

Ann. Naturhist. Mus. Wien, B	114	27–35	Wien, Oktober 2012
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Notes on the genus *Provespa* ASHMEAD, 1903 (Insecta: Hymenoptera: Vespidae: Vespinae) based on the material of the Naturhistorisches Museum Wien (Austria)

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Abstract

An annotated catalogue of the genus *Provespa* ASHMEAD, 1903 is provided. New records are dealt with from Brunei, China, Indonesia, Malaysia, Myanmar and Thailand.

Key words: Vespidae, Vespinae, *Provespa*, catalogue, new records, Brunei, China, Indonesia, Malaysia, Myanmar, Thailand, Oriental Region.

Zusammenfassung

Eine kommentierte Artenliste der Gattung *Provespa* ASHMEAD, 1903 wird vorgelegt. Neue Funddaten von Brunei, China, Indonesien, Malaysia, Myanmar und Thailand werden mitgeteilt.

Introduction

Currently the small subfamily Vespinae consists of four extant genera: *Dolichovespula* ROHWER, 1916, *Provespa* ASHMEAD, 1903, *Vespa* LINNAEUS, 1758, and *Vespula* THOMSON, 1869 (CARPENTER & KOJIMA 1997). The genus *Provespa*, which contains only three species, is restricted to the Oriental Region and occurs from India (East Himalayas) via southern China to Vietnam and via the Malaysian Peninsula to Sumatra, West-Java and Borneo including nearby smaller islands. There are occasional records from Sulawesi, but an established occurrence is still doubtful.

Species of the genus *Provespa* can be easily recognized by their yellow-brown body colour and the enlarged ocelli. They are nocturnal in their habits and new colonies are founded by swarming. The larvae and pupae of *Provespa* species are consumed by people in China and Indonesia. In Indonesia *Provespa anomala* (DE SAUSSURE, 1854) is known as edible insect from Sumatra (VAN DER MEER MOHR 1941) and Kalimantan (CHUNG 2010) and *Provespa nocturna* VAN DER VECHT, 1935 from Sumatra (VAN DER MEER MOHR 1941). In China *Provespa barthelemyi* DU BUYSSON, 1905 is a common insect food in Yunnan (YI & al. 2010, YING & al. 2010).

A curious fact is the overlap of the distribution areas of all three species in the area of Jitra (Malaysia: Province Kedah), which is currently the southern limit for *Provespa barthelemyi* and the northern limit for *Provespa anomala* and *Provespa nocturna*.

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The small amount of material housed in the Hymenoptera Collection of the Naturhistorisches Museum in Vienna contains all known species. Most of the material has been identified or checked by J. van der Vecht or J. Gusenleitner. *Provespa anomala* is here recorded from Malaysia, Singapore, Brunei and Indonesia, *Provespa barthelemyi* from China, Myanmar, and Thailand and *Provespa nocturna* from Indonesia.

The papers dealing with the genus *Provespa* are scattered in various scientific journals. As some of them are often not available for researchers, I have prepared a catalogue. Papers, which I could not consult, are indicated "not seen" in the chapter references.

Abbreviations

biol.	biology
cat.	catalogue
descr.	description
fig. (s)	figure (s)
syn.	synonym
tab.	table
tax.	taxonomy
typ. gen.	typus generis

Annotated catalogue

Genus *Provespa* ASHMEAD, 1903

Description: ASHMEAD 1903: 182.

Typus generis: *Vespa dorylloides* DE SAUSSURE, 1854 (= *Provespa anomala* (DE SAUSSURE, 1854)).

Distribution: Oriental Region.

Valid species: 3.

Provespa anomala (DE SAUSSURE, 1854)

Vespa anomala de SAUSSURE, 1854: 112 (descr. ♀, Indonesia (Java)); DE DALLA TORRE 1894: 137 (cat. partim); VON DALLA TORRE 1904: 68 (syn. of *Vespa dorylloides* (!) de Saussure). CASOLARI & CASOLARI MORENO 1980: 126 (Indonesia (Java), cat.).

Provespa anomala (DE SAUSSURE, 1854): BEQUAERT 1930: 63 (tax., Myanmar partim, Thailand, Malaysia (West Malaysia, Borneo partim), Indonesia (Sumatra, Java, Borneo partim), Philippines (?)); VAN DER VECHT 1935: 42 (figs. 2A-C); VAN DER VECHT 1936: 160 (tax.), 161 (tax., descr. ♀, Indonesia (Sumatra), 162 (key), 163 (key, tax., Thailand, Malaysia (West Malaysia, Langkawi, Sarawak, Sabah), Indonesia (Sumatra, Bangka, Durian)), 87 (tab. 1: biol.); CARPENTER 1987: 417 (tax.), 430 (without locality); ARCHER 1989: 6 (key), 31 (cat.), fig. 19A; MATSUURA & YAMANE 1990: 187 (biol., tab. 7.2: biol.), 190 (biol., Indonesia (Sumatra)), 191 (fig. 7.2), 192 (fig. 7.3 below), 193 (fig. 7.4C), 233 (cat.), 267 (as food); KOJIMA & YAMANE 1990: 32 (key, Indonesia (Sumatra)); MATSUURA 1991: 257 (biol., Indonesia (Sumatra), 259 (fig. 7.10), 261 (fig. 7.11)); CARPENTER & KOJIMA 1997: 63 (cat.); KOJIMA & VAN ACHTERBERG 1997b: 4 (Malaysia (Sabah), Indonesia (Sumatra)), 6 (biol.); KIFUNE & YAMANE 1998: 213 (biol., Thailand); WENZEL 1998: 25 (cat. nest), 28 (fig. 15B: nest); MATSUURA 1999: 219 (biol., Indonesia (Sumatra)), 220 (fig. 1: biol.), 221 (figs 2: biol., 3: biol.); ARCHER 2000: 127 (tax., fig. 1B),

128 (Thailand, Malaysia (West Malaysia, Sarawak, Sabah), Singapore, Brunei, Indonesia (Sumatra, Bangka, Batu, Java, Kalimantan, Laut), 129 (fig. 2A)); FOSTER & RATNICKS 2001: 2 (fig. 1: tax., biol.); SMITH, O'DONNELL & JEANNE 2001: 336 (tab. 1: biol., cat.); SONTICHAI, PROMKUTKAEW & NAKAMURA 2004: (Thailand); ARCHER 2008: 68 (tax., distr.), 70 (tab. 1: cat.), 71 (biol.), 73 (biol.), 84 (biol.), 86 (biol., tab. 3: biol.), 90 (biol., tab. 7: biol.), 93 (tab. 10: biol.); CHUNG 2010: 148 (biol., as food, Indonesia (Kalimantan)); SAITO & KOJIMA 2011: 66 (tax.), 67 (tab. 1: tax., Indonesia (Kalimantan)), 68 (fig. 2), 70 (figs. 3-5), 71 (Indonesia (Java)), 72 (map); KOJIMA, SAITO & NGUYEN 2011: 57 (Malaysia (West Malaysia)); HYODO et al. 2011: 419 (biol.), 420 (tab. 1: biol., Malaysia (Sarawak)), 423 (biol.), 424 (app.: biol.); NUGROHO, KOJIMA & CARPENTER 2011: 171 (cat. Indonesia).

Vespa doryloides DE SAUSSURE, 1854: 256 (unnecessary replacement name for *Vespa anomala*), pl. 14 (figs. 2, 2a); SMITH 1857: 120 (Myanmar, East India, Indonesia (Sumatra, Java)); SMITH 1858: 116 (Malaysia (Sarawak)); WALLACE 1871 (In: SMITH): 297 (biol.); SMITH 1871: 383 (cat.); CAMERON 1905: 19 (Indonesia (Lingga)); CAMERON 1910: 86 (biol.); DOVER & RAO 1923: 248 (Myanmar partim, Malaysia (Sarawak, Sabah), Indonesia (Kalimantan)); DOVER 1929: 48 (Malaysia (West Malaysia, Sarawak)); BEQUAERT 1930: 63 (syn.); DOVER 1931: 259 (no data); DE SCHULTHESS 1932: 39 (Indonesia: Sumatra).

Vespa doryloides (!) DE SAUSSURE, 1854: DE SAUSSURE 1855: pl. 1 (tax.); ANONYMOUS 1859: 2 (biol., Malaysia (Borneo – in fact Sarawak)); ASHMEAD 1903 (In: ANONYMOUS): 284 (Thailand); DU BUYSSON 1905: 492 (key), 497 (key), 616 (tax., descr. ♂ ♀, biol., Myanmar partim, Malaysia (West Malaysia, Sarawak, Sabah), Singapore, Indonesia (Sumatra partim, Padang (Bengkalis), Kalimantan), pl. 5 (figs. 1, 2); VON SCHULTHESS 1914: 261 (Malaysia (West Malaysia), Indonesia (Sumatra)).

Provespa doryloides (!) (DE SAUSSURE, 1854): ASHMEAD 1903: 182 (typ. gen., Thailand); VON DALLA TORRE 1904: 68 (cat. partim);

Parasites: *Xenos provesparum* KIFUNE, 1986, *Xenos* sp. (Strepsiptera: Xenidae).

Material examined: Malaysia: West Malaysia (Perak: Kuala Kangsar 4 ♀ ♀ 1902 leg. Grubauer) – Sarawak (Batang Ai National Park, Enkari river 3 ♀ ♀ 19.-20. 2. 1993 leg. H. Zettel) – Singapore: Bukit Tamah 2 ♀ ♀ 1888 leg. Ranson. – Brunei: 3 ♀ ♀ 1968 leg. Birkenmeier – Indonesia: Sumatra (1 ♀ Coll. Paganetti – Medan, am Licht 1 ♀ 29. 4. 1922 leg. L. Fulmek – Padang 1 ♀ 16. 1. 1901 leg. Schild – Montes Battak 2 ♀ ♀ Coll. Frustorfer – Pantai Bungus bei Padang 1 ♀ 23. 2. 1991 leg. H. Schillhammer – Permatangsiantar, Holzweg 2 33 ♀ ♀ 23. 2. 1996, 1 ♂, 26 ♀ ♀ 26. 2. 1996; Holzweg 3 15 ♀ ♀ 24. 2. 1996 leg. M. Lödl – Padang Sidempoean 1 ♀ 12. 7. 1925 leg. SWK – Sipirok 2 ♀ ♀ 20. 2. 1996, 1 ♂ 2 ♀ ♀ 21. 2. 1996 leg. M. Lödl) – Bengkalis (1 ♀ 1885 leg. Maindron) – Borneo (4 ♀ ♀ 1852 leg. I. Pfeiffer; 5 ♀ ♀ 1880; 1 ♀ 1882; 2 ♀ ♀ 1886 leg. Baczes) – Sulawesi (1 ♀ 1860 leg. Stevens) – India Orientalis: 2 ♀ ♀ 1866.

Distribution: Myanmar, Thailand, Malaysia (West Malaysia, Pulau Langkawi, Sarawak, Sabah), Singapore, Brunei, Indonesia (Sumatra, Bangka, Batu, Durian, Karimun Lingga, Padang, Java, Kalimantan, Laut).

The record from Taiwan (SONAN 1929: 138) is caused by mislabelling (KOJIMA, SAITO & NGUYEN 2011: 57). The record from Sulawesi (Indonesia) is probably caused by mislabelling or by a dead specimen on board ship. The record from North Thailand (Province Chiang Mai) by SONTICHAI, PROMKUTKAEW & NAKAMURA (2004) should be checked.

Provespa barthelemyi (DU BUYSSON, 1905)

Vespa barthelemyi DU BUYSSON, 1905: 492 (key), 497 (key), 618 (descr. ♂ ♀, India (West Bengal (not Bhutan), Myanmar, Cambodia, Vietnam), pl. 5 (figs. 3, 4); BEQUAERT 1930: 63 (tax., India (West Bengal (not Bhutan), Cambodia, Myanmar, Thailand, Vietnam); VAN DER VECHT 1936: 162 (key), 163 (key), 165 (tax., Laos, Thailand, Malaysia (West Malaysia)); VAN DER VECHT 1957: 4 (key ♀ ♂), 8 (fig. 2 (map)), 10 (tax., India (Sikkim, West Bengal (not Bhutan)), Cambodia, Thailand, Vietnam); VAN DER VECHT 1959: 209 (tax., Myanmar, Thailand); DAS & GUPTA 1984: 434 (cat. India); CARPENTER 1987: 430 (without locality); DAS & GUPTA 1989: 227 (key), 228 (tax., India (Sikkim, West Bengal (not Bhutan))), 253 (figs. 39f, g), 265 (map 41); ARCHER 1989: 6 (key), 31 (cat.), figs. 2A, figs. 18B,C, 19B; MATSUURA & YAMANE 1990: 233 (cat.); MADL 1995: 397 (Thailand); DONG & WANG 1992: 344 (tab. 1: biol. China); CARPENTER & KOJIMA 1997: 64 (cat.); ARCHER 2000: 127 (tax., fig. 1A), 128 (India (Sikkim, West Bengal

(not Bhutan), Assam, Arunachal Pradesh, Manipur), Myanmar, Thailand, Cambodia, Vietnam, Malaysia (West Malaysia)), 129 (fig. 2B (map)); TANO & KUROKAWA 2001: (Myanmar); NGUYEN & CARPENTER 2002: 201 (key, Vietnam); CARPENTER & NGUYEN 2003: 190 (fig. 40); TANGMITCHAROEN & al. 2005: 102 (tab. 2: biol., Thailand); GUSENLEITNER 2006: 679 (India (Meghalaya)); NGUYEN et al. 2006: 96 (key), 98 (Vietnam); ARCHER 2008: 68 (tax., distr.), 70 (tab. 1: cat.), 71 (biol.); KUMAR & NGUYEN 2010: 379 (tax., descr. ♂ ♀, India (Sikkim, West Bengal, Assam, Meghalaya, Arunachal Pradesh, Nagaland, Manipur, Tripura, Mizoram)), 381 (figs. 1-6); SAITO & KOJIMA 2011: 66 (tax.), 67 (tab. 1: tax., Vietnam), 70 (figs. 3-5), 71 (Vietnam, Laos), 72 (map).

Provespa berthelemyi (!) (DU BUYSSON, 1905): DEY 2007: 340 (tax., biol., India (Sikkim)), 341 (tab. 1: tax., fig. 2), 342 (tab. 2: tax., fig. 3).

Provespa berthelemyi (!) (DU BUYSSON, 1905): CARPENTER 1982: 34 (without data).

Provespa anomala (DE SAUSSURE, 1854): BEQUAERT 1930: 63 (India (Sikkim), Myanmar partim); DAS & GUPTA 1984: 433 (cat. India). ROY & KUNDU 1985. (India (Arunachal Pradesh)); DAS & GUPTA 1989: 227 (key, tax., descr. ♂ ♀, India (Sikkim)), 253 (figs. 39d, e), 265 (map 41). JONATHAN, ROY & KUNDU 1999: (India (West Bengal)); JONATHAN, ROY & KUNDU 2000a: (India (Tripura)). JONATHAN, ROY & KUNDU 2000b: (India (Meghalaya)); JONATHAN & KUNDU 2003: (India (Sikkim)); KUNDU, GOSH & ROYCHOWDHURY 2006: (India (Arunachal Pradesh)).

Vespa doryloides (!) DE SAUSSURE, 1854: GRIBODO 1884: 354 (Myanmar).

Vespa doryloides DE SAUSSURE, 1854: BINGHAM 1897: 400 (key, tax., descr. ♀, India (Uttara Pradesh, Uttarakhand (Dehradun), Sikkim, Myanmar), pl. 3 (fig. 5); DU BUYSSON 1905: 618 (India (Himalaya), Myanmar partim); DOVER & RAO 1923: 248 (biol., India (East Himalayas, Assam), Myanmar partim);

Material examined: China: Province Yunnan (Xishuangbanna, N Jinghong, Guangping env., 1000 m 1 ♀ leg. S. Murzin) – Myanmar: Chin State (Natmataung National Park, WNW Kanpetlet township, Oasis Mountain Resort, ca. 1700 m 1 ♂ 1 ♀ 31. 5. 2010, 1 ♂ 6. 6. 2010; WNW Kanpetlet township, pine tree forest, 2340 m 4 ♀♀ 1. 6. 2010, WNW Kanpetlet township, 1930 m 1 ♀ 4. 6. 2010 leg. D. Zimmermann) – Thailand: Provinz Mae Hong Son (WNW Pai, SW Ban Mo Paeng, am Mo Paeng Wasserfall (19°22'41"N/98°22'34"E), 900m 3 ♀♀ 11. 04. 2000 leg. H. & R. Rausch – Province Mae Hong Son, WNW Pai, SW Ban Mo Paeng, in der Nähe des Ortes (19°22'51"N/98°23'52"E), 700m 3 ♀♀ leg. H. & R. Rausch – Provinz Mae Hong Son, NNW Soppong, N Mae Lana, Umgebung Ban Papuek, Weg zur Grenzregion Myanmar (19°39'24"N/98°14'22"E), 1115m 3 ♀♀ leg. H. & R. Rausch) – Province Kanchanaburi (Sai Yok National Park 1 ♀ 3. 12. 1990 leg. M.A. Jäch).

Distribution: India: (Sikkim, West Bengal, Assam, Meghalaya, Arunachal Pradesh, Nagaland, Manipur, Tripura, Mizoram), China (Yunnan, Guangxi), Myanmar, Laos, Cambodia, Vietnam, Thailand, Malaysia (West Malaysia).

Actually the locality Maria Basti is situated in West Bengal (India). Therefore Bhutan (DU BUYSSON 1905: 619) is deleted from the distribution list. The record from Uttar Pradesh has never been confirmed (DAS & GUPTA 1989: 228).

Provespa nocturna VAN DER VECHT, 1935

Provespa nocturna VAN DER VECHT, 1935: 41 (descr. ♂ ♀, biol., Indonesia (Sumatra, Kalimantan), 42 (figs. 1A-C); VAN DER VECHT 1936: 159 (tax., descr. ♂ ♀, Malaysia (West Malaysia, Sarawak), Indonesia (Sumatra)), 161 (figs. 1-3), 162 (key ♀, ♂), 163 (tax., Malaysia (West Malaysia, Sarawak, Sabah), Indonesia (Sumatra)); VAN DER VECHT 1957: 3 (key ♀), 4 (key ♂), 8 (fig. 2 (map), 9 (tax., biol., Indonesia (Sumatra, Bangka, Kalimantan, Vietnam); VAN DER VECHT 1959: 210 (Malaysia (Sarawak), Indonesia (Sumatra)); MATSUURA 1983: 27 (biol., Indonesia (Sumatra)), 28 (tab. 2-4: biol.); KIFUNE 1986: 86 (biol., Indonesia (Sumatra)), 87 (tab. 1: biol.); DAS & GUPTA 1989: 227 (key), 253 (figs. 39a-c), 265 (map 41); ARCHER 1989: 6 (keys ♂ ♀), 31 (cat.), figs 18A, 19A; MATSUURA & YAMANE 1990: 187 (as *Provespa*, biol.), 190 (biol., Indonesia (Sumatra)), 192 (fig. 7.3 above), 193 (figs. 7.4A, B), 209 (tab. 9.1: biol.), 233 (cat.), 267 (used as food); KOJIMA & YAMANE 1990: 32 (key), 33 (Indonesia (Sumatra)); MATSUURA 1991: 257 (biol., Indonesia (Sumatra)); CARPENTER & KOJIMA 1997: 64 (cat.); KOJIMA & VAN ACHTERBERG 1997b: 158 (type cat.); SCHMITZ & MORITZ 1998: 184 (Malaysia without locality), 185 (figs. 1a, b: tax.), 186 (tax.), 187 (tab. 1: tax.), 188 (fig. 2: tax.), 190 (fig. 3: tax.); ARCHER 1999: 90 (Australia

(Queensland)); ARCHER 2000: 127 (tax., fig. 1B), 128 (Thailand, Vietnam, Malaysia (West Malaysia, Sarawak, Sabah), Indonesia (Sumatra, Bangka, Kalimantan), Australia (Queensland)), 129 (fig. 2C); SMITH, O'DONNELL & JEANNE 2001: 336 (tab. 1: biol., tax.); NGUYEN & CARPENTER 2002: 201 (key), 202 (cat.); CARPENTER 2003: 3 (fig. 1: tax.), 4 (fig. 2: tax.), 6 (fig. 3: tax.), 7 (fig. 4: tax.), 8 (fig. 5: tax.), 9 (fig. 6: tax., fig. 7 (tax.)), 10 (fig. 8: tax.), 11 (fig. 9: tax.), 16 (app. 1: tax.), 17-20 (app. 2: tax.); ARCHER 2008: 68 (tax., distr.), 70 (tab. 1: cat.), 71 (biol.), 86 (biol.); SAITO & KOJIMA 2011: 66 (tax.), 67 (tab. 1: tax., Malaysia (West Malaysia)), 68 (fig. 1), 70 (figs. 3-5), 72 (map); KOJIMA, SAITO & NGUYEN 2011: 57 (Malaysia (West Malaysia)); NUGROHO, KOJIMA & CARPENTER 2011: 171 (Sumatra, cat. Indonesia).

Provespa anomala (DE SAUSSURE, 1853): DU BUYSSON 1905: 616 (Sumatra partim).

Parasites: *Bareogonalos* sp. (Hymenoptera: Trigonalidae) – *Xenos provesparum* KIFUNE, 1986 (Strepsiptera: Xenidae).

Material examined: Indonesia: Sumatra (without locality 1 ♂ 1893 – Padang 1 ♂ 16.1.1901 leg. Schild – Permatangsiantar, Holzweg 2 1 ♂ 4 ♀♀ 23.2.1996, 2 ♀♀ 24.2.1996; Holzweg 3 3 ♀♀ 24.2.1996 leg. M. Lödl – Sipirok 1 ♂ 15 ♀♀ 21.2.1996 leg. M. Lödl).

Distribution: Malaysia (West Malaysia, Sarawak, Sabah), Indonesia (Sumatra, Bangka, Kalimantan).

The record from Sulawesi (VAN DER VECHT 1935: 43) was caused by mislabelling (VAN DER VECHT 1957: 9). The records from Vietnam and Australia (Queensland), which are far away from the core range of *Provespa nocturna*, are probably caused by dead specimens on board ships. NGUYEN & CARPENTER (2002) have not seen any material from Vietnam.

Acknowledgements

I thank Manuela Vizek and Dominique Zimmermann (both Naturhistorisches Museum Wien, Austria) for making unidentified material available for study. I am grateful to C. van Achterberg (Netherlands Centre for Biodiversity Naturalis in Leiden, Netherlands), J.M. Carpenter (American Museum of Natural History in New York, U.S.A.), P.D. Durst (FAO Regional Office for Asia and the Pacific in Bangkok, Thailand), J. Gusenleitner (Linz, Austria), J. Kojima (Ibaraki University in Mito, Japan), L.T.P. Nguyen (Vietnamese Academy of Science and Technology in Hanoi, Vietnam) and F. Saito (Japan) for providing copies of papers. I also thank J.M. Carpenter for his comments on an earlier draft of the manuscript.

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