

VESPIDAE OF VIETNAM (INSECTA: HYMENOPTERA)

1. VESPINAE

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Abstract.—Three genera and 15 species of Vietnamese wasps belonging to the subfamily Vespinae of the family Vespidae are recorded. Among them, one genus and three species are new records for Vietnam, and the record of one species is doubtful.

Key words: Vespidae, Vespinae, new distribution records.

Up to the present time, the Vespidae of Vietnam are little known. Just two genera and 12 species of the subfamily Vespinae were recorded in the checklist by Carpenter and Kojima (1997), and this is the best known vespid subfamily, as the species are large and conspicuous wasps. The total of 12 species contrasts with Thailand, which had three genera and 18 species of Vespinae recorded by Carpenter and Kojima (1997). Vietnam is likely to have about as rich a fauna, thus the previously recorded diversity is minimally an underestimate by about a third of the true diversity.

Historically, the most significant collection of Vespidae from Vietnam is that of the Muséum National d'Histoire Naturelle (MNHN) in Paris, France. The holdings of that institution formed the basis of monographic studies of Vespinae by du Buysson (1905) and van der Vecht (1957, 1959) in the last century. Only a few scattered reports mention specimens in other collections. Recent specimens of vespid wasps collected by Master's student Nguyen Thi Phuong Lien and Dr. James M. Carpenter during two expeditions to Vietnam were studied for this review. In addition to this material, the other specimens of Vespidae collected in Vietnam and deposited in the American Museum of Natural History (AMNH) and Insect Taxonomy Department and Museum of Zoology of the Institute of Ecology and Bioresources (IEBR) were examined and identified.

The present paper deals with subfamily Vespinae, including the genera *Vespa*, *Provespa* and *Vespula*. Keys to all the hitherto known genera and species are provided. The classification followed is that used by Carpenter and Kojima (1997). In the sections listing specimens examined below, the abbreviation IED is used for the Insect Ecology Department and ITD is used for the Insect Taxonomy Department, respectively, of the IEBR.

The recent localities are plotted on a basemap of Vietnam in Fig. 1, which includes the current names of provinces and a key to the place names. The total of 35 collected places spans the length of Vietnam, but the map is most notable for the absence of collection localities, particularly in southern Vietnam. Further collecting should considerably augment the knowledge of vespine distribution in Vietnam.

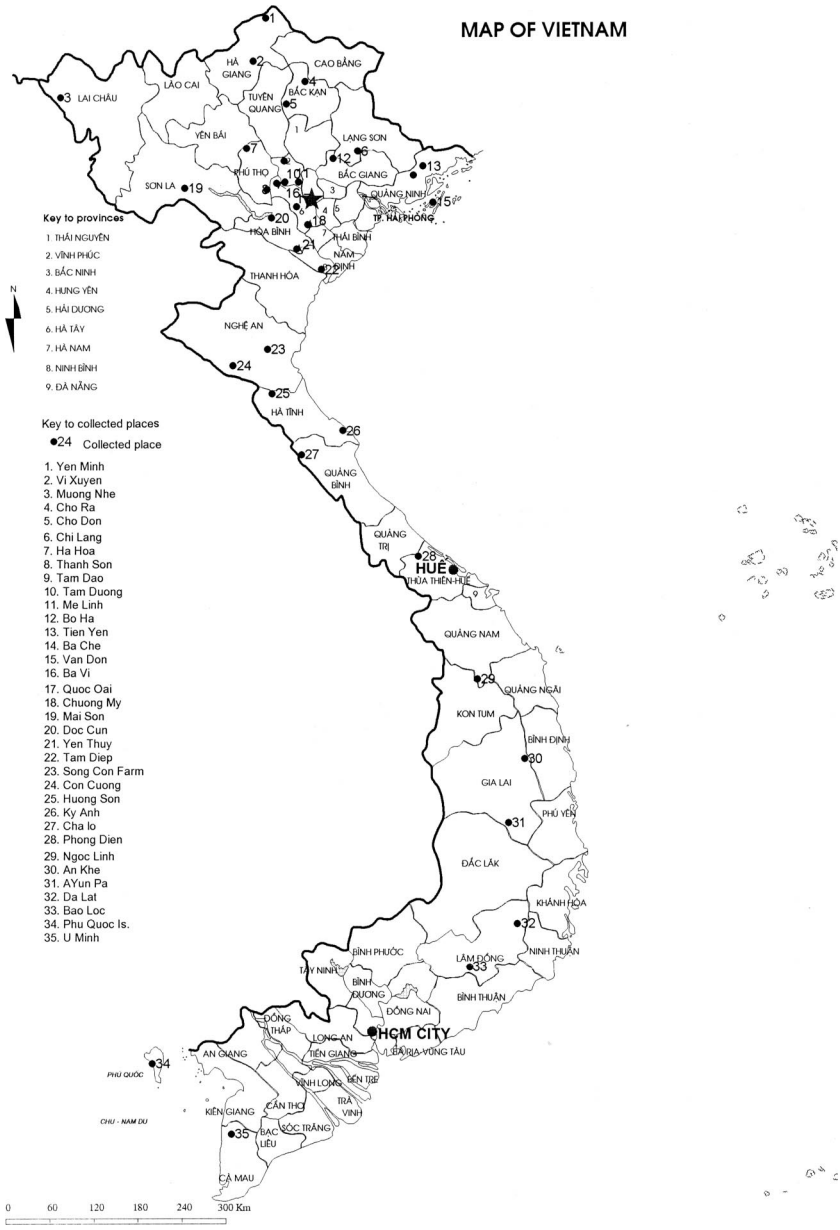


Fig. 1. Recent collecting localities in Vietnam reported in this paper. The current provinces are shown, along with their names. The key to collected places uses a shortened form of the locality names given in the text.

KEY TO THE GENERA OF THE VESPINAE

1. Ocelli enlarged, posterior ocelli close to the eye than to each other . . . *Provespa* Ashmead
- Ocelli not enlarged, posterior ocelli more than twice as far from the back of the head as from each other 2
2. Pronotal carina present; vertex long, ocelloccipital distance greater than distance between posterior ocellus and eye; prestigma length three times that of pterostigma *Vespa* Linnaeus
- Pronotal carina absent; vertex short, ocelloccipital distance shorter than or equal to distance between posterior ocellus and eye; prestigma subequal in length to pterostigma *Vespula* Thomson

GENUS *PROVESPA* ASHMEAD

Provespa Ashmead, 1903, Ent. News 14: 182, genus.

Type species: *Vespa dorylloides* de Saussure, 1854 [= *Vespa anomala* de Saussure, 1854], by original designation.

KEY TO THE SPECIES OF *PROVESPA*

1. Clypeus deeply emarginate apically in females, shallowly in males, the apical angles prominent and slightly projecting; female scutum longer than wide and clypeus brownish; male antenna without tyloides *nocturna* van der Vecht
- Clypeus shallowly emarginate apically in females, almost straight in males, the apical angles not prominent or projecting; female scutum nearly as wide as long and clypeus pale yellow; male antenna with tyloides *barthelemyi* (du Buysson)

Provespa barthelemyi (du Buysson, 1905)

Vespa Barthelemyi du Buysson, 1905 (1904), Ann. Soc. Ent. France 73: 492 (key), 618, pl. V figs. 3, 4.

Previous records. Du Buysson (1905: 619) described this species from, *inter alia*, “Cochinchine, cap S-Jacques (. . . avril, M^{is} de Barthélemy 1900, Muséum de Paris)” based on a worker. Van der Vecht (1957: 10) recorded this species from “Baria in Cochinchina, A. Brebion, leg. Dr. J. V. Vautier, 1910, 1911” based on two workers in the MNHN, and “Saigon, leg. Santschi” based on two workers and two males in the MNHN.

Material examined. 1 female, Gia Lai Prov., An Khe, Song Ba Farm, 300 m, 29 Mar. 1978, IED’s collectors; 2 females, same locality and collectors, 31 Mar. 1978; 1 female, Phu Tho Prov., Thanh Son, Xuan Son, 250 m, 5 Mar. 1975, IED’s collectors; 1 female, Bac Can Prov., Cho Ra, Ba Be Co-operative, 500 m, 24 Nov. 1976, IED’s collectors; 1 female, Quang Nam Prov., Ngoc Linh, 1,470 m, 24–26 March 1999, Christine Johnson, light; 1 female, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 61 m, 25 July 2000, Malaise trap, Khuat Dang Long.

Distribution. Himalayan India and southern China, and throughout continental Southeast Asia.

Provespa nocturna van der Vecht, 1935

Provespa nocturna van der Vecht, 1935, Ent. Meded. Ned. Indië 1: 41, fig. 1.

Previous records. Van der Vecht (1957: 9) recorded this species from "Indo-China: . . . Tonkin, rég. de Hoa-Binh, 1929, leg. A. de Cooman" based on a worker in the MNHN.

Specimens examined. No specimens were seen of this species.

Distribution. Vietnam; Malaysia; Sumatra, Bangka, and Borneo; introduced into Australia (Queensland).

GENUS *VESPA* LINNAEUS

Vespa Linnaeus, 1758, Syst. Nat., ed. 10, 1: 343, 572, genus (17 species).

Type species: "*Vespa crabro*, Fab." [= *Vespa crabro* Linnaeus, 1758], by subsequent designation of Latreille, 1810, Consid. Gen. Crust. Arachn. Ins.: 438.

Macrovespa Dalla Torre, 1904, Gen. Ins. 19: 64, group of genus *Vespa* Linnaeus.

Type species: *Vespa crabro* Linnaeus, 1758, by subsequent designation of Bequaert, 1930, Bull. Brooklyn Ent. Soc. 25: 64.

Nyctovespa van der Vecht, 1959, Zool. Meded., Leiden 36 (13): 210, subgenus of *Vespa* Linnaeus.

Type species: *Vespa binghami* du Buysson, 1905, by original designation.

KEY TO THE SPECIES OF *VESPA*

1. Pretegular carina complete, crossing spiracular operculum 2
- Pretegular carina incomplete, only extending to center of spiracular operculum 9
2. Female clypeus with bluntly triangular tooth on each side of the apical emargination; male metasomal sternum VII nearly straight or very shallowly emarginate apically; male eye usually separated from clypeus by a distinct gap on each side 3
- Female clypeus with short broadly rounded lobe on each side of the apical emargination; male metasomal sternum VII either convex or broadly and deeply emarginate apically; eye touching clypeus on each side 6
3. Head enlarged and produced behind eyes: gena more than 1.8× eye width in female, 1.4× male 4
- Head not swollen behind eyes, gena less than 1.8× eye width in female, 1.4× in male 5
4. Metasomal terga I–II orange with a narrow apical black band, metasomal terga III–VI black *soror* du Buysson
- Metasomal terga I–V black with a narrow apical orange band, metasomal tergum VI largely orange *mandarinia* Smith
5. Female metasomal terga I–II orange with a narrow apical black band; segments V–VI black; male metasomal tergum II with a broad apical orange-yellow band which extends one third or more the distance across the tergum; metasomal terga never all black; female clypeus orange; head orange-yellow *ducalis* Smith
- Metasomal tergum II orange-yellow, sometimes with a narrow apical black band, or metasomal terga all black except sometimes a narrow apical orange-yellow band on tergum II which extends for less than one third the distance across the tergum; female clypeus never all orange, if orange with some black mark then vertex orange with

- dark blotch enclosing the ocelli, clypeus usually black with margin orange and vertex black *tropica* (Linnaeus)
6. Female first metasomal tergum about half as long or longer than wide as seen from above; male metasomal sternum VI deeply emarginate apically 7
- Female first metasomal tergum less than half as long as wide as seen from above; male metasomal sternum VI nearly straight or shallowly and narrowly emarginate apically 8
7. Scutum and vertex with distances between punctures less than puncture diameter; metasomal tergum II largely or entirely reddish-brown except where the body coloration may be entirely black *affinis* (Linnaeus)
- Scutum and vertex with with distances between punctures greater than puncture diameter; metasomal tergum II black or dark brown with at most a narrow yellow to reddish-brown apical band *mocsaryana* du Buysson
8. Ocelli large, the posterior ocelli nearer to the eyes than to each other; female clypeus more or less emarginate apically, without median tooth; male metasomal sternum VII convex apically *binghami* du Buysson
- Ocelli normal size, the posterior ocelli closer to each other than to the eyes; female clypeus with broad and deep emargination and blunt median tooth apically; male metasomal sternum VII emarginate apically *analisis* Fabricius
9. Scutellum and metanotum entirely or mainly yellow; vertex black *bicolor* Fabricius
- Scutellum and metanotum usually not entirely or mainly yellow, often without yellow markings; if mainly yellow the vertex is not entirely black, posteriorly with a yellow band 10
10. Scutal punctures separated by up to two or three puncture diameters; female metasomal terga black except for parts of tergum II; male metasomal sternum VII convex apically *basalis* Smith
- Scutal punctures often only separated by one puncture diameter; female metasomal terga not entirely black, except for I; male metasomal sternum VII deeply emarginate apically 11
11. Light-colored areas of the vertex, gena and scutellum orange or reddish-yellow; metasomal tergum II mainly dark colored; metasomal terga V–VI (female) or V–VII (male) orange or reddish-brown *auraria* Smith
- Head reddish-brown; metasoma darker (terga V–VI or V–VII reddish brown) *velutina* Lepeletier

Vespa affinis (Linnaeus, 1764)

Apis affinis Linnaeus, 1764, Mus. Ludov. Ulricae: 417.

Previous records. Du Buysson (1905: 535) recorded this species (as a variety of *Vespa cincta* Fabricius) from “Cochinchine (1861, *Muséum de Paris; coll. J. de Gaulle*),” “Tonkin (*R. Oberthür 1898, Muséum de Paris*),” “frontière de Chine, Ha Giang (*A. Weiss 1901, Muséum de Paris*),” “Saïgon (*Germain 1864, Muséum de Paris*),” “Haut Tonkin, Phuon-lom (*leg. J. Laisi, R. Oberthür 1901, Muséum de Paris*)” and “Annam, Nha-trang (*J. Blin 1902, Muséum de Paris*).” Pérez (1910: 40) described *indosinensis* (now considered a synonym) from, *inter alia*, “Cochinchine; Annam (M. Boutan).” Bequaert (1936: 349) recorded this species (as *affinis* var. *indosinensis* Pérez) from “INDO-CHINA: Hanoi (W. Demange).” Van der Vecht (1957: 28) recorded this species (as *affinis* subspecies *indosinensis*) from “Indo-China: Tonkin, . . . frontière de China, Ha-Giang, A Weiss, 1901” based on two

workers, "Hanoi, 1911, G. Dupouy" based on one worker, "Hoa Binh, 1927, 1934, A. de Cooman" based on two workers, "Annam, . . . prov. Phanrang, région de Cana, 700–800 m, 1923, leg. Poilane" based on two workers, "Cochinchine, . . . Cap St. Jacques, 1913, leg. Fouquet" based on one worker, and "Saigon, leg. Germain, 1894" based on two workers; all specimens in MNHN. Van der Vecht (1959: 213) recorded it (using the same subspecies name) from "Indo-China: . . . Phuquoc, 28 Aug. 1924, R. V. de Salvaza" based on a worker in the Institut Royal des Sciences Nautrelles (IRSN), Brussels, Belgium; and (all following specimens in the MNHN) "Tonkin, Hanoi, coll. J. de Gaulle, 1919" based on one queen, "Tonkin, rég. de Hoa-Binh, A. de Cooman, 1927–8" based on two workers, "Tonkin, Poste de Dong-Dang, Madame Réville" based on one worker, "Cochinchine, Cap St. Jacques, leg. Fouquet, 1913" based on two workers, "Annam, Lién-Chiên près Tourane, 1,000 m, Mme Poilane, 1923" based on one worker, "Annam, Col des Nuages près Tourane, Mme Poilane, 1923." based on one worker, and "Annam, Quang-tri, M. Maurier, 1922" based on two workers.

Specimens examined. 2 females, Lang Son Prov., Chi Lang, 300 m, 6 June 1964, IED's collectors; 1 female, Lang Son Prov., Bac Son, 500 m, July 1965, IED's collectors; 1 female, Bac Giang Prov., Bo Ha, Bo Ha Farm, 100 m, 19 July 1965, IED's collectors; 1 female, Ninh Binh Prov., Tam Diep, Dong Giao Farm, 100 m, July 1965, IED's collectors; 1 female, Son La Prov., Mai Son, To Hieu Farm, 500 m July 1965, IED's collectors; 1 female, Ha Tay Prov., Chuong My, Phu Nam An, 10 m, 25 May 1967, IED's collectors; 1 female, Quang Ninh Prov., Tien Yen, Dong Ngu, 100 m, 19 Oct. 1969, IED's collectors; 1 female, Vinh Phuc Prov., Tam Duong, 150 m, 1 Oct. 1975, IED's collectors; 6 females, Phu Tho Prov., Thanh Son, Xuan Son, 250 m, 5 Mar. 1975, IED's collectors; 1 females, Hoa Binh Prov., Cun slope, 300 m, 18 Oct. 1976, IED's collectors; 3 females, Gia Lai Prov., Ayunpa, Cheo Reo, 300 m, 13 May 1980, IED's collectors; 3 females, Ha Tay Prov., Quoc Oai, 10 m, 28 Aug. 1998, IED's collectors; 3 females, Hoa Binh Prov., Yen Thuy, Bao Hieu, 100 m, 16 Aug. 1999, IED's collectors; 1 female, Quang Binh Prov., Bo Trach, Ba Den, 400 m, Aug. 2000, ITD's collectors; 28 female, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 40 m, 27 May 2000, N. P. Lien; 1 female, same locality, IED's collectors, 20 July 2000; 5 females, same locality and collectors, 19 July 2000; 2 females, same locality and collectors, 21 July 2000; 4 females, Ca Mau Prov., U Minh, U Minh Thuong, 50 m, 5 Oct. 2000, ITD's collectors; 22 females, Phu Tho Prov., Ha Hoa, Ao Chau, 50 m, 13 Sep. 2000, ITD's collectors; 3 females, Phu Tho Prov., Ha Hoa, Y Son, 50 m, 15 Sep. 2000, ITD's collectors; 2 females, Hoa Binh Prov., Yen Thuy, Da Phuc, 100 m, 27 July 2000, IED's collectors; 5 females, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 60 m, 24 May 2000, N. P. Lien; 17 females, same locality and collector, 22 Aug. 2000; 14 females, Ha Tay Prov., Ba Vi Mt., 800 m, 19 Sep. 2000, N. P. Lien.

Distribution. India; Sri Lanka; China; Taiwan; Ryukyu Islands; continental Southeast Asia; Indonesia from Sumatra and Borneo to New Guinea; New Britain and New Ireland; the Philippines.

Vespa analis Fabricius, 1775

Vespa analis Fabricius, 1775, Syst. Ent.: 363.

Previous records. Du Buysson (1905: 516) recorded this species from "Cochinchine" based on material in the MNHN (no further detail given).

Specimens examined. 1 female, Vinh Phuc Prov., Tam Dao Mt., 900 m, 27 Sep. 1975, IED's collectors; 1 female, Hoa Binh Prov., Mai Chau, Pa Co, 900 m, 11 Oct. 2000, ITD's collectors; 1 female, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 60 m, 19 July 2000, IED's collectors; 1 female, Vinh Phuc Prov., Tam Dao Mt., 800 m, 8 Sep. 2000, N. P. Lien.

Distribution. India and China; continental Southeast Asia; Indonesia from Sumatra and Java, through the Sunda Islands to Bali; Taiwan; Korea; Japan; Russia.

Vespa auraria Smith, 1852

Vespa auraria Smith, 1852, Trans. Ent. Soc. Lond. (N. S.) 2 (2): 46, pl. VIII fig. 8.

Specimens examined. 1 female, Ninh Binh Prov., Tam Diep, Dong Giao Farm, 100 m, July 1966, IED's collectors; 1 female, Vinh Phuc Prov., Tam Dao Mt., 900 m, 27 Sep. 1975, IED's collectors; 3 females, Son La Prov., To Hieu Farm, 500 m, 4 Sep. 1993, IED's collectors; 3 females, Lam Dong Prov., Da Lat, Truyen Lam, 1,350 m, 14 Nov. 2000, ITD's collectors; 5 females, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 70 m, 20 July 2000, IED's collectors; 17 females, Vinh Phuc Prov., Tam Dao Mt., 900 m, 9 Sep. 2000, N. P. Lien; 6 females, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 50 m, 22 Aug. 2000, N. P. Lien; 6 females, Ha Tay Prov., Ba Vi Mt., 800 m, 18 Sep. 2000, N. P. Lien; 1 female, Ha Giang Prov., Vi Xuyen, Cao Bo, 200 m, 24 Apr. 2000, N. P. Lien.

Distribution. Afghanistan to southern China; continental Southeast Asia including Vietnam (new record). Introduced into Yemen.

Discussion. This is the first record of this species from Vietnam.

Vespa basalis Smith, 1852

Vespa basalis Smith, 1852, Trans. Ent. Soc. Lond. (N. S.) 2 (2): 46, female.

Previous records. Van der Vecht (1959: 216) recorded this species from "Indo-China: . . . Tonkin, région de Hoa-Binh, A. de Cooman, 1927" based on two workers in the MNHN.

Specimens examined. 1 female, Quang Nam Prov., Ngoc Linh, 24 March 1999, C. Johnson, Malaise trap; 1 female, Vinh Phuc Prov., Tam Dao., 21°27'N 105°38'E, 890 m, 4 May 2000, J. M. Carpenter; 1 female, Bac Can Prov., Dong Lac, Cho Don, 550 m, 1 Dec. 2000, ITD's collectors.

Distribution. Pakistan and northern India; southern China; Taiwan; continental Southeast Asia; Sumatra.

Vespa bicolor Fabricius, 1787

Vespa bicolor Fabricius, 1787, Mant. Ins. 1: 288.

Previous records. Du Buysson (1905: 545) recorded this species from "Cochinchine (coll. J. de Gaulle)." Van der Vecht (1957: 41) recorded this species from "Tonkin: . . . région de Hoa-Binh, 1926–1934, A. de Cooman" based on four workers in the MNHN; "Annam: . . . prov. de Quang Tri, rég. de Vinh-Linh, 1922, leg. Jabouille" based on one worker, "Col des Nuages près Tourane, 1923, leg. Mme. Poilane"

based on one worker, and “prov. Phan-rang, région de Ca-na, 700–800 m, 1923, leg. Poilane” based on two queens; all specimens in the MNHN.

Specimens examined. 1 female, Nghe An Prov., Song Con, 500 m, July 1965, IED’s collectors; 3 females, Ha Tay Prov., Chuong My, Phu Nam An, 10 m, 25 May 1967, IED’s collectors; 3 females, Quang Ninh Prov., Ba Che, 100 m, 29 Oct. 1969, IED’s collectors; 1 female, Quang Ninh Prov., Tien Yen, Dong Ngu, 100 m, 19 Oct. 1969, IED’s collectors; 1 female, Quang Ninh Prov., Van Yen, 100 m, 18 June 1969, IED’s collectors; 3 females, Phu Tho, Tam Duong, 150 m, 1 Oct. 1975, IED’s collectors; 1 female, Phu Tho Prov., Thanh Son, Thuong Cuu, 200 m, 10 Mar. 1975, IED’s collectors; 2 females, Vinh Phuc Prov., Tam Dao Mt., 800 m, 29 Sep. 1975, IED’s collectors; 3 females, Bac Can Prov., Cho Ra, Ba Be Co-operative, 24 Nov. 1976, 500 m, IED’s collectors; 1 female, Quang Binh Prov., Cha Lo, 17°42’N 105°46’E, 298 m, 14–17 April 1998, J. M. Carpenter; 2 females, Ha Thinh Prov., 17 km SE Huong Son, 18°22’N 105°13’E, 180 m, 19–23 April 1998, J. M. Carpenter; 1 female, Ha Thinh Prov., Huong Son, 18°22’N 106°13’E, 200–300 m, April–May 1998, Cal Snyder; 1 female, same locality, 900 m, 20–28 April 1998, Malaise trap; 3 females, same locality, 1,250 m, 28 April 1998, Malaise trap; 1 female, same locality, 1,250 m, 20 May 1998, Malaise trap; 1 female, Quang Nam Prov., Ngoc Linh, 920 m, 13–21 March 1999, Christine Johnson; 1 female, Quang Nam Prov., Ngoc Linh, 1,470 m, 24–26 March 1999, Christine Johnson, light; 3 females, Lam Dong, Bao Loc, Dambri, 800 m, 8 Nov. 2000, ITD’s collectors; 6 females, Ha Tinh Prov., Huong Son, Rao An, 100 m, 20 Apr. 1998, K. D. Long; 12 females, Vinh Phuc Prov., Tam Dao Mt., 900 m, 9 Sep. 2000, N. P. Lien.

Distribution. northern India; China; continental Southeast Asia.

Vespa binghami du Buysson, 1905

Vespa binghami du Buysson, 1905 (1904), Ann. Soc. Ent. France 73: 488 (key), 523.

Previous records. Archer (1989: 33) listed it from “North Vietnam” in his distributional summary without providing an actual record. However, he later (Archer, 1999: 43) omitted Vietnam entirely from the distributional summary for the species, and his Fig. 1, which plots the distribution of *binghami*, does not show Vietnam. Archer’s listing in 1989 was therefore perhaps a mistake, and the presence of this species in Vietnam, while possible, is not documented.

Specimens examined. No specimens were seen.

Distribution. Northern India; China; continental Southeast Asia (including Vietnam?); Russia; Korea.

Vespa ducalis Smith, 1852

Vespa ducalis Smith, 1852, Trans. Ent. Soc. Lond. (N. S.) 2 (2): 39.

Previous records. Du Buysson (1905: 518) recorded this species from “Tonkin: Monts Manon (avril-mai, 2–3000 m. leg. H. Fruhstorfer, coll. von Schulthess Rechberg).” Van der Vecht (1959: 224–225) described the subspecies *tropica pseudosoror* from “Indo-China: Annam, . . . Lién-Chiên près Tourane, 1,000 m, Mme Poilane, 1923” (holotype queen or worker in the MNHN), and “Tonkin, . . . région

de Tien-Yen et de la Baie d'Alomez, Lieut. Poimeur, 1928" (paratype queen or worker in the RMNH). The subspecies *pseudosoror* was synonymized with typical *ducalis* by Archer (1989, 1991).

Specimens examined. 2 females, Ninh Binh Prov., Tam Dien, Dong Giao Farm, 100 m, July 1965, IED's collectors; 1 female, Ha Tinh Prov., Huong Son, Rao An, 150 m, 19 May 1998, N. P. Lien; 1 female, Quang Nam Prov., Ngoc Linh, 950 m, 16 April 1999, Malaise trap; 1 female, 1 male, Vinh Phuc Prov., Tam Dao Mt., 800 m, 7 Sep. 2000, N. P. Lien; 1 female, Thua Thien Hue Prov., Phong Dien, Phong My, 600 m, 1–5 April 2000, T. X. Lam; 1 female, Ha Giang Prov., Du Gia Commune, 22°54'N 105°14'E, 680 m, 29–30 April 2000, J. M. Carpenter; 1 female, Ha Giang Prov., Yen Minh, Du Gia, 600 m, 30 Apr. 2000, N. P. Lien; 1 female, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 50 m, 24 May 2000, N. P. Lien; 1 female, same locality and collectors, 27 May 2000; 2 females, same locality and collector, 22 Aug. 2000; 1 female, same locality and collector, 29 Aug. 2000.

Distribution. Northern India; China; Taiwan; continental Southeast Asia; Russia; Korea; Japan.

Vespa mandarinia Smith, 1852

Vespa mandarinia Smith, 1852, Trans. Ent. Soc. Lond. (N. S.) 2 (2): 38, pl. VIII fig. 1.

Specimens examined. 1 female, Hoa Binh Prov., Mai Chau, Pa Co, 900 m, 11 Oct. 2000, ITD's collectors.

Distribution. Northern India; Sri Lanka; China; Taiwan; Russia; Korea; Japan; continental Southeast Asia including Vietnam (new record).

Discussion. This is the first record of this species from Vietnam.

Vespa mocsaryana du Buysson, 1905

Vespa mocsaryana du Buysson, 1905 (1904), Ann. Soc. Ent. France 73: 490 (key), 537, pl. VII fig. 3.

Previous records. Van der Vecht (1957: 42) recorded this species from "Indo-China: . . . Tonkin, région de Hoa-Binh, 1926–1930, A. de Cooman" based on two workers and a possible queen in the MNHN.

Specimens examined. 1 female, Ninh Binh Prov., Tam Diep, Dong Giao Farm, 100 m, July 1965, IED's collectors; 1 female, Ha Tay Prov., Chuong My, Phu Nam An, 10 m, 25 May 1967, IED's collectors; 1 female, Phu Tho Prov., Thanh Son, Xuan Son, 200 m, 4 Mar. 1975, IED's collectors; 2 females, Hoa Binh Prov., Thuong Tien, 200 m, 3 Nov. 1978, IED's collectors; 1 female, Vinh Phuc Prov., Tam Dao Mt., 900 m, 9 Sep. 2000, N. P. Lien; 4 females, Ha Tay Prov., Ba Vi Mt., 800 m, 18 Sep. 2000, N. P. Lien.

Distribution. Northern India and southern China; continental Southeast Asia; Sumatra.

Vespa soror du Buysson, 1905

Vespa ducalis var. *soror* du Buysson, 1905 (1904), Ann. Soc. Ent. France 73: 490 (key), 519.

Previous records. Du Buysson's (1905: 519) description of this taxon included the following localities: "Tonkin: Bac Kan (*M. Maindron 1902, Muséum de Paris*), Than-Moi (*H. Fruhstorfer, coll. A. Schulz*); Annam: Phuc-son (*H. Fruhstorfer, coll. A. Schulz*)." Van der Vecht (1957: 16) recorded this species (as *mandarinia* subspecies *soror*) from "Indo-China: . . . Tonkin, région de Hoa Binh, 1926–1934, leg. A. de Cooman" based on six workers in the MNHN and Rijksmuseum van Natuurlijke Historie (RMNH), Leiden, Netherlands, and "Annam, col des Nuages près Tourane, 1923, leg. Mme. Poilane" based on one queen in the MNHN.

Specimens examined. 1 female, Hoa Binh Prov., Lac Thuy, Co Nghia, 100 m, 4 July 1965, IED's collectors; 1 female, Ninh Binh Prov., Tam Diep, Dong Giao Farm, 100 m, July 1965, IED's collectors; 2 females, Quang Ninh Prov., Tien Yen, Dong Ngu, 100 m, 19 Oct. 1969, IED's collectors; 1 female, Quang Ninh Prov., Cam Pha, Ba Mun Is., 50 m, 29 May 1969, IED's collectors; 1 female, Quang Ninh Prov., Van Don, Cam Pha, 50 m, 23 Sep. 1969, IED's collectors; 1 female, Phu Tho Prov., Thanh Son, Xuan Son, 200 m, 4 Mar. 1975, IED's collectors; 1 female, Ha Tinh Prov., Ky Anh, 300 m, 17 Aug. 1975, IED's collectors; 1 female, Bac Can Prov., Cho Ra, Ba Be Co-operative, 500 m, 24 Nov. 1976, IED's collectors; 1 female, Gia Lai Prov., Ayunpa, Cheo Reo, 300 m, 13 May 1980, IED's collectors; 1 female, Ha Tinh Prov., Huong Son, Rao An, 1,300 m, 9 May 1998, K. D. Long; 1 female, Ha Tinh Prov., 17 km SE Huong Son, 18°22'N 105°13'E, 180 m, 19–23 April 1998, J. M. Carpenter; 1 female, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 60 m, 24 May 2000, N. P. Lien; 1 female, Bac Can Prov., Dong Lac, Cho Don, 550 m, 7 Dec. 2000, ITD's collectors; 2 females, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 70 m, 19 July 2000, IED's collectors; 1 female, same locality and collectors, 20 July 2000; 1 female, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 60 m, 3 Sep. 2000, N. P. Lien; 2 females, Phu Tho Prov., Ha Hoa, Ao Chau, 50 m, 13 Sep. 2000, ITD's collectors; 6 females, Lam Dong Prov., Da Lat, Truyen Lam, 1,350 m, 14 Nov. 2000, ITD's collectors; 1 female, Thua Thien Hue Prov., Phong Dien, Phong My, 600 m, 1–5 April 2001, T. X. Lam.

Distribution. Southern China; Thailand; Laos; Vietnam.

Vespa tropica (Linnaeus, 1758)

Sphex tropica Linnaeus, 1758, Syst. Nat., ed. 10, 1: 517.

Previous records. Du Buysson (1905: 533) recorded this species (as *cincta* Fabricius, synonymized with *tropica* by Schulz, 1912) from "Cochinchine (*Delestre 1891, Muséum de Paris; coll. J. de Gaulle*)" and "Annam, Nha-trang (*G. Blin 1902, Muséum de Paris*)." Bequaert (1936: 338) stated to have seen "many specimens of typical *tropica*" from, *inter alia*, "Tonkin" and "Indo-China." He also described *tropica* var. *haematodes* from, *inter alia*, "ANNAM" based on material in the Zoologisches Museum der Humboldt-Universität, Berlin, Germany, as well as mentioning intermediate forms between *haematodes* and typical *tropica* from "Hanoi, Indo-China" as well as other localities. Van der Vecht (1957: 21) recorded this species (as *tropica* subspecies *leefmansii* van der Vecht) from "Indo-China: Tonkin, . . . Hoa Binh, 1927, A. de Cooman" and "Cochinchine, . . . Baria, 1907, Capitaine Modest, based on single workers from each locality in the MNHN. Van der Vecht (1959: 225) recorded it, using the same subspecies name, from "Indo-China: . . . Tonkin,

région de Ha Giang, Siebens Olivier, 1916” based on one queen, and “Tonkin, environs immédiats de Lao-Kay, Capitaine Sauvez, 1908” based on one worker; both specimens in the MNHN; and “Cochinchine, Hanh Lui (?), 21 May 1927, R. V. de Salvaza” and “Saigon, 1 June 1923, R. V. de Salvaza” each based on a single queen in the IRSN.

Specimens examined. 1 female, Son La Prov., Mai Son, To Hieu, 500 m, July 1965, IED’s collectors; 1 female, Quang Ninh Prov., Tien Yen, Dong Ngu, 100 m, 19 Oct. 1969, IED’s collectors; 1 female, Kien Giang Prov., Phu Quoc, 50 m, Apr. 1975, IED’s collectors; 1 female, 1 male, Bac Can Prov., Cho Ra, Ba Be Co-operative, 500 m, 24 Nov. 1976, IED’s collectors; 1 female, Lai Chau Prov., Dien Bien, Muong Nhe, 800 m, 24 June 1977, IED’s collectors; 1 female, same locality and collectors, 29 June 1977; 1 female, Gia Lai Prov., Ayunpa, Cheo Reo, 300 m, 13 May 1980, IED’s collectors; 1 female, Nghê An Prov., Khe Bo, 19°03’N 104°43’E, 123 m, 25–28 April 1998, J. M. Carpenter; 1 female, Hoa Binh Prov., Yen Thuy, Bao Hieu, 100 m, 29 Aug. 2000, N. P. Lien; 2 females, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 50 m, 22 Aug. 2000, N. P. Lien; 1 female, Ca Mau Prov., U Minh, U Minh Thuong, 50 m, 5 Oct. 2000, ITD’s collectors; 1 female, Phu Tho Prov., Ha Hoa, Ao Chau, 50 m, 13 Sep. 2000, ITD’s collectors; 1 female, same locality and collectors, 15 Sep. 2000; 1 female, Thua Thien Hue Prov., Phong Dien, Phong My, 600 m, 1–5 April 2001, T. X. Lam.

Distribution. Afghanistan to southern China, continental Southeast Asia; Indonesia from Sumatra and Borneo to New Guinea, New Britain, the Philippines.

Vespa velutina Lepelletier, 1836

Vespa velutina “De Haan” Lepelletier, 1836, Hist. Nat. Ins. Hym. 1: 507.

Previous records. Du Buysson (1905: 550) recorded this species from “Tonkin: Than-moi (*juin-juillet*, *H. Fruhstorfer*, coll. *J. de Gaulle* et coll. *A. Schulz*).” Van der Vecht (1957: 37) described the subspecies *velutina variana* from, *inter alia*, “Indo-China: . . . Tonkin, rég. de Hoa Binh, 1927–1936, leg. A. de Cooman” based on one queen and four workers in the MNHN.

Specimens examined. 2 females, Phu Tho Prov., Thanh Son, Thuong Cuu, 200 m, 10 Mar. 1975, IED’s collectors; 1 female, Vinh Phuc Prov., Tam Dao Mt., 800 m, 27 Sep. 1975, IED’s collectors; 1 female, Quang Binh Prov., Cha Lo, 17°42’N 105°46’E, 298 m, 14–17 April 1998, J. M. Carpenter; 1 female, Nghê An Prov., Con Công, 19°03’N 104°53’E, 100 m, 25 April 1998, J. M. Carpenter; 1 female, Quang Nam Prov., Ngoc Linh, 1,300–1,450 m, 14 March 1999, Christine Johnson; 1 female, Quang Nam Prov., Ngoc Linh, 23–25 March 1999, 1,450 m, Christine Johnson; 1 female, Ha Giang Prov., Cao Bo, Tham Ve village, 22°45’N 104°52’E, 532 m, 21–24 April 2000, J. M. Carpenter; 5 females, Vinh Phuc Prov., Me Linh, Ngoc Thanh, 50 m, 22 Aug. 2000, N. P. Lien; 7 females, Vinh Phuc Prov., Tam Dao Mt., 900 m, 9 Sep. 2000, N. P. Lien.

Distribution. Northern India and southern China; Taiwan; continental Southeast Asia; Indonesia from Sumatra and Java to Sulawesi.

GENUS *VESPULA* THOMSON

Vespula Thomson, 1869, Opusc. Entomol. 1: 79, subgenus of *Vespa* (8 species).

Type species: *Vespa austriaca* Panzer, 1799, by subsequent designation of Ashmead, 1902, Can. Entomol. 34: 164.

Pseudovespa Schmiedeknecht, 1881, Entomol. Nachr. 7: 314, subgenus of *Vespa* Linnaeus.

Type species: *Vespa austriaca* Panzer, 1799, by monotypy.

Paravespula Blüthgen, 1938 (1937), Konowia 16: 271, subgenus of *Dolichovespula* Rohwer.

Type species: *Vespa vulgaris* Linnaeus, 1758, by original designation.

Allovespula Blüthgen, 1943, Stettin. Entomol. Ztg. 104: 149, subgenus of *Paravespula* Blüthgen.

Type species: "*Paravespula rufa* (Linné)" [= *Vespa rufa* Linnaeus, 1758], by monotypy.

Rugovespula Archer, 1982, Kontyû 50 (2): 261, 264, subgenus of *Vespula* Thomson.

Type species: *Vespa koreensis* Radoszkowski, 1887, by original designation.

Vespula orbata (du Buysson, 1902)

Vespa orbata du Buysson, 1902, Bull. Soc. Entomol. Fr. 1902: 140.

Specimens examined. 1 female, Ha Thinh Prov., Huong Son, 18°22'N 106°13'E, 14 April 1998, 1,240 m, Malaise trap, AMNH-IEBR expedition.

Distribution. Northern India; Nepal; Myanmar, Vietnam (new record).

Discussion. This is the first record of the genus *Vespula* from Vietnam.

ACKNOWLEDGMENTS

Phuong Lien's fieldwork was supported by MacArthur Foundation, and the Conservation Biology Center at the Kunming Institute of Zoology. Phuong Lien is grateful to the Museum of Zoology and Insect Taxonomy Department, IEBC, for offering an opportunity for studying material. J. Carpenter's fieldwork was supported by Grant No. 9870232 from the National Science Foundation, and the Center for Biodiversity and Conservation at the AMNH.

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Received 25 July 2001; accepted 15 May 2002.