Nantou Huisun Forest Area 500m 15 km N of Puli 07-08.06.1997. leg. B. Herczig & L. Ronkay

So far, it has been considered to be an endemic species to Taiwan. YANG (1992) described *Suphalomitus lutemaculatus* Yang, 1992 from China. In his diagnosis, the specific differences were based only on the colour of basal part of wings. According to him, *Suphalomitus formosanus* has reddish wing base (ESBEN-PETERSEN 1913) while *Suphalomitus lutemaculatus* has yellowish (YANG 1992). After examining of 8 *Suphalomitus formosanus* specimens from Taiwan (preserved in SCM, Kaposvár), I found that the color of wing base varies from reddish to yellow. Several intermediary form was found between the 2 color variation. There was not detected any morphological differences between the 2 species. For this reason, *Suphalomitus lutemaculatus* Yang, 1992 is a junior synonym of *Suphalomitus formosanus* Esben-Petersen, 1913.

It flies from end of April till early July.

Acknowledgements

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