

Last updated: 12 October 2018

STIGMUS

Stigmus Panzer, 1804:Heft 86, pl. 7. Type species: *Stigmus pendulus* Panzer, 1804, by monotypy.

Antrionius Zetterstedt, 1838:442. Type species: *Stigmus pendulus* Panzer, 1804. Not available (Article 11.5, not treated as valid when proposed).

Gonostigmus Rohwer, 1911b:559. Type species: *Gonostigmus typicus* Rohwer, 1911 [= *Stigmus temporalis* Kohl, 1892], by original designation.

Atopostigmus Krombein, 1973:218, as subgenus of *Stigmus*. Type species: *Stigmus fulvipes* W. Fox, 1892, by original designation and monotypy.

Revisions: Tsuneki, 1954a (Eurasian species); Krombein, 1973 (North America); Budrys, 1987 (Russian Far East).

Key: Allen, 1997 (British species).

Review of biology: Kazenas, 2001b:135.

1. *americanus* Packard

Stigmus americanus Packard, 1867:386, ♀. Lectotype: ♀, USA: Illinois: no specific locality (ANSP), designated by Cresson, 1928:51. – Cresson, 1887:283 (in catalog of North American Hymenoptera); Kohl, 1890a:63 (in review of *Stigmus*); W. Fox, 1892h:322 (in revision of North American Pemphredonini); Dalla Torre, 1897:361 (in catalog of world Hymenoptera); G. Peckham and E. Peckham, 1898:44 (nesting habits); Ashmead, 1899d:222 (in checklist of North American Crabronidae); J. Smith, 1900:516 (in list of insects of New Jersey); Slosson, 1902:5 (Kentucky: Mount Washington); H. Smith, 1908b:394 (in revision of Nebraskan Sphecidae); J. Smith, 1910:675 (in new list of insects of New Jersey); Rohwer, 1916b:689 (in catalog of Hymenoptera of Connecticut); Mickel, 1918b:427 (in catalog of Nebraskan Sphecidae); Rohwer *in* Viereck, 1925:689 (in key to Sphecidae of Connecticut: Momaguin, New Haven; nest parasite: *Omalus corruscans* (Norton), a chrysidid); J.Ch. Bradley, 1926:175 (New York: Lloyd-Cornell Reservation near McLean); Brues, 1927:82 (Massachusetts: Petersham, nesting in wood); J.Ch. Bradley, 1928:1013 (in catalog of New York Sphecidae); Brimley, 1942:36 (North Carolina: Wake County); Strickland, 1947:129 (Canada: Alberta); Krombein *in* Muesebeck et al., 1951:967 (in catalog of North American Hymenoptera); Krombein, 1952a:94 (USA: Virginia: Westmoreland State Park), 1952b:178 (USA: West Virginia: Lost River State Park), 1954a:6 (West Virginia: Lost River State Park), 1955a:16 (prey), 1956a:42 (prey), 1958a:24 (prey), 1958f:190 (in supplement to catalog of North American Hymenoptera: West Virginia; list of prey), 1961b:64 (nest, prey); E. Baker, 1962:5 (parasite: *Lackerbaueria americana*, new species, an acarid); Krombein, 1962b:13 (infestation by acarid *Lackerbaueria krombeini* Baker), 18 (by acarid *Lackerbaueria americana* Baker), 1963f:275 (Maryland: Plummers Island near Washington, D.C.); Kurczewski and Kurczewski, 1963:146 (Pennsylvania: Presque Isle State Park); Evans, 1970:487 (Wyoming: Jackson Hole); Krombein, 1973:221 (in revision of North American *Stigmus*); Wray, 1967:125 (North Carolina: Wake County); R. Bohart and Menke, 1976:188 (in checklist of world Sphecidae); Krombein, 1979b:1607 (in catalog of North American Hymenoptera); Finnamore, 1982:80 (in Sphecid Fauna of southern Quebec); Radović, 1985:64 (sting apparatus analyzed); Blades and Marshall, 1994:276 (Canada: southern Ontario); Finnamore, 1994:210 (Canada: Alberta: Wagner Natural Area 8 km west of Edmonton); Ahlstrom, 1995:108 (in checklist of insects of North Carolina); Finnamore, 1997:887 (Canada: Yukon); Kurczewski, 1998d:250 (pine barrens in upstate New York); Wcislo, 1998:181 (proportions of antennae in relations to parasitic/non-parasitic behavior); Boone, Grehan, and B. Parker, 2000:36 (Vermont: Mount Mansfield); Buck, 2004:25 (Canada: in checklist of Sphecidae of Ontario); Ratzlaff, 2016:27 (Canada: British Columbia: from Krombein, 1979).

Stigmus lucidus Rohwer, 1909a:102, ♂. Holotype or syntypes: ♂, USA, Kansas: Lawrence (USNM). Synonymized with *Stigmus americanus* by Krombein, 1973:221. – Krombein *in* Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera).

Stigmus fraternus coloradensis Rohwer, 1911b:559, ♀. Holotype: ♀, USA: Colorado: no specific locality (USNM). Synonymized with *Stigmus americanus* by Krombein, 1973:221. – Krombein in Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera).

2. *aphidiperda* Rohwer

Stigmus aphidiperda Rohwer, 1911b:558, ♀, ♂. Holotype: sex not indicated, USA: Pennsylvania: Highspire (USNM). – Krombein in Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera); Krombein, 1958f:190 (in supplement to catalog of North American Hymenoptera: Virginia), 1973:226 (in revision of North American *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Krombein, 1979b:1607 (in catalog of North American Hymenoptera); Ahlstrom, 1995:108 (in checklist of insects of North Carolina).

3. *convergens* Tsuneki

Stigmus convergens Tsuneki, 1954a:33, ♀. Holotype: ♀, Japan: Hokkaido: Akagawa near Kucchian (originally K. Tsuneki coll., now Hyogo Mus.). – Tsuneki, 1954a:5 (in key to Eurasian *Stigmus*), 1954c:50 (in revision of Eurasian *Stigmus*, description of ♂); Tsuneki and Shimoyama, 1963:49 (Japan: Towada Prefecture); Haneda, 1968a:45 (Japan); Tano, 1968:33 (Japan); Tsuneki, 1970a:15 (nesting habits), 1972d:44, 45 (in key to Japanese *Stigmus*); Nambu, 1973a:151 (Japan: Saitama Prefecture); Suda, 1973:122 (Japan: Yamanashi Prefecture); Nambu, 1975b:68 (Japan: Saitama Prefecture); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Budrys, 1987:50 (in key to *Stigmus* of USSR), 52 (Russia: Khabarovsk and Maritime provinces, Kuril Islands; specimens from Khabarovsk = *Stigmus eurasiaticus*); Tano, 1994a:5 (holotype in K. Tsuneki collection); nec Budrys in Nemkov, Kazenas, Budrys, et Antropov, 1995:404 (in key to Sphecidae of Russian Far East = *Stigmus eurasiaticus*); Hashimoto and Nakanishi, 1997:28 (holotype transferred to Hyogo Mus.); Haneda, Nosaka, Tano, Kurokawa, and Murota, 2004:32 (Japan: Gifu Prefecture); Suda, 2004:36 (Japan: Yamanashi Prefecture); Haneda, Nozaka, Tano, Kurokawa, and Murota, 2005:46 (Japan: Gifu Prefecture), 2006a:22 (Japan: Toyama Prefecture); Nemkov, 2007b:70 (Russia: Kuril Islands: Islands of Iturup and Kunashir), 2008b:19 (in catalog of Crabronidae of Asiatic Russia); S. Takahashi and Haneda, 2008b:43 (Japan: Hokkaido: Sapporo); Nemkov, 2009b:71 (in new catalog of Sphecidae and Crabronidae of Asiatic Russia); nec Mokrousov, 2010a:63 (Russia: Nizhniy Novgorod Oblast', Chuvash Republic, Mari El Republic: no specific localities = *Stigmus eurasiaticus*); Baghirov, 2011b:152 (Russia: Altay Republic: Artybash, Chemal, may be *Stigmus eurasiaticus*); Mokrousov, 2011:407 (Russia: Mari El Republic, Nizhniy Novgorod Oblast', in key to European *Stigmus*); nec Mokrousov, Berezin, and Egorov, 2011:80 (Russia: Chuvash Republic = *Stigmus eurasiaticus*); Nemkov, 2012c:438 (in catalog of Crabronidae of Russian Far East); Terayama, 2012:9 (in key to Pemphredonini of Japan), 16 (in revision of Pemphredonini of Japan, in Japanese), 20 (in checklist of Pemphredonini of Japan); J.-K. Kim, 2014:444 (in catalog of Sphecidae s.l. of Korean Peninsula); Mokrousov, 2017c:13 (Russia: Kuril Islands: islands of Kunashir and Shikotan), 2017e:250 (in catalog of Pemphredoninae of Russia).

ssp. ami Tsuneki

Stigmus convergens ami Tsuneki, 1971j:9, ♀, ♂. Holotype: ♀, Taiwan: Chiai Prefecture: Kansitaku (originally K. Tsuneki coll., now USNM). – R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Nuhn and Menke, 1994:25 (holotype transferred to USNM); Porter, Stange, and Wang, 1999:7 (in checklist of Sphecidae of Taiwan); Hua, 2006:282 (in list of Chinese insects, geographic distribution).

4. *cuculus* Dudgeon

Stigmus cuculus Dudgeon in Nurse, 1903b:12, ♀. Syntypes: ♀, India: Himachal Pradesh: Holta in Kangra Valley (BMNH). – Ramakrishna Aiyar, 1916:556 (in catalog of Indian aculeates described after Bingham, 1897); Tsuneki, 1954a:5 (in key to Eurasian *Stigmus*), 29 (in revision of Eurasian *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae).

5. *eurasiaticus* Mokrousov

Stigmus eurasiaticus Mokrousov, 2017c:9, ♀, ♂. Holotype: ♀, Russia: Chuvash Republic: Cheboksary at 56°07'44"N 47°08'48"E (ZIN). Paratypes: Russia: Chelyabinsk Oblast', Irkutsk Oblast', Nizhniy Novgorod, Yekaterinburg, Altai Republic, Chuvash Republic, Karelia: Petrozavodsk, Khabarovskiy Kray, Mari El Republic, Primorskiy Kray. – Mokrousov, 2017e:250 (in catalog of Pemphredoninae of Russia).

As *Stigmus convergens*, corrected to *Stigmus eurasiaticus* by Mokrousov, 2017c:9: Budrys, 1987:52 (specimens from Khabarovsk only); Budrys in Nemkov, Kazenas, Budrys, et Antropov, 1995:404 (in key to Sphecidae of Russian Far East); Mokrousov, 2010a:63 (Russia: Nizhniy Novgorod Oblast', Chuvash Republic, Mari El Republic: no specific localities); Mokrousov, Berezin, and Egorov, 2011:80 (Russia: Chuvash Republic); perhaps also Baghirov, 2011b:152 (Russia: Altay Republic: Artybash, Chermal).

6. *fraternus* Say

Stigmus fraternus Say, 1824:340, sex not indicated. Holotype or syntypes: USA: Pennsylvania: no specific locality (originally William W. Wood collection, now destroyed). – Le Conte, 1859a:229 (original description copied); Cresson, 1962:236 (in catalog of North American Hymenoptera); Packard, 1867:387 (in revision of North American Sphecidae); Provancher, 1882:98 and 1883b:650 (in revision of Canadian Hymenoptera); Cresson, 1887:283 (in catalog of North American Hymenoptera); Ashmead, 1890:32 (in checklist of Hymenoptera of Colorado); Kohl, 1890a:63 (in review of *Stigmus*); W. Fox, 1892h:323 (in revision of North American Pemphredonini); Dalla Torre, 1897:361 (in catalog of world Hymenoptera); Ashmead, 1899d:222 (in checklist of North American Crabronidae); J. Smith, 1900:516 (in list of insects of New Jersey: probable in New Jersey); Harrington, 1902:220 (Canada: Ontario: Ottawa); J.Ch. Bradley, 1926:175 (New York: Lloyd-Cornell Reservation near McLean), 1928:1013 (in catalog of New York Sphecidae); Brimley, 1938:446 (North Carolina: Bryson City); Krombein, 1951a:143 (Virginia: Dunn Loring; visiting tulip-tree honeydew); Krombein in Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera); Krombein, 1952b:178 (USA: West Virginia: Lost River State Park); Evans, 1958c:135 (larval description by Packard, 1896); Krombein, 1958b:24 (prey), 1958f:190 (in supplement to catalog of North American Hymenoptera: West Virginia, as *fraternus fraternus*); Kurczewski and Kurczewski, 1963:146 (Pennsylvania: Presque Isle State Park); Krombein, 1973:219 (in revision of North American *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Krombein, 1979b:1607 (in catalog of North American Hymenoptera); Finnamore, 1982:83 (in Sphecid Fauna of southern Quebec); Ahlstrom, 1995:108 (in checklist of insects of North Carolina); Boone, Grehan, and B. Parker, 2000:36 (Vermont: Mount Mansfield); Buck, 2004:25 (Canada: in checklist of Sphecidae of Ontario); Ratzlaff, 2016:27 (Canada: first record from British Columbia: Southern Interior and Southern Interior Mountains), 38 (British Columbia: locality records). – As *Mimesa fraternus*: F. Smith, 1856:430 (new combination, in catalog of Hymenoptera in British Museum). – As *Cemonus fraternus*: F. Smith, 1856:434 (new combination, in catalog of Hymenoptera in British Museum, listed the same species in another genus).

Stigmus conestogorum Rohwer, 1911b:557, ♀. Holotype: ♀, USA: Pennsylvania: Highspire (USNM). Synonymized with *Stigmus fraternus* by Krombein, 1973:220. – Richardson, 1915:104 (nesting in galls of *Holcaspis globulus*); Krombein in Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera).

Stigmus fraternus raii Rohwer, 1923a:100, ♀, ♂. Holotype: ♀, USA: Missouri: Saint Louis (USNM). Synonymized with *Stigmus fraternus* by Krombein, 1973:220. – Rau, 1928b:379 (nesting in twigs, prey: aphids); Krombein in Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera).

7. *fulvicornis* Rohwer

Stigmus fulvicornis Rohwer, 1923c:370, ♀. Holotype: ♀, USA: Mississippi: Starkville (USNM). – M. Smith, 1923b:553 (borrowing nest holes in floor of a house in Starkville, Mississippi); Krombein in Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera); Krombein, 1973:220 (in revision of North American *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Krombein, 1979b:1607 (in catalog of North American Hymenoptera).

8. *fulvipes* W. Fox

Stigmus fulvipes W. Fox, 1892h:324, ♀. Lectotype: ♀, USA: California: Los Angeles (ANSP), designated by Cresson, 1928:51. – Dalla Torre, 1897:361 (in catalog of world Hymenoptera); Ashmead, 1899d:222 (in checklist of North American Crabronidae); Viereck, 1903b:731 (New Mexico); Mickel, 1918b:427 (in catalog of Nebraskan Sphecidae); Rohwer, 1917a:247 (California: Santa Barbara, as *fulvipes fulvipes*); Brimley, 1938:446 (North Carolina: Raleigh); Krombein *in* Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera); Krombein, 1952a:94 (USA: Virginia: Westmoreland State Park; diagnostic characters), 1958f:190 (in supplement to catalog of North American Hymenoptera: Nebraska, Iowa, New Mexico, Texas, Virginia, District of Columbia), 1973:218 (in revision of North American *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Krombein, 1979b:1608 (in catalog of North American Hymenoptera); Rust, Menke, and Miller, 1985:46 (California: Channel Islands); S. Frommer, 1988:96 (California: Riverside County: Deep Canyon); Ahlstrom, 1995:108 (in checklist of insects of North Carolina); Amarante, 2002:54 (in catalog of Neotropical Crabronidae); Ruíz Cancino, Coronado Blanco, Varela Fuente, and Horta Vega, 2002:667 (in checklist of Mexican Sphecidae); Ratzlaff, 2016:27 (Canada: British Columbia: from Krombein, 1979).

9. *hubbardi* Rohwer

Stigmus inordinatus hubbardi Rohwer, 1911b:559, ♀, ♂. Holotype: sex not indicated, USA: California: Palm Springs (USNM). – Krombein *in* Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera). – **As *Stigmus hubbardi***: Krombein, 1973:2224 (new status, in revision of North American *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Krombein, 1979b:1607 (in catalog of North American Hymenoptera).

10. *inordinatus* W. Fox

Stigmus inordinatus W. Fox, 1892h:322, ♀, ♂. Lectotype: ♀, USA: Colorado: no specific locality (ANSP), designated by Cresson, 1928:52. – Davidson, 1895:271 (nest and prey); Dalla Torre, 1897:361 (in catalog of world Hymenoptera); Ashmead, 1899d:222 (in checklist of North American Crabronidae); Snow, 1906:9 (Arizona: Oak Creek 20 mi. southwest of Flagstaff); Rohwer, 1909a:102 (Colorado); R. Perkins, 1910:605 (Hawaiian Islands: Oahu: Honolulu); F. Williams, 1927:435 (reference to R. Perkins, 1910); Krombein *in* Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera); Evans, 1958c:134 (description of larva); Wasbauer and Simonds, 1964:114 (prey: *Aphis* sp., nest structure); F. Parker and R. Bohart, 1966:95 (California: Davis, Nevada: Verdi; nest parasites: *Omalus variatus* Aaron, *O. glomeratus* Buysson, and *O. cressoni* Aaron, Chrysididae); Krombein, 1973:223 (in revision of North American *Stigmus*); R. Bohart and Menke, 1976:129 (in checklist of world Sphecidae); Krombein, 1979b:1607 (in catalog of North American Hymenoptera); Rust, Menke, and Miller, 1985:46 (California: Channel Islands); Ratzlaff, 2016:27 (Canada: British Columbia: from Krombein, 1979).

Stigmus fulvipes var. *coquilletti* Rohwer, 1911b:559, ♀, ♂. Holotype: sex not indicated, USA: California: Los Angeles County: no specific locality (USNM). Synonymized with *Stigmus inordinatus* by Krombein, 1973:223. – **As *Stigmus fulvipes coquilletti***: Rohwer, 1917a:247 (new status, California: Alameda County); Krombein *in* Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera, as var. *coquilletti*).

Stigmus reticulatus Mickel, 1918a:330, ♀. Holotype: ♀, USA: California: Marin County: Inverness (UNL). Synonymized with *Stigmus inordinatus* by Krombein, 1958f:190. – Krombein *in* Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera); Muma, 1952:23 (holotype in UNL).

ssp. universitatis Rohwer

Stigmus inordinatus universitatis Rohwer, 1909a:102, sex not indicated. Lectotype: ♀, USA: Colorado: Boulder (USNM), designated by Krombein, 1973:224 (Article 74b). – Krombein *in* Muesebeck et al., 1951:966 (in catalog of North American Hymenoptera); Krombein, 1958a:188 (USA: West Virginia: Lost River State Park, as *universitatus*), 1958f:190 (in supplement to catalog of North American Hymenoptera: West Virginia), 1973:224 (in revision of North

American *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Krombein, 1979b:1608 (in catalog of North American Hymenoptera).

11. *japonicus* Tsuneki

Stigmus japonicus Tsuneki, 1954a:29, ♀, ♂ (♂ = *Stigmus quadriceps*). Holotype: ♀, Japan: Hokkaido: Kyogoku-mura near Kucchian (originally K. Tsuneki coll., now Hyogo Mus.). – Tsuneki, 1954a:6, 37 (in key to Eurasian *Stigmus*), 1972d:45 (in key to Japanese *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Budrys, 1987:51 (in key to *Stigmus* of USSR), 52 (description of ♂; Russia: Far East: Birobidzhan area, Khabarovsk and Maritime provinces); Nemkov, 1992b:244 (Russia: Far East: Khingan Nature Reserve); Tano, 1994a:5 (holotype in K. Tsuneki collection); Budrys in Nemkov, Kazenas, Budrys, et Antropov, 1995:404 (in key to Sphecidae of Russian Far East); Hashimoto and Nakanishi, 1997:28 (holotype transferred to Hyogo Mus.); Suda, 2004:36 (Japan: Yamanashi Prefecture); Haneda, Nozaka, Tano, Kurokawa and Murota, 2006a:22 (Japan: Toyama Prefecture); Nemkov, 2005a:147 (Russia: Island of Sakhalin); Nemkov, 2007b:70 (Russia: Kuril Islands: Island of Kunashir), 2007c:997 (in Appendix to Key to identification of Sphecidae of Far East of Russia), 2008b:19 (in catalog of Crabronidae of Asiatic Russia); S. Takahashi and Haneda, 2008b:43 (Japan: Hokkaido: Sapporo); J.-K Kim and Yang, 2009:468 (in revision of Korean Stigmina); Nemkov, 2009b:70 (in new catalog of Sphecidae and Crabronidae of Asiatic Russia), 2009c:236 (Russia: Primorskiy Kray: Lazovsky Nature Reserve); J. Kim and Yang, 2010:146 (in checklist of Korean Pemphredoninae); Nemkov, 2012c:438 (in catalog of Crabronidae of Russian Far East); Terayama, 2012:9 (in key to Pemphredonini of Japan), 17 (in revision of Pemphredonini of Japan, in Japanese), 20 (in checklist of Pemphredonini of Japan); J.-K. Kim, 2014:444 (in catalog of Sphecidae s.l. of Korean Peninsula); Mokrousov, 2017e:250 (in catalog of Pemphredoninae of Russia).

12. *kansitakuanus* Tsuneki

Stigmus kansitakuanus Tsuneki, 1971j:5, ♀, ♂. Holotype: ♀, Taiwan: Chiayi Prefecture: Kansitaku, now Kuanghua (originally K. Tsuneki coll., now USNM). – R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Nuhn and Menke, 1994:25 (holotype transferred to USNM); Porter, Stange, and Wang, 1999:7 (in checklist of Sphecidae of Taiwan); Hua, 2006:282 (in list of Chinese insects, geographic distribution).

13. *marginicollis* (Cameron)

Psen marginicollis Cameron, 1908d:243, ♀. Holotype or syntypes: ♀, Malaysia: Sarawak: Kuching (BMNH). – van Lith, 1959:62 (belongs to *Stigmus*). – As *Stigmus marginicollis*: R. Turner, 1914b:248 (new combination); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae).

Passaloeus carinicollis Cameron: R. Turner, 1914b:248 (nomen nudum).

14. *montivagus* Cameron

Stigmus montivagus Cameron, 1891a:141, ♀. Syntypes: ♀, Mexico: Guerrero: Chilpancingo and Omilteme (BMNH). – Dalla Torre, 1897:361 (in catalog of world Hymenoptera); Ashmead, 1899d:222 (in checklist of North American Crabronidae); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Amarante, 2002:54 (in catalog of Neotropical Crabronidae); Ruíz Cancino, Coronado Blanco, Varela Fuente, and Horta Vega, 2002:667 (in checklist of Mexican Sphecidae).

15. *munakatai* Tsuneki

Stigmus munakatai Tsuneki, 1954a:32, ♀. Holotype: ♀, Japan: Hokkaido: Akagawa near Kucchian (originally K. Tsuneki coll., now?). – Tsuneki, 1954a:5 (in key to Eurasian *Stigmus*), 1969i:60 (Japan: Fukui Prefecture: Taichôdzi temple), 1970a:15 (nesting habits), 1972d:45, 46 (in key to Japanese *Stigmus*); Nambu, 1975b:68 (Japan: Saitama Prefecture); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Budrys, 1987:50 (in key to *Stigmus* of USSR), 51 (Russia: Primorskiy Kray: Vladivostok); Tano, 1994a:5 (allotype in K. Tsuneki collection); Budrys in Nemkov, Kazenas, Budrys, et Antropov, 1995:404 (in key to Sphecidae of Russian Far East); Haneda and Tano, 2003:11 (Japan: Nagasaki Prefecture: Tsushima); Haneda, Nozaka, Tano, Kurokawa and Murota, 2006a:22 (Japan: Toyama Prefecture);

Nemkov, 2008b:19 (in catalog of Crabronidae of Asiatic Russia), 2009b:71 (in new catalog of Sphecidae and Crabronidae of Asiatic Russia), 2012c:438 (in catalog of Crabronidae of Russian Far East); Terayama, 2012:9 (in key to Pemphredonini of Japan), 17 (in revision of Pemphredonini of Japan, in Japanese), 20 (in checklist of Pemphredonini of Japan); Mokrousov, 2017e:250 (in catalog of Pemphredoninae of Russia).

Stigmus flavicornis Tsuneki, 1954a:35, ♂. Holotype: Japan: Fukui Prefecture: Jodoimura near Katsuyama (originally K. Tsuneki coll., now Hyogo Mus.). Synonymized with *Stigmus munakatai* by Budrys, 1987:52. – Tsuneki, 1954a:37 (in key to Eurasian *Stigmus*), 1972d:46 (in key to Japanese *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Tano, 1994a:5 (holotype in K. Tsuneki collection); Hashimoto and Nakanishi, 1997:28 (holotype and paratype transferred to Hyogo Mus.).

16. *murotai* Tsuneki

Stigmus murotai Tsuneki, 1977c:12, E, ♂. Holotype: E, Taiwan: Nantou Prefecture: Pempuchi (originally K. Tsuneki coll., now Hyogo Mus.). – Tano, 1995:43 (holotype in K. Tsuneki collection); Hashimoto and Nakanishi, 1997:28 (holotype transferred to Hyogo Mus.); Hua, 2006:282 (in list of Chinese insects, geographic distribution).

17. *nigricoxis* Strand

Stigmus nigricoxis Strand, 1911a:150, ♂. Holotype: ♂, Ecuador: El Angel (MNHN). – R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Amarante, 2002:54 (in catalog of Neotropical Crabronidae); Rasmussen and Asenjo, 2009:14 (in checklist of Crabronidae of Peru).

18. *parallelus* Say

Stigmus parallelus Say, 1837:378, sex not indicated. Holotype or syntypes: Mexico: no specific locality (lost). – Le Conte, 1859b:760 (original description copied); Cresson, 1962:236 (in catalog of North American Hymenoptera); Packard, 1867:387 (bibliographic reference); Kohl, 1890a:63 (in review of *Stigmus*); Cameron, 1891a:140 (bibliographic reference, not found in Mexico); Dalla Torre, 1897:362 (in catalog of world Hymenoptera); Ashmead, 1899d:222 (in checklist of North American Crabronidae); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Amarante, 2002:54 (in catalog of Neotropical Crabronidae); Ruíz Cancino, Coronado Blanco, Varela Fuente, and Horta Vega, 2002:667 (in checklist of Mexican Sphecidae). – *As Cemonus parallelus*: F. Smith, 1856:434 (new combination, in catalog of Hymenoptera in British Museum).

19. *pendulus* Panzer

Stigmus pendulus Panzer, 1804, Heft 86:7, [♀]. Lectotype: ♀, Germany: no specific locality (ZSBS, Sturm collection), designated by Richards, 1935a:165 and de Beaumont, 1956e:385. – Panzer, 1806:271 (in critical review of his earlier work); Vander Linden, 1829:76 (bibliographic references, Belgium: Liège, Germany, Italy: Genova); Shuckard, 1837a:181 (in revision of British Aculeata); von Siebold, 1839:51 (Germany: Danzig, now Poland: Gdańsk); Herrich-Schaeffer, 1840:292 (Germany: Bayern: Regensburg area); Dahlbom, 1842a:12 (in review of Scandinavian aculeates), 1844:239 and 1845:504 (in revision of Sphecidae and Pompilidae); Lepeletier de Saint Fargeau, 1845:98 (in revision of world Hymenoptera); Eversmann, 1849:410 (Russia: Ural Mountains foothills); von Kiesenwetter, 1849:90 (Germany: Kingdom of Saxony: Oberlausitz area); Wissmann, 1849:13 (Germany: Kingdom of Hannover: Hannover, Münden); Tischbein, 1850:6, 9 (Germany: Rheinland-Pfalz: Herrstein in Fürstenthum Birkenfeld); F. Smith, 1851c:32 (Great Britain: London district); Wesmael, 1852:285 (Belgium: Bruxelles); Kirschbaum, 1853:47 (Germany: Herzogtum Nassau: Weilburg, Wiesbaden); F. Smith, 1853:64 (in checklist of British Hymenoptera); Kirchner, 1854:312 (Czechoslovakia: Kaplitz in Budweiser District, now České Budějovice); F. Smith, 1856:426 (in catalog of Hymenoptera in British Museum); Kawall, 1857:25 (Kurland, now Latvia); Ruthe and Stein, 1857:315 (Germany: Berlin area); Schenck, 1857:141 (Germany: in revision of fossorial wasps of Nassau); A. Costa, 1858:20 (Italy: Campania: Monti Partenii in Benevento Region); F. Smith, 1858c:169 (in review of British Aculeata, redescription); Taschenberg, 1858:93 (in key to Sphecidae of Germany); Assmus, 1859:614 (Russia: Moscow Oblast'); Funk, 1859:58 (Germany: Bayern: Bamberg); Schenck, 1860:147 (Germany: Nassau Region); Brischke, 1862:103 (Germany: Provinz Preussen,

now Poland: Pomorze Region); A. Costa, 1863:66 (Italy: Calabria Ulteriore: no specific locality); Giraud, 1866:473 (nesting in stems of *Rubus*, not a parasite, preying on aphids); Taschenberg, 1866:186 (in revision of Hymenoptera of Germany); A. Costa, 1867c:115 (in revision of Italian Sphecidae); Kirchner, 1867:222 (in catalog of European Hymenoptera); Dietrich, 1868:363 (Switzerland: Zurich Canton); Wierzejski, 1868:117 (Ukraine: L'viv and Podole Region); Thomson, 1870:238 (in revision of Swedish wasps); F. Smith, 1871b:17 (in catalog of British Aculeata); Schlechtendal, 1872:37 (Germany: Sachsen: Zwickau); Thomson, 1874:201 (in revision of Hymenoptera of Scandinavia); Wierzejski, 1874:260 (Poland: Kraków; Ukraine: Tulin, and Podole Region: Mielnica, Skała); Taschenberg, 1875:386 (Germany: Halle); Frivaldszky, 1876:354 (Hungary: Ribis-völgy, now Romania: in Caraş-Severin or Timiş District); Schenck, 1867a:353 (Germany: Nassau Region); A. Costa, 1871b:44 (in revision of Italian Sphecidae); Dours, 1874:145 (in catalog of Hymenoptera of France); Girard, 1879:943 (morphology and habits); Kohl, 1880:137 (Austria: Tirol, and Italy: Trentino–Alto Adige); Daly, 1878:46 (Great Britain: Dorset: Glanville's Wootton); E. Saunders, 1880:254 (in revision of British Aculeata); Gribodo, 1881a:146 (Italy: Calabria: near Palizzi); Marquet, 1881:183 (France: Landes); Kohl, 1883e:659 (Switzerland); Sickmann, 1883:78 (Germany: Niedersachsen: Wellingholthausen); A. Costa, 1884b:33 (Italy: Sardegna: Ploaghe); von Heyden, 1884:120 (Germany: Hessen: Frankfurt am Main area); Wüstnei, 1886:38 (Germany: Schleswig-Holstein: Husum); Ed. André, 1888:189 (in revision of Sphecidae of Europe and Algeria), 14* (bibliographic references); Brischke, 1888b:99 (Germany: Provinz Preussen, now Poland: Pomorze Region); Kohl, 1888b:724 (Austria: Tirol, now Italy: Alto Adige), 1890a:63 (in review of *Stigmus*); C. Verhoeff, 1891b:9 (nesting habits); V. Perkins, 1892:202 (Great Britain: Gloucestershire: Wotton-under-Edge); Radoszkowski, 1892:588 (male genitalia); Kohl, 1893a:37 (Austria: Niederösterreich); Sickmann, 1893:79 (Germany: Niedersachsen: Iburg); Krieger, 1894:15 (Germany: Kingdom of Saxony); Aclouque, 1897:86 (in Sphecid Fauna of France and Algeria); Dalla Torre, 1897:362 (in catalog of world Hymenoptera); Mocsáry, 1897:78 (Kingdom of Hungary: Trencsén, now in Slovakia); Strand, 1898b:93 (Norway); de Cobelli, 1903:106 (Italy: Province of Trentino); Aurivillius, 1904:262 (in revision of Swedish Sphecidae); W. Schulz, 1904b:92 (Czechoslovakia); Kubes, 1905:83 (Czech Republic: Sušice, Veltruby); von Heyden, 1905:82 (Germany: Hessen); Schmiedeknecht, 1907:206 (in key to Hymenoptera of Central Europe); de Gaulle, 1908:103 (in catalog of French Hymenoptera); Dittrich, 1911b:21 (Germany: Provinz Niederschlesien, now Poland: Dolny Śląsk Region); Graeffe, 1911:50 (Italy: Trieste area); Birula, 1912:537 (Ukraine: Zhytomyr Oblast': Radomyshl'); Rudow, 1912:66 (nesting in galls caused by *Lipara lucens* Meigen on *Phragmites*), 75 (adopting empty cells of other insects); Schirmer, 1912:165 (Germany: Berlin area); Alfken, 1914:276 (northwestern Germany); Birula, 1914:380 (Belarus': Luskopol' near Vitebsk); Zilahi Kiss, 1915:80 (Hungary: Hadad, Várkudu, Orsova); O. Meyer, 1919:150 (Germany: Provinz Posen, now Poland: Poznań Region); A. Wagner, 1920:40 (Germany: Lower Elbe region); Dubois, 1921c:194 (in key to Belgian Sphecidae); Hedicke, 1922:270 (Germany: Brandenburg: Gross Machnower Weinberg); Berland, 1925d:147 (in Sphecid Fauna of France); Bischoff, 1925:299 (Poland: Grajewo area); Blüthgen, 1925:166 (Germany: Saale River valley: Naumburg); Coulon, 1925:114 (France: Elbeuf, Evreux, Oise); Koornneef, 1925:362 (Netherlands: Gelderland: Dieren); Schütze, 1925:111 (Germany: Lausitz Region); Friese, 1926:152 (in key to Sphecidae of Central Europe, short morphological and biological characteristics); Hémon, 1926:199 (France: Finistère: Fouesnant); F. Werner, 1927:66 (Austria: Niederösterreich: River Kamp valley); Berland, 1928b:179 (France: Ardennes: Charleville, and Finistère: Fouesnant); Bouwman, 1928b:212 (in revision of Sphecidae of Netherlands); Crèvecoeur and Maréchal, 1928:172 (Belgium: Saint-André-Bruges), 1929:168 (Belgium: Souverain-Wandre); Schmiedeknecht, 1930:667 (in keys to Hymenoptera of North and Central Europe); Pulkkinen, 1931:99 (in revision of Sphecidae of Finland, not yet found in Finland); Bondroit, 1932:36 (Belgium: Solbosch, Uccle); Crèvecoeur and Maréchal, 1932:68 (in catalog of Belgian Hymenoptera: La Xhavée); Bondroit, 1933:31 (Belgium: Bruxelles); Drogoszewski, 1933:118 (Poland: Łowicz); Dulac, 1933a:38 (France: Saône-et-Loire: Savianges); Enslin, 1933:140 (in key to Hymenoptera nesting in stems of *Rubus*); Balles, 1934:18 (Germany: Baden-Württemberg: Hopfengarten); Bondroit, 1934:61 (Belgium: no specific locality); Jansson, 1934:289 (Sweden); Marchand and Dulac, 1935:61 (France: Saône-et-Loire: Saint Laurent d'Andenay); Minkiewicz, 1935:216, 220 (Poland: Lake Garbaś 20 km W Suwałki); Vergne, 1935:119 (France: Auvergne: Pont-du-Chateau); Crèvecoeur and Maréchal, 1936:251 (in catalog of

Belgian Hymenoptera); Dulac, 1937:16 (France: Saône-et-Loire: Savianges); Zavadil, Šusterka, and Bat'a, 1937:176 (in catalog of Sphecidae of Czechoslovakia); Móczár, 1938c:81 (Hungary: Kőszeg Hills); A. Wagner, 1938a:119 (north-western Germany); Maneval, 1939:76 (preying on aphid *Callipterus tiliae* Koch, description of larva); Leclercq, 1941a:68 (Belgium: Pays de Liège), 1941b:12 (Belgium: Liège area); Paul, 1941:39 (Germany: Pommern: Stettin area, now Poland: Województwo Zachodniopomorskie: Szczecin area); Schneid, 1941:1034 (Germany: Bayern: Bamberg area); Balthasar, 1943:41 (Czech Republic: Moravia: Zlin area); Giner Marí, 1943a:34 (in Sphecid Fauna of Spain); Šnoflák, 1944a:143 (Czech Republic: serpentine steppe near Mohelno); Šnoflák in Zavadil and Šnoflák, 1948:50 (in key to Sphecidae of Czechoslovakia); Cavro, 1950:33 (France: Département du Nord); Georgel, 1950:64 (France: Seine-et-Oise: Sucy-en-Brie); de Beaumont, 1951h:34 (Switzerland: Neuchâtel area); Głowacki, 1953:518 (Poland: Podkowa Leśna, Brwinów); Leclercq, 1953a:249 (Belgium: locality records); Nouvel and Ribaut, 1953:181 (France: Hautes-Pyrénées: Caunterets); Bischoff and Stadler, 1954:126 (Germany: Bayern: Romberg); de Beaumont, 1954e:94 (Italy); Tsuneki, 1954a:6, 36 (in key to Eurasian *Stigmus*), 21 (in revision of Eurasian *Stigmus*); Aerts, 1955:60 (Germany: Rheinland); Harant and Leclercq, 1955:251 (France: Hérault: Montpellier); Vergne, 1955:5 (France: Auvergne); Vogrin, 1955:40 (Yugoslavia); Leclercq, 1956i:132 (Luxembourg); Bajári, 1957a:90 (in key to Hungarian Sphecidae); Zirngiebl, 1957:179 (Germany: Rheinland-Pfalz: Pfalz region); Benno, 1958b:12 (in review of Dutch Sphecidae); Evans, 1958c:135 (larval description by Maneval, 1939); Puławski, 1958a:187 (Bulgaria: Kniazhevo near Sofia); Wolf, 1959b:28 (Germany: Nassau); Noskiewicz and Puławski, 1960:66 (in key to Polish Sphecidae); Hoop, 1961:64 (Germany: Schleswig-Holstein: Rosenfeld); Grandi, 1962:97 (Italy); Janvier, 1962:501 (nesting habits, description of larva); Hoop, 1963b:7 (Germany: Schleswig-Holstein: Niendorf); Babiy, 1964:116 (Austria: Land Salzburg); de Beaumont, 1964a:300 (*pendulus* and *solskyi* are only European *Stigmus*), 1964c:114 (in Sphecid Fauna of Switzerland); Evans, 1964b:253 (discussion of Janvier, 1962, description of larva); Hüsing and Jäger, 1964:192 (Germany: Sachsen-Anhalt: Nietleben near Halle), 197 (nesting in wood of cherry trees); Bonelli, 1966c:219 (Italy: Trentino–Alto Adige: Fassa); Lefeber, 1966:209 (Netherlands: Sint Pietersberg); Benno, 1967:37 (in checklist of Sphecidae of Netherlands); Gauss, 1967:556 (Germany: Baden-Württemberg); J. Heinrich, 1967:79 (Germany: Bayern: Unterfranken District); Lefeber, 1967c:219 (Netherlands: Bemelen, Gronsveld, Sint Pietersberg); Niedl and Deneš, 1967:78 (Czech Republic: Třeboň area); Scobiola-Palade, 1967b:47 (Romania); Haneda, 1968c:69 (a European species found in Japan); Lefeber, 1968b:95 (Netherlands: Sint Pietersberg); Wolf, 1968:12 (Germany: Nordrhein-Westfalen: Siegen, inhabitant of forest edge); Dathe, 1969:439 (Germany: Berlin Zoological Garden); Lefeber, 1969b:99 (Netherlands: very common), 1969c:234 (Netherlands: Sint Pietersberg = Montagne Saint Pierre); Oehlke, 1970:751 (Democratic Germany); Tumšs, 1970:75 (Latvia); Dathe, 1971:234 (Germany: Berlin Zoological Garden: phenology); Schmidt, 1971b:44 (Germany: Rheinland-Pfalz: Gonsenheimer Wald, Mainzer Sand); Stritt, 1971a:105 (Baden-Württemberg: Germany: Karlsruhe); Balthasar, 1972:204 (in Sphecid Fauna of Czechoslovakia); Kofler, 1972:111 (Austria: eastern Tirol); Erlandsson, 1974:80 (Italy); Leclercq, 1974b:207 (locality records from Belgium, Czech Republic, France, Germany, and Spain); Levi, Sysoletina, and Shernin, 1974:269 (Russia: Kirov Oblast': Kirov); Lefeber, 1975b:154 (Belgium); Lomholdt, 1975c:130 (in Sphecid Fauna of Fennoscandia and Denmark); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Kolesnikov, 1977:319 (Russia: Bryansk Oblast'); Schmidt, 1977:97 (Germany: Baden-Württemberg: Enzklösterle in Schwarzwald); Puławski, 1978:248 (in key to Sphecidae of European part of former USSR); Schwammberger, 1978:418 (Germany: Württemberg); Benedek, 1979:234 (Hungary: Bakony Hills); Schmidt, 1979a:55 (Germany: Ost-Holstein); Casolari and Casolari Moreno, 1980:119 (specimens in M. 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partment); Haack, Tschardtke, and Vidal, 1984:133 (Germany: Hamburg area); Jacob-Remacle, 1984:260 (Belgium: urban center of Liège); Lefeber, 1984:29 (Netherlands: Maastricht); Mingo and Gayubo, 1984:113 (Spain); Schmidt, 1984:289 (Germany: Baden-Württemberg); Haeseler, 1985c:571 (Germany: Friesian Islands); Józán, 1985b:56 (Hungary south of Lake Balaton), 83 (ecological and zoogeographic characteristics); Lefeber, 1985:87 (Netherlands: southern Limburg); Tyrner, 1985:9 (Czech Republic: Jezerka Nature Reserve in Krušné Hory = Erzgebirge); Skibińska, 1986b:150, 153 (Poland: suburbs of Warszawa), 157 (rural and suburban parks), 160 (gardens), 162 (urban parks), 164 (streetside green), 168 (green areas of housing estates), 173 (various green urban habitats); Steiner, 1986:100 (references to papers on nesting habits); Vickberg, 1986b:76 (Finland); Allen, 1987a:214 (first record from Britain); Budrys, 1987:50 (in key to *Stigmus* of USSR); Schmidt and Westrich, 1987:369 (Germany: Mainz area); Chevin, 1988:15 (France: La Manche Department); Düweke, 1988:689 (Germany: Baden-Württemberg: Kaiserstuhl); Kowalczyk, 1988a:44 (Poland: Rogów), 1988b:64 (Poland: environs of Łódź); Wolf, 1988b:143 (Germany: Rheinland-Westfalen); Jacobs, 1989:10 (Germany: Mecklenburg-Vorpommern); Pádr *in* Šedivý, 1989a:169 (in checklist of Czechoslovakian Sphecidae); Skibińska, 1989a:204 (Poland: Warszawa area), 1989b:291 (Poland: moist meadow in Warszawa area); Jacobs and Oehlke, 1990:156 (new records from Democratic Germany); Kowalczyk, 1990:290 (Poland: Góry Świętokrzyskie); Pádr, 1990:80 (Czech Republic: Praha area); Pagliano, 1990:118 (in catalog of Italian Sphecidae); Schwammberger and Priesner, 1990:538 (Austria: Kärnten); Dollfuss, 1991:79 (in key to Sphecidae of North and Central Europe); Gayubo, Borsato, and Osella, 1991:399 (Italy: Piemonte); Jakubzik, 1991:74 (Germany: Nordrhein-Westfalen: Köln); Kowalczyk, 1991a:89, 93, 107 (Poland: Łódź), 1991b:120 (Poland: Augustów Forest); Kuhlmann et al., 1991:92 (Germany: Senne Region); Sorg and Wolf, 1991:195 (Germany: Koppelstein Reserve SE Koblenz); Budrys, 1992:25 (in list of Sphecidae of Lithuania); Sorg and Cölln, 1992:132 (Germany: Rheinland-Pfalz: Gönnersdorf); K. 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Weber, 1998:148 (Germany: Bayern: Bamberg area); Cölln and Jakubzik, 1999:29 (Germany: Rheinland-Pfalz: Keuper-Scharren SW Hungerburg); Herrmann, 1999:8 (Germany: Niedersachsen: Oldenburg area; habitats size); Luig and Voolma, 1999:178 (first record from Estonia: Elva, Ihaste, Saue, Tartu, Vapramäe); Mandery, 1999:106 (Germany: Bayern: Coburg area); Neumayer, Schwarz, and Bregant, 1999:225 (Austria: in checklist of Sphecidae of Land Kärnten); Pauly, 1999:109 (in catalog of Belgian aculeates); M. Schwarz, 1999:85 (Austria: Oberösterreich: city of Linz area); Vikberg, 1999:245 (Finland); Blösch, 2000:200 (in

Sphecidae Fauna of Germany); Dressler, 2000:34 (Germany: Hessen: Darmstadt area); Gonzáles, Gayubo, and Tormos, 2000:19 (Andorra: Santa Coloma); Jacobs, 2000:12 (Germany: Mecklenburg-Vorpommern: not endangered); Józán, 2000:106 (Hungary: Bakony Mountains); M. Mader and Chalwatzis, 2000:60 (Germany: Hessen: Oderwald Mountains); Mokrousov, 2000b:30 (Russia: Nizhniy Novgorod Oblast); Dollfuss and Bitsch *in* Bitsch et al., 2001:110 (in Sphecidae Fauna of Western Europe); Haeseler, 2001:266 (Germany: Niedersachsen: Brookdeich near Oldenburg); Jones, 2001:213 (Great Britain: ancient woodlands in south-east London); Józán, 2001:278 (Hungary: Somogy County); Ljubomirov, 2001b:48 (Bulgaria: Mount Vitosha near Sofia); Ohl et al., 2001:142 (distribution in Germany by provinces); Szczepko and Kowalczyk, 2001:188 (Poland: Kampinos National Park near Warszawa); van der Smissen, 2001:63 (Germany: Schleswig-Holstein: not endangered); Wolf, 2001a:172 (Germany: Bayern: Lech valley from Augsburg to Donau); Zettel, Gross, and Mazzucco, 2001:70 (Austria: Wien); Beavis, 2002:110 (Great Britain: Kent: Tunbridge Wells area); Bieri, 2002:79 (Liechtenstein); Józán, 2002:53 (Hungary: Mecsek Mountains); Kowalczyk, Szczepko, and Świątek, 2002:153 (Poland: Kampinos National Park near Warszawa); Litt, 2002:166 (Belgium); Shlyakhtenok and Skibinska, 2002:33 (Belarus: no specific locality); Wiśniowski, 2002:69 (Poland: Ojców National Park); Bagnée, 2003:65 (Belgium: Namur: Ri d'Hôwisse); Cölln, Esser, and Jakubzik, 2003:63 (Germany: northwestern Rheinland-Pfalz: excavation sites and quarries); Haeseler, 2003:340 (Germany: Niedersachsen: Harriersand Island near Bremen); Józán, 2003:227 (Hungary: Látrányi Puszta Nature Conservation Area); Mandery, Kraus, Voith, Wickl, Scheuchl, Schubert, and Warncke, 2003:70 (Germany: in catalog of wasps and bees of Bayern); Nieves-Aldrey, Fontal-Cazalla, Garrido-Torres, and Rey del Castillo, 2003:42 (Spain: Madrid: Estación Biogeológica de El Ventorrillo in Sierra de Guadarrama); von der Heide and Metscher, 2003:103 (Germany: Niedersachsen: Emsland area); Wiśniowski *in* Dylewska and Wiśniowski, 2003:146 (Poland: Ojców National Park); Deván, 2004:148 (western Slovakia); Dollfuss, 2004a:128 (Czech Republic); Esser, Jakubzik, Sonnenburg, and Woydak, 2004:264 (Germany: in checklist of Sphecidae of Nordrhein-Westfalen); Gayubo et al. 2004:132 (Spain: Madrid: Estación Biogeológica de El Ventorrillo in Sierra de Guadarrama); Kuhlmann, 2004:230 (Germany is responsible for preservation of this species on its territory); Skibińska *in* Bogdanowicz, Chudzicka, Pilipiuk, and Skibińska, 2004:357 (in catalog of Polish Crabronidae); Szczepko and Kowalczyk, 2004:125 (Poland: Kampinos National Park near Warszawa); van Achterberg and Peeters, 2004:32 (in checklist of Sphecidae of Netherlands); Wiśniowski, 2004:42 and 60 (in checklist of Polish Sphecidae); Burger, 2005:35 (Germany: Thüringen); Haeseler, 2005:629 (Germany: Niedersachsen: Steller Heide near Bremen); Kofler, 2005:171 (Austria: Tirol: Lienz District: Lavant, Kirsche in Lavant Common, Sankt Johann, Heckenfluren and Anflug an Heustadel in Virgen Common); Kowalczyk and Kurzac, 2005:106 (Poland: Botanical Garden in Łódź); Pagliano and Negrisolo, 2005:483 (in Sphecidae Fauna of Italy); Riemann and Hohmann, 2005:565 (Germany: Niedersachsen: city of Bremen and adjacent area); Saure, 2005:19 (Germany: Berlin); Theunert, 2005a:18 (Germany: in checklist of Sphecidae of Niedersachsen and Bremen); Venne and Bleidorn, 2005:44 (Germany: Nordrhein-Westfalen: Moosheide Nature Reserve); Wiśniowski, 2005a:312 (Poland: Ojców National Park; occurring in nearly all biotopes); Allen, 2006:24 (Great Britain: Kent: Faversham); Edwards and Broad, 2006:56 (Great Britain: distribution, status, habitat, flight period, prey, nesting habits, flower visiting, parasites, and distribution map); Gayubo, González, de la Nuez, Asís, and Tormos, 2006:210 (Spain: Cantabria: Matienzo de Ruesga); Liebig, 2006:40 (Germany: Sachsen: Muskauer Heide); N. Schneider, 2006:133, 134, 142 (Luxemburg: anthropogenic habitats); Shlyakhtenok, 2006:111 (Belarus: Polesye Radiological Nature Reserve); Standfuss and Standfuss, 2006a:86 (Germany: Nordrhein-Westfalen: Dortmund); Vepřek, 2006:511 (Czech Republic: Kokořínsko area); Beavis, 2007:95 (Great Britain: Tunbridge Wells and Central High Weald); Bitsch, Dollfuss, Bouček, Schmidt, Schmid-Egger, Gayubo, Antropov, and Barbier, 2007:457 (recorded from Andorra by Gonzales et al., 2000, and from Spain by Gayubo et al., 2004, 2006); Hallin, 2007b:24 (Sweden: Blekinge County); Herrmann, 2007a:53 (Germany: Niedersachsen: Ostfriesland), 2007b:96 (Germany: Baden-Württemberg: Fürstenberg in Konstanz); Jacobs, 2007:82 (in key to Crabronidae of Germany); Jansen and Kaluza, 2007:26 (Germany: northwestern Sachsen); Józán, 2007:174, 179 (Hungary: Zselic hills); Saure, 2007:83 (Germany: in checklist of Aculeata of Brandenburg); Shlyakhtenok, 2007a:299 (Belarus: Berezinsky Nature Reserve); Vago, 2007:174 (France: département du Nord); Venne, Bleidorn, and Lauterbach, 2007:303 (Germany: Nordrhein-Westfalen: Bielefeld); Ve-

přek and Straka, 2007:201 (in catalog of Sphecidae of Czech Republic and Slovakia); Haeseler, 2008:309 (Germany: Friesian Islands); Theunert, 2008:82 (Germany: map of distribution in Niedersachsen and Bremen); Donie, 2009:10 (Germany: Niedersachsen: Oldenburg); U. Frommer, 2009a:29 (Germany: in checklist of Sphecidae of Hessen); Fuhrmann, 2009:6 (Germany: Nordrhein-Westfalen: montane beech forest in Rothaargebirge); Guéorguiev and Ljubomirov, 2009:264 (Bulgaria: Maleshevska Planina); Livory, Chevin, Lair, Sagot, and Baldock, 2009:21 (France: Département de la Manche: Bolleville and Saint-Sauveur-de-Pierrepont); Mokrousov, 2009:293 (Russia: Republic Mari El); Pagliano, 2009:188 (Italy: Lazio: Morlupo; Liguria: Casanova; France: Corse: Pirio); Ermilov and Mokrousov, 2010:91 (phoretic mite *Acarus psenuli* in Middle Volga Region of Russia); Esser, Fuhrmann, and Venne, 2010:38 (Germany: in checklist of aculeates of Nordrhein-Westfalen); Hable, Wickl, Krauss, and von der Dunk, 2010:29 (Germany: Bayern: Sulz- and Ottmaringer Tal); Jakubzik and Cölln, 2010:1188 (Germany: Rheinland-Pfalz: Bruchertseifen near Altenkirchen); Johansson, 2010:121 (Sweden: Småland: upper Emå river valley); Mokrousov, 2010a:63 (Russia: Kostroma and Nizhniy Novgorod Oblast's, Chuvash Republic: no specific localities); Rudoiskatel', 2010:155 (Russia: central Ural Mountains); Saure, 2010a:88 (Germany: Berlin-Reinickendorf: Baumberge), 2010b:175 (Germany: Berlin-Reinickendorf: airport Tempel and Flughafensee Protected Area); Schmid-Egger, 2010a:19 (in red list of Aculeata of Germany: relatively common); Schmidt, 2010:140 (Germany: Bayern: collected along Main-Donau canal); Shorenko and Konovalov, 2010:27 (Ukraine); van der Smissen, 2010a:353 (Germany: Schleswig-Holstein: locality records); Gogala, 2011:12 (Slovenia: Podčetrtek); Józán, 2011:180 (in checklist of Sphecidae s.l. of Hungary); Mokrousov, 2011:407 (in key to European *Stigmus*); Mokrousov, Berezin, and Egorov, 2011:80 (Russia: Chuvash Republic); Pagliano, 2011a:159 (specimens in coll. Spinola, Torino, are *Stigmus pendulus* and *S. solskyi*); Schüepp, Herrmann, Herzog, and Schmidt-Engling, 2011:716 (Switzerland plateau between Bern, Fribourg, and Solothurn, habitat fragmentation); Theunert, 2011a:21 (Germany: in checklist of aculeates of Niedersachsen including city of Bremen); Tischendorf, Frommer, Flügel et al., 2011:175 (Germany: Hessen: not endangered); Archer, 2012:183 (Great Britain: urban York); Boillat, 2012:228 (Switzerland: in checklist of insects of Canton de Genève); Gerth, Mayer, Hering, Wolf, Schaffer, and Bleidorn, 2012:9 (Germany: Sachsen: Bienitz in Leipzig); Larivière, Chapelin-Viscardi, and Maillat-Mezeray, 2012:296 (France: Essonne: Boigneville and Maisse); Shlyakhtenok, 2012a:172 (Belarus', and Russia: Krasnaya Polana near Sochi: collected in private plots); Bitsch, Grouet, and Savina, 2013:292 (France: département d'Ariège: Ascou); Flügel, 2013c:303 (Germany: Hessen: Kassel); Pankov, 2013:230 (Russia: Ivanovo Oblast'); Shlyakhtenok, 2013:159 (in annotated catalog of aculeate wasps of Belarus'); Wiśniowski and Szczepko, 2013:50 (Poland: Kampinos National Park near Warszawa); Bitsch, 2014:409 (France: Ariège: Ascou Le Pujol; recorded from Corsica by Pagliano, 2009); U. Frommer, 2014:28 (Germany: Hessen: Lorch); Hellqvist, Abenius, and Norén, 2014:93 (in catalog of Ampulicidae, Sphecidae, and Crabronidae of Sweden, by provinces); Mokrousov and Vafin, 2014:59 (Russia: Republic of Tatarstan); Else, Bolton, and Broad, 2016:42 (in checklist of Aculeata of Great Britain and Ireland: England); Mokrousov and Popov, 2016:588 (Russia: Krasnodarskiy Krai); Ruchin and Antropov, 2016:402 (Russia: Mordovian State Nature Reserve); Saure, 2016b:50 (Germany: Sachsen-Anhalt: fruit orchards); Stolle and Saure, 2016:925 (Germany: in list of Sphecidae s.l. of Sachsen-Anhalt); Fresno, 2017:147 (Spain: Asturias: Pola de Lena); Mokrousov, 2017e:250 (in catalog of Pemphredoninae of Russia).

Stigmus ater Jurine, 1807:139 and pl.9, Fig. 9, ♀. Holotype or syntypes: ♀, Europe: no specific locality, possibly Switzerland (MHNG). Synonymized with *Stigmus pendulus* by Lepeletier de Saint Fargeau et Audinet-Serville, 1825:493 and by Frei-Gessner, Kohl, and Kriechbaumer, 1882:393. – Spinola, 1808:174 (Italy: Liguria); Lepeletier de Saint Fargeau et Audinet-Serville, 1825:493 (redescription); Stephens, 1829a:366 (in catalog of British insects), 1829b:34 (in checklist of British insects); Dufour and Perris, 1840:35 (is nest parasite of other Hymenoptera).

20. *podagricus* Kohl

Stigmus podagricus Kohl, 1890a:65, ♂. Syntypes: ♂, Mexico: Orizaba (NHMW). – Cameron, 1891a:140 (Mexico); Dalla Torre, 1897:362 (in catalog of world Hymenoptera); Ashmead, 1899d:222 (in checklist of North American Crabronidae, as *podagritus*); Krombein, 1973:225 (in revision of North American *Stigmus*); R. Bohart and Menke, 1976:189 (in

checklist of world Sphecidae); Krombein, 1979b:1608 (in catalog of North American Hymenoptera); Dollfuss, 1989:12 (type material in NHMW); Amarante, 2002:54 (in catalog of Neotropical Crabronidae); Ruíz Cancino, Coronado Blanco, Varela Fuente, and Horta Vega, 2002:667 (in checklist of Mexican Sphecidae).

ssp. *tarsalis* Krombein

Stigmus podagricus tarsalis Krombein, 1973:225, ♀, ♂. Holotype: ♀, USA: Alabama: Coleta (USNM). – R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Krombein, 1979b:1608 (in catalog of North American Hymenoptera).

21. *quadriceps* Tsuneki

Stigmus quadriceps Tsuneki, 1954c:47, ♀, ♂. Holotype: ♀, Japan: Fukui Prefecture: Koike (originally K. Tsuneki coll., now Hyogo Mus.). – Tsuneki and Shimoyama, 1963:49 (Japan: Towada Prefecture); Haneda, 1968a:45 (Japan); Tsuneki, 1970a:16 (nesting habits), 1972d:45, 46 (in key to Japanese *Stigmus*); Nambu, 1973a:151 (Japan: Saitama Prefecture); Suda, 1973:122 (Japan: Yamanashi Prefecture); Tsuneki, 1973a:21 (variation in head proportions); Nambu, 1975b:68 (Japan: Saitama Prefecture); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Budrys, 1987:51 (in key to *Stigmus* of USSR), 52 (Kuril Islands: Island of Kunashir); Tano, 1994a:5 (holotype in K. Tsuneki collection); Budrys in Nemkov, Kazenas, Budrys, et Antropov, 1995:404 (in key to Sphecidae of Russian Far East); Hashimoto and Nakanishi, 1997:28 (holotype transferred to Hyogo Mus.); Haneda, Nosaka, Tano, Kurokawa, and Murota, 2004:32 (Japan: Gifu Prefecture); Suda, 2004:36 (Japan: Yamanashi Prefecture); Haneda, Nozaka, Tano, Kurokawa, and Murota, 2005:46 (Japan: Gifu Prefecture), 2006a:22 (Japan: Toyama Prefecture); Nemkov, 2007b:70 (Russia: Kuril Islands: Island of Kunashir), 2008b:19 (in catalog of Crabronidae of Asiatic Russia); S. Takahashi and Haneda, 2008b:43 (Japan: Hokkaido: Sapporo); Nemkov, 2009b:71 (in new catalog of Sphecidae and Crabronidae of Asiatic Russia), 2011:95 (known only from Kuril Islands and Japan), 2012c:438 (in catalog of Crabronidae of Russian Far East); Terayama, 2012:9 (in key to Pemphredonini of Japan), 17 (in revision of Pemphredonini of Japan, in Japanese), 20 (in checklist of Pemphredonini of Japan); Mokrousov, 2017e:250 (in catalog of Pemphredoninae of Russia).

As *Stigmus japonicus*: Tsuneki, 1954a:29 (♂ only), corrected to *Stigmus quadriceps* by Tsuneki, 1954c:47.

22. *rumipambensis* Benoist

Stigmus rumipambensis Benoist, 1942:84, ♀, ♂. Syntypes: Ecuador: Rumipamba near Quito (MNHN). – R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Amarante, 2002:54 (in catalog of Neotropical Crabronidae).

23. *shirozui* Tsuneki

Stigmus shirozui Tsuneki, 1964b:6, ♂. Holotype: ♂, Japan: Ryukyus Islands: Island of Amami Oshima: Simmura-Akatsuchiyama (originally K. Tsuneki coll., now Hyogo Mus.). – Tsuneki, 1966c:1 (listed from Taiwan, in error), 1972d:45 (in key to Japanese *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Tsuneki, 1982g:58 (known from the Ryukyu archipelago); Tano, 1994a:5 (holotype in K. Tsuneki collection); Hashimoto and Nakanishi, 1997:29 (holotype transferred to Hyogo Mus.); Yamane, Ikudome, and Terayama, 1999:494 (in Identification Guide to Crabronidae of Nansei = Ryukyu Islands, Japan); Nambu, 2006:247 (Japan: Tokyo: Imperial Palace garden, as *shirozui shirozui*); Terayama, 2012:9 (in key to Pemphredonini of Japan), 17 in revision of Pemphredonini of Japan, in Japanese, 20 (in checklist of Pemphredonini of Japan).

ssp. *alishanus* Tsuneki

Stigmus shirozui alishanus Tsuneki, 1971j:7, ♂. Holotype: ♂, Taiwan: Chiaï Prefecture: Kansitaku, now Kuanghua (originally K. Tsuneki coll., now USNM). – R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Nuhn and Menke, 1994:25 (holotype transferred to USNM); Porter, Stange, and Wang, 1999:7 (in checklist of Sphecidae of Taiwan); Hua, 2006:282 (in list of Chinese insects, geographic distribution).

24. *solskyi* A. Morawitz

Stigmus solskyi A. Morawitz, 1864:462, ♀, ♂ (as *Solskyi*, incorrect original capitalization). Syntypes: Russia: Sankt-Petersburg (ZIN). – Kirchner, 1867:222 (in catalog of European Hymenoptera); Thomson, 1870:239 (in revision of Swedish wasps), 1874:200 (in revision of Hymenoptera of Scandinavia); Girard, 1879:943 (in the description of *Stigmus*); Kohl, 1880:137 (Austria: Tirol, and Italy: Trentino–Alto Adige); von Heyden, 1884:120 (Germany: Hessen: Frankfurt am Main area); Wüstnei, 1886:38 (Germany: Schleswig-Holstein: Emmelsbüll); Ed. André, 1888:189 (in revision of Sphecidae of Europe and Algeria), 14* (bibliographic references); Kohl, 1890a:64 (in review of *Stigmus*), 1893a:37 (Austria: Niederösterreich); F. Morawitz, 1893a:111 (Russia: Karelian Isthmus); Sickmann, 1893:79 (Germany: Niedersachsen: Iburg, cephalic deformations); Baldini, 1894:51 (Italy: Modena area); Krieger, 1894:15 (Germany: Kingdom of Saxony); E. Saunders, 1896:90 (in revision of British Aculeata); Westerlund, 1896:28 (Finland: no specific locality); Dalla Torre, 1897:362 (in catalog of world Hymenoptera); Mocsáry, 1897:78 (Kingdom of Hungary, some localities are in today's Romania and Slovakia); de Cobelli, 1903:106 (Italy: Province of Trentino); Aurivillius, 1904:263 (in revision of Swedish Sphecidae); W. Schulz, 1904b:92 (Czechoslovakia); Kubes, 1905:83 (Czech Republic: Kolín); Schmiedeknecht, 1907:206 (in key to Hymenoptera of Central Europe); de Gaulle, 1908:103 (in catalog of French Hymenoptera); Morley, 1908a:234 (preying on *Aphis hieracii* Kalt.); Graeffe, 1911:50 (Italy: Trieste area); Morice, 1911:68 (Algeria: Azazga); Rudow, 1912:75 (75 (adopting empty cells of other insects); Alfken, 1914:277 (northwestern Germany); Birula, 1914:380 (Belarus: Ambrosovich near Vitebsk); Haines, 1914:129 (Great Britain: Dorset); O. Meyer, 1919:150 (Germany: Provinz Posen, now Poland: Poznań Region); Stöckhert, 1919:39 (Germany: Franken); Dubois, 1920:88 (first record from Belgium: Sainte-Croix); Łoziński, 1920:121 (Poland: Kraków); A. Wagner, 1920:41 (Germany: Lower Elbe region); Dubois, 1921a:19 (Belgium: Heyst), 1921c:194 (in key to Belgian Sphecidae); R. Perkins, 1924:223 (Great Britain: Devon); Berland, 1925d:147 (in Sphecid Fauna of France); Bischoff, 1925:299 (Latvia: Wezkukkul; Poland: Grajewo area); R. Perkins, 1925:150 (Great Britain: Gloucestershire and Somersetshire); Crèvecoeur and Maréchal, 1927:139 (Belgium: Saint-André-les-Bruges); Berland, 1928b:179 (France: Ardennes, Charleville and Neufmanil); Bouwman, 1928b:212 (in revision of Sphecidae of Netherlands); Schmiedeknecht, 1930:667 (in keys to Hymenoptera of North and Central Europe); Pulkkinen, 1931:99 (in revision of Sphecidae of Finland); Spooner, 1931:14 (Great Britain: Cambridgeshire); Bondroit, 1932:36 (Belgium: Solbosch); Crèvecoeur and Maréchal, 1932:68 (in catalog of Belgian Hymenoptera); Giordani Soika, 1932a:22 (Italy: Lido di Venezia); Bondroit, 1933:31 (Belgium: Bruxelles); Dulac, 1933a:38 (France: Saône-et-Loire: Savianges); Merisuo, 1933a:60 (Finland: city of Turku); Balles, 1934:18 (Germany: Baden-Württemberg: Hopfengarten); Bondroit, 1934:61 (Belgium: no specific locality); Jansson, 1934:289 (Sweden); Bernard, 1935:66 (France: Var: Fréjus area); Forsius *in* Forsius and Hellén, 1935:11 (in checklist of Hymenoptera of Finland); Marchand and Dulac, 1935:61 (France: Saône-et-Loire: Saint Laurent d'Andenay); Crèvecoeur and Maréchal, 1936:251 (in catalog of Belgian Hymenoptera); Dulac, 1937:17 (France: Saône-et-Loire: Saint-Laurent d'Andenay, Savianges); Richards, 1937b:104 (in checklist of British aculeates); Zavadil, Šusterka, and Bat'a, 1937:176 (in catalog of Sphecidae of Czechoslovakia); Móczár, 1938c:81 (Hungary: Kőszeg Hills); A. Wagner, 1938a:119 (northwestern Germany); de Graham, 1941:99 (Great Britain: Lincolnshire); Leclercq, 1941b:12 (Belgium: Liège area); Paul, 1941:40 (Germany: Pommern: Stettin and Tempelburg, now Poland: Województwo Zachodniopomorskie: Szczecin and Czaplinek); Schneid, 1941:1034 (Germany: Bayern: Bamberg area); Bat'a, 1942:85 (Czech Republic); J. Perkins, 1942:198 (Sweden: Skåne: Kivik and Löderup); Spooner, 1942:110 (Great Britain: Bedfordshire); Balthasar, 1943:41 (Czech Republic: Moravia: Zlin area); Giner Marí, 1943a:34 (in Sphecid Fauna of Spain); Spooner, 1943:72 (Great Britain: Harwood in Colchester District); Guiglia, 1944b:32 (Italy); Šnoflák, 1944a:143 (Czech Republic: serpentine steppe near Mohelno); Balthasar, 1945:114 (Czech Republic: southeastern Morava Region); T. Fletcher, 1945:53 (Great Britain: Gloucestershire: Olveston, Wotton); Spooner, 1946:26 (Britain: Leicestershire: Charnwood Forest); Bristowe, 1948:35 (nesting habits); de Hennin and Anciaux, 1948:76 (Belgium: between Sambre and Meuse rivers); Guichard and Yarrow, 1948:90 (Britain: London: Hampstead Heath); Šnoflák *in* Zavadil and Šnoflák, 1948:50 (in key to Sphecidae of Czechoslovakia); Ceballos, 1949:101 (Spain); Chambers, 1949:224 (Britain: Bedfordshire); de Andrade, 1949:3 (Portugal: Lisboa, Massora); Cavro, 1950:33 (France: Département du Nord);

Szulczewski, 1950:105 (Poland: Wielkopolski National Park 15 km S Poznań); de Beaumont, 1951h:34 (Switzerland: Neuchâtel area); Leclercq, 1953a:249 (Belgium: locality records); Móczár, 1953:310 (Hungary); Nouvel and Ribaut, 1953:181 (France: Haute-Garonne: Saint-Béat, Hautes-Pyrénées: Causerets); Bischoff and Stadler, 1954:126 (Germany: Bayern: Romberg); de Beaumont, 1954e:94 (Italy); Fahlander, 1954:250 (Sweden: Gästrikland Region); Grandi, 1954:242 (Italy); Kjellander, 1954b:245 (Sweden); Tsuneki, 1954a:6 (in key to Eurasian *Stigmus*), 24 (in revision of Eurasian *Stigmus*); Yarrow, 1954c:238 (identity of *Stigmus solskyi*); Aerts, 1955:60 (Germany: Rheinland); Hellén, 1955a:124 (Finland: nine localities); Lehrer, 1955:265 (Romania: Moldova: Dealul Seaca in Iași District); Vogrin, 1955:40 (Yugoslavia); van der Zanden, 1955:420 (Netherlands: Arcen and Haamstede); Bajári, 1957a:90 (in key to Hungarian Sphecidae); Zirngiebl, 1957:179 (Germany: Rheinland-Pfalz: Ellerstadt, Leistadt); Benno, 1958b:12 (in review of Dutch Sphecidae); Pulawski, 1958a:187 (Bulgaria: Kniazhevo near Sofia); Diniz, 1959:26 (Portugal: Lisboa); Wolf, 1959b:28 (Germany: Nassau); Hamann, 1960:199 (Austria: Oberösterreich: Mönchgraben at 48°13'N 14°21'E); Noskiewicz and Puławski, 1960:66 (in key to Polish Sphecidae); Grandi, 1962:97 (Italy); Janvier, 1962:497 (nesting habits, description of larva); Valkeila, 1962b:67 (southwestern Finland); Felton, 1963:177 (Great Britain: Kent County); Babi, 1964:116 (Austria: Land Salzburg); de Beaumont, 1964a:300 (*pendulus* and *solskyi* are only European *Stigmus*), 1964c:114 (in Sphecidae Fauna of Switzerland); Evans, 1964b:253 (discussion of Janvier, 1962, description of larva); de Beaumont, 1964c:114 (in Sphecidae Fauna of Switzerland), 1965a:58 (Greece); Roberti, Frilli, and Pizzaghi, 1965:110 (Italy: Emilia-Romagna: Pianello in Piacenza Province); Lefeber, 1966:209 (Netherlands: Sint Pietersberg); Benno, 1967:37 (in checklist of Sphecidae of Netherlands); de Beaumont, 1967a:348 (Turkey); Gauss, 1967:556 (Germany: Baden-Württemberg); J. Heinrich, 1967:79 (Germany: Bayern: Unterfranken District); Lefeber, 1967c:219 (Netherlands: Amby, Bemelen, Mheer, Sint Pietersberg); Niedl and Deneš, 1967:78 (Czech Republic: Třeboň area); Scobiola-Palade, 1967b:47 (Romania); Benedek, 1968:75 (Hungary, visiting flowers of *Angelica silvestris* L.); Leclercq, 1968b:39 (Great Britain: Kent), 1968d:109 (Belgium: city of Liège); Lefeber, 1968b:95 (Netherlands: Sint Pietersberg); Scobiola-Palade, 1968c:385 (Romania: București); Benedek, 1969a:84 (Hungary; marshy meadow); Wolf, 1968:12 (Germany: Nordrhein-Westfalen: Siegen, inhabitant of forest edge); Dathe, 1969:439 (Germany: Berlin Zoological Garden); Lefeber, 1969b:99 (Netherlands: common) Lefeber, 1969c:234 (Netherlands: Sint Pietersberg = Montagne Saint Pierre); Romanova, 1969:134 (Russia: North Caucasus); Stritt, 1969:131 (Germany: Baden-Württemberg: Karlsruhe); Suárez, 1969:33 (Spain: Almería Province); Zangheri, 1969:1706 (Italy); Benedek, 1970:101 (Hungary: Tapolca); Oehlke, 1970:752 (Democratic Germany); Tumšs, 1970:75 (Latvia); Danks, 1971a:67-73 (Great Britain: Berkshire: Silwood Park), 1971b:80 (nest mortality); Dathe, 1971:234 (Germany: Berlin Zoological Garden; phenology); Kazenas, 1971:161 (Kazakhstan: Zailiyskiy Alatau Range; widely distributed in Kazakhstan); Schmidt, 1971b:44 (Germany: Rheinland-Pfalz: Gonsenheimer Wald, Mainzer Sand); Stritt, 1971a:105 (Baden-Württemberg: Germany: Karlsruhe); Balthasar, 1972:205 (in Sphecidae Fauna of Czechoslovakia); Guichard, 1972:243 (Great Britain: London: Bushey Park); Haeseler, 1972:156 (Germany: Schleswig-Holstein; anthropogenic habitats); Kazenas, 1972b:121 (Kazakhstan); Kofler, 1972:111 (Austria: eastern Tirol); Erlandsson, 1974:80 (Italy, Yugoslavia); Kazenas, 1974b:110 (feeding on flowers of *Silaum besseri* L., Apiaceae, in Kazakhstan); Kofler, 1974:320 (Austria: Kärnten); Leclercq, 1974b:207 (locality records); Lefeber and Petit, 1974:163 (Belgium: Plombières); Lefeber, 1975b:154 (Belgium); Lomholdt, 1975c:129 (in Sphecidae Fauna of Fennoscandia and Denmark); R. 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Weber, 1992:88 (Germany: Bayern: Bamberg District); Wolf, 1992c:23 (Germany: Nordrhein-Westfalen: Plettenberg: castle Schwarzenberg ruin); Asís, Gayubo, and Tormos, 1993:55 (description of larva); Józán, 1993:413 (Hungary: Bükk National Park); Kuhlmann, 1993:76 (Germany: known from Westfalen); Luig, 1993:43 (Estonia); Sorg, 1993:407 (Germany: Rheinland-Pfalz: Nature Reserve Ahrschleife bei Altenahr); Sorg and Wolf, 1993:60 (Germany: Rheinland-Westfalen: Nature Reserve Die Spey); Kowalczyk, 1994:73 (Poland: Łagiewniki forest in Łódź); Schmid-Egger, 1994a:688 (Germany: Rheinland-Pfalz: Höllenberg near Grünstadt); Theunert, 1994c:50 (Germany: summary of records from Niedersachsen and Bremen); Archer, 1995a:21 (Great Britain: Yorkshire: Blaxton); Negrisolo *in* Minelli, Ruffo, and La Posta, 1995b:12 (in catalog of Italian fauna); Riemann, 1995:52 (Germany: Bremen); Scharrer, 1995:23 (Germany: Bayern: Aschaffenburg); Schmid-Egger, 1995:64 (Germany: NW Baden-Württemberg); Schmid-Egger, Risch, and Niehuis, 1995:210 (summary of records from Germany: Rheinland-Pfalz); Archer, 1996b:121 (Great Britain: Yorkshire); Arens, 1996:441 (Germany: Bayern: Bayreuth area); Chaubet, 1996:115 (France: Bretagne: Corps-Nuds); Harvey and Plant, 1996:75 (Great Britain: summary of records from Essex); Fowles, 1996:36 (Great Britain: in checklist of aculeates of Wales); Jakubzik, 1996:253 (Germany: Nordrhein-Westfalen: Köln); Jakubzik and Cölln, 1996a:323 (Germany: nesting in stems of *Rubus*), 1996b:401 (Germany: Rheinland-Pfalz); Mino-ranskiy and Shkuratov, 1996:82 (Russia: Rostov Oblast'); Schmid-Egger, Schmidt, and Doczkal, 1996:378 (Germany:

Baden-Württemberg: not endangered); Shlyakhtenok, 1996:304 (Belarus': Berezinsky Nature Reserve); Voblenko, Gorobchishin, and Nesterov, 1996:14 (Ukraine: Polesye Region); Witt, 1996:106 (Germany: Brandenburg); Woydak, 1996:33 (Germany: Westfalen: summary of distribution and nesting habits); Celary, 1997:58 (in checklist of Animals of Poland); Esenbekova, 1997:143 (preying on aphids in southeastern Kazakhstan); Riemann, 1997:50 (Germany: Achim 14 km SE Bremen); Schmidt and Schmid-Egger, 1997:28 (in checklist of German Sphecidae); Budrys, 1998:82 (Russia: Belgorod Oblast': Borisovka at 50°36'N 36°04'E); Dollfuss, Gusenleitner, and Bregant, 1998:513 (Austria: summary of collecting records from Burgenland); González, Gayubo, and Torres, 1998:72, 73 (Spain: Valladolid Province); Haeseler and Ritzau, 1998:51 (Germany: Bremen: Island of Harriersand in Weser River and Steller Heide); Jakubzik, Schlüter, and Cölln, 1998:1182, 1184 (Germany: Rheinland-Pfalz); Józán, 1998:311 (Hungary: Duna-Dráva National Park); Lefeber, 1998:182 (Netherlands: Limburg: Sint-Pietersberg near Maastricht at 50°50'N 5°41'E); N. 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Jakubzik, Sonnenburg, and Woydak, 2004:264 (Germany: in checklist of Sphecidae of Nordrhein-Westfalen); Gayubo et al. 2004:132 (Spain: Madrid: Estación Biogeológica de El Ventorrillo in Sierra de Guadarrama); Gorobchishin and Protsenko, 2004:40 (Ukraine: Kherson Oblast': Chernomorskiy Nature Reserve); Jakubzik, Niehuis, and Cölln, 2004:458 (Germany: Rheinland-Pfalz: Roßstein in Rhein valley at 50°06'42"N 7°43'87"E); Kazenas, 2004b:102 (Kazakhstan: western Tien Shan); Salzmann-Wandeler and Rezbanyai-Reser, 2004:27 (central Switzerland); Schneider and Carrières, 2004:98 (Luxemburg: Bon-Pays Region); Shkuratov, 2004a:79 (Russia: Rostov Oblast'), 2004b:167 (Russia: Rostov Oblast': Gosudarstvennyi Muzei-Zapovednik M.A. Sholokhova); Skibińska in Bogdanowicz, Chudzicka, Pilipiuk, and Skibińska, 2004:357 (in catalog of Polish Crabronidae); Szczepko and Kowalczyk, 2004:125 (Poland: Kampinos National Park near Warszawa); van Achterberg and Peeters, 2004:32 (in checklist of Sphecidae of Netherlands); Wiśniowski, 2004:42 and 60 (in checklist of Polish Sphecidae); Burger, 2005:35 (Germany: Thüringen); Cruz-Sánchez, Gayubo, González, and Torres, 2005:221 (Spain: Salamanca: San Martín del Castañar); Gayubo and Özbek, 2005:37 (Turkey: Erzurum: Oltu); Haeseler, 2005:629 (Germany: Niedersachsen: Steller Heide near Bremen); Jacobs, 2005a:450 (Bulgaria: Dragoman); Kofler, 2005:171 (Austria: Tirol: Lienz District: Weiherburg in Ainet Common, Aguntum and Göriach in Dölsach Common, Lavant, city of Lienz, Huben in Matrei Common, Tristacher Au in Tristach Common; Kärnten: Itschen Ortsteil "Pflügen" Drauu); Kowalczyk and Kurzac, 2005:106 (Poland: Botanical Garden in Łódź); Kraatz, 2005:103 (Germany: Niedersachsen: Bümmerstede near Oldenburg); Pagliano and Negrisolo, 2005:484 (in Sphecidae Fauna of Italy); Riemann and Hohmann, 2005:565 (Germany: Niedersachsen: city of Bremen and adjacent area); Saure, 2005:19 (Germany: Berlin); Shoreiko, 2005a:166 (Ukraine: Crimea), 2005b:99 (Ukraine: Crimea: Karadagh Nature Reserve); Theunert, 2005a:18 (Germany: in checklist of Sphecidae of Niedersachsen and Bremen); Venne and Bleidorn, 2005:44 (Germany: Nordrhein-Westfalen: Moosheide Nature Reserve); Archer, 2006a:21 (Great Britain: Lincolnshire: Rauceby Warren National Park); Edwards and Broad, 2006:58 (Great Britain: distribution, status, habitat, flight period, prey, nesting habits, flower visiting, parasites, and distribution map); Liebig, 2006:40 (Germany: Sachsen: Muskauer Heide); Liška, 2006b:90 (Slovakia: Košecké Podhradie); Ljubomirov, 2006:543 (Bulgaria: Rhodope Mountains: village Boykovo); N. Schneider, 2006:142 (Luxemburg: anthropogenic habitats); Shlyakhtenok, 2006:111 (Belarus': Polesye Radiological Nature Reserve); Standfuss and Standfuss, 2006c:304 (Greece: Thessalia: Magnisia Peninsula at 39°N 23°E); Tomarchio and Turrisi, 2006:958 (Italy: Sicilia: Catania, Mount Etna, Siracusa); Beavis, 2007:95 (Great Britain: Tunbridge Wells and Central High Weald); Hallin, 2007b:24 (Sweden: Blekinge County); Herrmann, 2007a:53 (Germany: Niedersachsen: Ostfriesland); Jacobs, 2007:82 (in key to Crabronidae of Germany); Jansen and Kaluza, 2007:26 (Germany: northwestern Sachsen); Józán, 2007:175, 179 (Hungary: Zselic hills); Lee and Scott, 2007:22 (Great Britain: East Anglian wetlands); Saure, 2007:83 (Germany: in checklist of Aculeata of Brandenburg); Shlyakhtenok, 2007a:299 (Belarus': Berezinsky Nature Reserve); Vago, 2007:174 (France: départements du Nord and Pas-de-Calais); Vepřek and Straka, 2007:201 (in catalog of Sphecidae of Czech Republic and Slovakia); Yildirim and Ljubomirov, 2007:119 (Turkey: Konya: Çumra: Beylerce); Haeseler, 2008:309 (Germany: Friesian Islands); Ljubomirov and Yildirim, 2008:187 (in catalog of Crabronidae of Turkey); Protsenko and Drozdovskaya, 2008:126 (Ukraine: Sumy Oblast': Mogritsa village); Theunert, 2008:82 (Germany: map of distribution in Niedersachsen and Bremen); Donie, 2009:10 (Germany: Niedersachsen: Oldenburg); U. Frommer, 2009a:29 (Germany: in checklist of Sphecidae of Hessen); Gayubo, González, Tormos, and Asís, 2009:363 (Spain: Valladolid: Reserva Natural Riberas de Castronuño – Vega del Duero); González, Gayubo, Asís, and Tormos, 2009:623 (Spain: Salamanca and Zamora provinces: Arribes del Duero Natural Park); Guéorguiev and Ljubomirov, 2009:264 (Bulgaria: Maleshevska Planina); Józán, 2009:165 (Croatia: Mošćenice); Pagliano, 2009:188 (Italy: Lazio: Morlupo; Toscana: San Rossore; recorded from Sicilia by Tomarchio and Turrisi, 2006; France: Corse: PIRIO); Shoreiko, 2009:368 (in list of Sphecidae s.l. of Crimea); Straka, Dvořák, and Bogusch, 2009:265 (Czech Republic: Jizerské Mountains and Frýdlant region); Baghirov, 2010:679 (Russia: Altai Territories: village Savvushka); Ermilov and Mokrousov: 2010:91 (phoretic mites *Acarus psenuli* and *Schulzea caucasica* in Middle Volga Region of Russia); Esser, Fuhrmann, and Venne, 2010:38 (Germany: in checklist of aculeates of Nordrhein-Westfalen); Falk, 2010:94 (Great Britain: heathland sites in West Midlands region); Hable, Wickl, Krauss, and von der Dunk, 2010:29 (Germany: Bayern: Sulz- and Ottmaringer Tal); Jakubzik and Cölln, 2010:11887 (Germany: Rhein-

land-Pfalz: Bruchertseifen near Altenkirchen); Johansson, 2010:121 (Sweden: Småland: upper Emå river valley); Mokrousov, 2010a:63 (Russia: Kirov, Nizhniy Novgorod, and Yaroslavl' Oblast's, Chuvash Republic: no specific localities), 2010c:108 (Russia: Chuvash Republic: State Nature Reserve "Prisurskiy"); Rudoiskatel', 2010:155 (Russia: central and southern Ural Mountains); Saure, 2010a:88 (Germany: Berlin-Reinickendorf: Baumberge), 2010b:175 (Germany: Berlin-Reinickendorf: airport Tempel and Flughafensee Protected Area); Schmid-Egger, 2010a:19 (in red list of Aculeata of Germany: relatively common); Schmidt, 2010:140 (Germany: Bayern: collected along Main-Donau canal); Shorenko and Konovalov, 2010:27 (Ukraine); van der Smissen, 2010a:353 (Germany: Schleswig-Holstein: locality records), 2010c:398 (Sweden: Södermanland: Ören); Baghirov, 2011b:152 (Russia: Altayskiy Kray: Savvushka); Gogala, 2011:12 (Slovenia); Józán, 2011:180 (in checklist of Sphecidae s.l. of Hungary); Mokrousov, 2011:407 (in key to European *Stigmus*); Mokrousov, Berezin, and Egorov, 2011:80 (Russia: Chuvash Republic); Schmid-Egger, 2011c:557 (Austria: Tirol: Tiroler Lech Nature Park); Theunert, 2011a:21 (Germany: in checklist of aculeates of Niedersachsen including city of Bremen); Tischendorf, Frommer, Flügel et al., 2011:176 (Germany: Hessen: not endangered); Archer, 2012:183 (Great Britain: urban York); Boillat, 2012:228 (Switzerland: in checklist of insects of Canton de Genève); Larivière, Chapelin-Viscardi, and Maillet-Mezeray, 2012:296 (France: Essonne: Boigneville); Shlyakhtenok, 2012a:172 (Belarus', and Russia: Krasnaya Polana near Sochi: collected in private plots); Standfuss and Standfuss, 2012:428 (Greece: Thessalia: Magnisia Peninsula at 39°N 23°E: addition to flight period); Strumia, Pagliano, and Gayubo, 2012:57 (Italy: Toscana: Riserva di San Rossore); Dyuzhaeva, 2013:118 (Russia: Samara Oblast': Zhiguli Nature Reserve); Kazenas, 2013a:50 (color photograph of adult wasp, short information on geographic distribution and nesting habits); Shlyakhtenok, 2013:159 (in annotated catalog of aculeate wasps of Belarus'); Vieira, Oliveira, Brewster, and Gayubo, 2013:19 (Portugal: Douro International Natural Park, Serras de Aire e Candeeiros Natural Park, and Paúl do Boquilobo Nature Reserve); Bitsch, 2014:409 (France: Ariège: Bonac-Irazein; recorded from France by Pagliano, 2009 and Vago, 2007); U. Frommer, 2014:28 (Germany: Hessen: Lorch); U. Frommer, M. Niehuis, and O. Niehuis, 2014:1323 (Germany: Hessen: Roßstein); Hellqvist, Abenius, and Norén, 2014:93 (in catalog of Ampulicidae, Sphecidae, and Crabronidae of Sweden, by provinces); Yıldırım, Ljubomirov, and Lelej, 2014:10 (distribution in Turkey by biogeographic provinces); Koçak and Kemal, 2015:151 (in checklist of Hymenoptera of Turkey); Saure, 2015:15 (Germany: Berlin-Lichterfelde); Simon, Lorthiois, and Macé, 2015:55 (France: alluvial terraces in Eure Department: Courcelles-sur-Seine and Seine-Maritime Department: Anneville-Ambourville); Else, Bolton, and Broad, 2016:42 (in checklist of Aculeata of Great Britain and Ireland: England, Wales); Mokrousov and Popov, 2016:588 (Russia: Krasnodarskiy Kray); Stolle and Saure, 2016:925 (Germany: in list of Sphecidae s.l. of Sachsen-Anhalt); Di Giovanni, Mei, and Cerretti, 2017:73 (Italy: Lombardia: Riserva Naturale Bosco della Fontana 5 km from Mantova at 45°12'N 10°44'E, found in canopy and understory); Flügel, 2017:6 (Germany: Rheinland-Pfalz: Doline near Rockensüß); Jansen, 2017:10 (Germany: Sachsen: Leipzig); Mokrousov, 2017e:250 (in catalog of Pemphredoninae of Russia); Shorenko, 2017:79 (in Crimea collected in June and July).

Stigmus europaeus Tsuneki, 1954a:25, ♀. Holotype: ♀, Finland: Vanaja (originally K. Tsuneki coll., now Hyogo Mus.). Synonymized with *Stigmus solskyi* by Yarrow, 1954c:239, de Beaumont, 1956e:385, and Valkeila, 1956:166. – Tsuneki, 1954a:6 (in key to Eurasian *Stigmus*); Tano, 1995:43 (holotype in K. Tsuneki collection); Hashimoto and Nakanishi, 1997:28 (holotype and paratype transferred to Hyogo Mus.).

Stigmus verhoeffi Tsuneki, 1954a:26, ♀. Holotype: ♀, Switzerland: Vaud: Planchamps (originally K. Tsuneki coll., now Hyogo Mus.). Synonymized with *Stigmus solskyi* by de Beaumont, 1956e:385. – Tsuneki, 1954a:6, 36 (in key to Eurasian *Stigmus*); Valkeila, 1956:166 (status uncertain); Noskiewicz and Puławski, 1960:66 (in key to Polish Sphecidae, not yet found in Poland); Scobiola-Palade, 1967b:47 (Romania); Tano, 1995:43 (holotype in K. Tsuneki collection); Hashimoto and Nakanishi, 1997:29 (holotype and allotype transferred to Hyogo Mus.).

As *Stigmus pendulus* partim: Pagliano, 2011a:159 (specimen in coll. Spinola, Torino, is *Stigmus solskyi*)

25. *temporalis* Kohl

Stigmus temporalis Kohl, 1892:204, ♂. Holotype or syntypes: ♂, Guatemala: no specific locality (NHMW). – Dalla Torre, 1897:363 (in catalog of world Hymenoptera); Krombein, 1973:227 (in revision of North American *Stigmus*); R. Bohart and Menke, 1976:189 (in checklist of world Sphecidae); Dollfuss, 1989:12 (type material in NHMW); Hanson and Menke, 1995:638 (known from Costa Rica); Amarante, 2002:54 (in catalog of Neotropical Crabronidae); Ruíz Cancino, Coronado Blanco, Varela Fuente, and Horta Vega, 2002:667 (in checklist of Mexican Sphecidae).

Gonostigmus typicus Rohwer, 1911b:560, ♀. Holotype: ♀, Mexico: Vera Cruz: Motzorongo (USNM). Synonymized with *Stigmus temporalis* by Krombein, 1973:227.

sp.

Ducke, 1907b:93 (Brazil: Maranhão State: Codo); Giffard, 1916:230 (California: Alameda or Santa Clara County); Alayo Dalmau, 1973:182 (in catalog of Cuban Hymenoptera), 1976:25 (in checklist of Cuban Sphecidae); D. Evans, 1985:22 (Canada: British Columbia: southern Vancouver Island: associated with *Quercus garryana* Douglas); Amarante, 1993:19 (ne. Brazil); Cambra, 1993:16 (Peru: Pakitza at 11°57'S, 71°17'W); Boone, Grehan, and B. Parker, 2000:36 (Vermont: Mount Mansfield); Cambra and Santos, 2000:55 (Panama: Parque Nacional Coiba in Isla de Coiba, Pacific Ocean); Starr and Hook, 2003:21 (in catalog of Aculeata of Trinidad, West Indies); Dollfuss, 2004a:128 (Argentina, Borneo, China, Ecuador, India, Laos, Mexico, Thailand: locality records); Portuondo and Fernández, 2004:135 (Cuba: Sierra Maestra); Genaro, 2006:57 (in checklist of Cuban Sphecidae and Crabronidae); K. O'Neil and J. O'Neil, 2013:161 (New York State: Roy H. Park Preserve and Dorothy McIlroy Bird Sanctuary); Silvestre, Demétrio, Trad, de Oliveira Lima, Auko, and de Souza, 2014:69 (Brazil: Mato Grosso do Sul: dry forests in Bodoquena Mountain Range and Brazilian Chaco).

SPECIES DESCRIBED IN *STIGMUS* AND TRANSFERRED TO OTHER GENERA

aterrimus R. Turner, 1917 = *Carinostigmus*
barbatus Arnold, 1960 = *Carinostigmus*
congruus Walker, 1860 = *Carinostigmus*
filippovi Gussakovskij, 1934 = *Carinostigmus*
gueinzii R. Turner, 1912 = *Carinostigmus*
glabratus Kohl, 1905 = *Araucastigmus*
hexagonalis W. Fox, 1897 = *Incastigmus*
iwatai Tsuneki, 1954 = *Carinostigmus*
levifrons Arnold, 1947 = *Carinostigmus*
minutissimus Radoszkowski, 1877 = *Spilomena*
neotropicus Kohl = *Incastigmus*
niger Motschoulsky, 1863 = *Carinostigmus congruus* (Walker, 1860)
palawanensis Tsuneki, 1976 = *Carinostigmus*
patagonicus Mantero, 1901 = *Parastigmus*
pusillus Say, 1837 = *Spilomena*
queenlandensis R. Turner, 1908 = *Arpactophilus*
smithii Ashmead, 1900 = *Incastigmus thoracicus* (Ashmead, 1900)
taiwanensis Tsuneki, 1966 = *Carinostigmus formosanus* (Tsuneki, 1954)
thoracicus Ashmead, 1900 = *Incastigmus*