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## ALYSSON

*Alysson* Panzer, 1806:169. Type species: *Pompilus spinosus* Panzer, 1801, designated by Morice and Durrant, 1915:406.

*Alyson* Jurine, 1807:195. Type species: *Pompilus spinosus* Panzer, 1801, by monotypy.

Keys: Handlirsch, 1895:836 (Nearctic species); Kokujev, 1906 (Russia); Tsuneki, 1968h:4 (South and East Asia); Wu and Zhou, 1987:214 (China); Nemkov, 2014a (Russia and adjacent countries).

Review of biology: Kazenas, 2001b:216.

### 1. *annulipes* Cameron

*Alysson annulipes* Cameron, 1897:21, "♀" = ♂. Holotype: ♂, India: Maharashtra: Pune (OXUM). – Rothney, 1903:105 (India: West Bengal: Barrackpore); R. Turner, 1917e:184 (India; Cameron's type is a male); Tsuneki, 1968h:5 (in key to *Alysson* of southern and eastern Asia); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae).

### 2. *attenuatus* Wu and Zhou

*Alysson attenuatus* Wu and Zhou, 1987:218 and 221, ♂. Holotype: ♂, China: Yunnan: Xishuangbanna: Menglun (Inst. Zool. Beijing). – Wu and Zhou, 1987:215 (in key to *Alysson* of China), 1996a:132 (in revision in Economic Insect Fauna of China); Hua, 2006:277 (in list of Chinese insects, geographic distribution).

### 3. *caeruleus* Wu and Zhou

*Alysson caeruleus* Wu and Zhou, 1987:216 and 221, ♀. Holotype: ♀, China: Yunnan: Xishuangbanna: Menglun (Inst. Zool. Beijing). – Wu and Zhou, 1987:215 (in key to *Alysson* of China), 1996a:131 (in revision in Economic Insect Fauna of China); Hua, 2006:277 (in list of Chinese insects, geographic distribution).

### 4. *cameroni* Yasumatsu and Masuda

*Alysson cameroni* Yasumatsu and Masuda, 1932:53, ♀, ♂. Holotype: ♂, Japan, Honshu: Mount Mitsustôge near Kai (Entomol. Lab., Kyushu Univ., Fukuoka, Japan). – Evans, 1959b:150 (description of larva by Yasumatsu and Masuda, 1932); Tsuneki, Iida, Hirai, and Sabi, 1964:60 (Japan: Aomori Prefecture: Towada); Tsuneki, 1965c:26 (in key to Bembicinae of Japan and Korea); Evans, 1966d:29 (review of known behavioral data); Itami, 1968a:16 (Japan: Yamagata Prefecture: foot of Mount Iide); Tsuneki, 1968h:6 (in key to *Alysson* of South and East Asia); Haneda, 1968a:46 (Japan); Tsuneki, 1969d:16 (nesting habits), 1969e:26 (Japan: specimens in Osaka Museum of Natural History); Haneda, 1970:13 (Japan: Akita Prefecture); Tsuneki, 1970b:9 (central Japan); Suda, 1973:123 (Japan: Yamanashi Prefecture); Nambu, 1975b:71 (Japan: Saitama Prefecture); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Kazenas, 1980e:85 (Russia: Far East); Nemkov *in* Nemkov, Kazenas, Budrys, et Antropov, 1995:455 (in key to Sphecidae of Russian Far East); Miyatake, 1996:103 (specimens in Hiroshi Aoki collection); Haneda, Nosaka, Tano, Kurokawa, and Murota, 2004:37 (Japan: Gifu Prefecture); Suda, 2004:46 (Japan: Yamanashi Prefecture); Haneda, Nozaka, Tano, Kurokawa, and Murota, 2005:54 (Japan: Gifu Prefecture); Negoro, Haneda, and Tano, 2005:49 (Japan: Toyama Prefecture); Haneda, Nozaka, Tano, Kurokawa, and Murota, 2006a:29 (Japan: Toyama Prefecture); Terayama, 2006:2, 4 (in key to Japanese Bembicinae); Evans and O'Neil, 2007:23 (summary of information on nesting habits); Ohkusa, 2007:35 (Japan: central Honshu: Aichi Prefecture); Nemkov, 2008b:23 (in catalog of Crabronidae of Asiatic Russia); Ohkusa and Tajima, 2008:75 (Japan: central Honshu: Aichi Prefecture); Nemkov, 2009b:127 (in new catalog of Sphecidae and Crabronidae of Asiatic Russia); Ohkusa and Tajima, 2010:13 (Japan: Honshu Island: Shiga Prefecture); Nemkov, 2012b:119 (review of known prey), 2012c:445

(in catalog of Crabronidae of Russian Far East), 2014a:277, 278 (in key to *Alysson* of Russia and adjacent countries), 278 (in revision of *Alysson* of Russia and adjacent countries), ), 2017a:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae), 2017b:219 (in catalog of Bembicinae of Russia).

### 5. *carinatus* Wu and Zhou

*Alysson carinatus* Wu and Zhou, 1987:219 and 222, ♂. Holotype: ♂, China: Yunnan: Weixi: Pantiange (Inst. Zool. Beijing). – Wu and Zhou, 1987:215 (in key to *Alysson* of China, as *Carinatus*), 1996a:135 (in revision in Economic Insect Fauna of China); Hua, 2006:277 (in list of Chinese insects, geographic distribution).

### 6. *conicus* Provancher

*Alysson conicus* Provancher, 1889:271, ♀. Lectotype: ♂ [sic], Canada: Ontario: Ottawa (Laval Univ.), designated by Gahan and Rohwer, 1917:305. – W. Fox, 1894b:88 (in revision of North American *Alysson*); Handlirsch, 1895:832 (original description and Fox's redescription translated into German); Dalla Torre, 1897:563 (in catalog of world Sphecidae); Ashmead, 1899d:329 (in checklist of North American Crabronidae); Harrington, 1902:223 (Canada: Ontario: Ottawa); Bradley, 1920:130 (New York, Ontario); Mickel, 1918b:348 (in catalog of Nebraskan Sphecidae); J.Ch. Bradley, 1928:1014 (in catalog of New York Sphecidae); Krombein *in* Muesebeck et al., 1951:981 (in catalog of North American Hymenoptera); Krombein, 1963f:276 (Maryland: Plummers Island near Washington, D.C.); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Krombein, 1979b:1685 (in catalog of North American Hymenoptera); O'Brien and Kurczewski, 1979:435 (nesting behavior); Finnamore, 1982:202 (in Sphecid Fauna of Southern Quebec); O'Brien and Kurczewski, 1982b:225 (nesting behavior); Radović, 1985:65 (sting apparatus analyzed); Steiner, 1986:109 (references to publications on nesting habits); Kurczewski and Miller, 1991:254 (Pennsylvania: Erie County); Buck, 2004:27 (in checklist of Crabronidae of Ontario, Canada); Evans and O'Neil, 2007:24 (summary of information on nesting habits).

As *Euspongia bipunctata* (now *Ceropales bipunctata* Say, Pompilidae): A. Brown, 1934:263 (Canada: Ontario: Timagami), corrected to *Alysson conicus* by Buck, 2004:77.

### 7. *costai* de Beaumont

As *Alysson ratzeburgi*: Costa, 1867c:77 and 1869b:93 (in revision of Italian Sphecidae: Piemonte), corrected to *Alysson costai* by de Beaumont, 1953i:8; possibly also De Stefani Perez, 1895:228 (in catalog of Sicilian Hymenoptera).

*Alysson* sp.?: de Beaumont, 1951g:317 (Italy: Emilia), corrected to *Alysson costai* by de Beaumont, 1953i:8.

*Alysson costai* de Beaumont, 1953i:8, ♀, ♂. Holotype: ♀, Italy: Piemonte: no specific locality (NAPOLI). – de Beaumont and Bytinski-Salz, 1959:108 (Israel); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Pagliano, 1990:67 (in catalog of Italian Sphecidae); Pagliano, 1992:31 (in key to Italian Nyssoninae); Negrisolino *in* Minelli, Ruffo, and La Posta, 1995b:3 (in catalog of Italian fauna); Bitsch, Barbier, Gayubo, Schmidt, and Ohl, 1997:123 (in Sphecid Fauna of Western Europe); Pagliano and Negrisolino, 2005:112 (in Sphecid Fauna of Italy); Strumia, Pagliano, and Gayubo, 2012:56 (Italy: Toscana: Riserva di San Rossore); Nemkov, 2017:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae).

### 8. *erythrothorax* Cameron

*Alysson erythrothorax* Cameron, 1902c:291, ♀. Holotype or syntypes: ♀, India: Himachal Pradesh: Simla (BMNH). – Tsuneki, 1968h:5 (in key to *Alysson* of South and East Asia); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae).

### 9. *flavomaculatus* Cameron

*Alysson flavomaculatus* Cameron, 1901c:314, ♂. Holotype or syntypes: ♂, USA: New Mexico: Santa Fe Mountains (depository?). – R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Krombein, 1979b:1685 (in catalog of North American Hymenoptera). – As *Solierella flavomaculata*: Krombein *in* Muesebeck et al., 1951:942 (tentative new combination, in catalog of North American Hymenoptera).

**10. guichardi Arnold**

*Alysson guichardi* Arnold, 1951:120, ♀, ♂. Syntypes: Ethiopia: Ghedo (BMNH). – R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae).

**11. guignardi Provancher**

*Alysson guignardi* Provancher, 1887:271, ♀, ♂. Lectotype: ♀, Canada: Quebec: Bécancour (Laval Univ.), designated by Gahan and Rohwer, 1917:305. – W. Fox, 1894b:88 (in revision of North American *Alysson*); Handlirsch, 1895:833 (original description translated into German); Dalla Torre, 1897:564 (in catalog of world Sphecidae); Ashmead, 1899d:329 (in checklist of North American Crabronidae); Harrington, 1902:223 (Canada: Ontario: Ottawa); J.Ch. Bradley, 1926:175 (New York: Lloyd-Cornell Reservation near McLean), 1928:1014 (in catalog of New York Sphecidae); Krombein *in* Muesebeck et al., 1951:981 (in catalog of North American Hymenoptera); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Krombein, 1979b:1685 (in catalog of North American Hymenoptera); Finnamore, 1982:203 (in Sphecid Fauna of Southern Quebec); Radović, 1985:65 (sting apparatus analyzed); Ahlstrom, 1995:112 (in checklist of insects of North Carolina); Finnamore, 1997:892 (Canada: Yukon); Sugar *et al.*, 1998:16 (Canada: southern Ontario); Buck, 2004:27 (in checklist of Crabronidae of Ontario, Canada); Ratzlaff, 2016:23 (Canada: British Columbia, after Buck, 2004).

*Alyson interstitialis* Cameron, 1902e:375, ♂. Holotype or syntypes: ♂, USA: New Mexico: Santa Fé (depository?). Synonymized with *Alysson guignardi* by R. Bohart *in* Bohart and Menke, 1976:458. – Krombein *in* Muesebeck et al., 1951:981 (in catalog of North American Hymenoptera).

*Alyson petiolatus* Cameron, 1902e:374, ♂. Holotype or syntypes: ♂, USA: New Mexico: Santa Fé (depository?). Synonymized with *Alysson guignardi* by R. Bohart *in* Bohart and Menke, 1976:458. – Krombein *in* Muesebeck et al., 1951:981 (in catalog of North American Hymenoptera).

**12. guillarmodi Arnold**

*Alysson guillarmodi* Arnold, 1944:20, ♀ (as *Guillarmodi*, incorrect original capitalization). Holotype: ♀, Lesotho: Mamathes (SAM). – R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae).

**13. japonicus Tsuneki**

*Alysson japonicus* Tsuneki, 1977b:26, ♀, ♂. Holotype: ♂, Japan: Ishikawa Prefecture: Mount Haku near Ichinose (originally K. Tsuneki coll., now Hyogo Mus.). – Tano, 1994a:7 (holotype in K. Tsuneki coll.); Hashimoto and Nakanishi, 1997:23 (holotype transferred to Hyogo Mus.); Suda, 2004:46 (Japan: Yamanashi Prefecture); Haneda, Nozaka, Tano, Kurokawa, and Murota, 2005:54 (Japan: Gifu Prefecture), 2006a:29 (Japan: Toyama Prefecture); Nambu, 2006:247 (Japan: Tokyo: Imperial Palace garden); Terayama, 2006:2, 4 (in key to Japanese Bembicinae); Nemkov, 2014a:277, 278 (in key to *Alysson* of Russia and adjacent countries), 280 (in revision of *Alysson* of Russia and adjacent countries), 2017:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae).

**14. madecassus Arnold**

*Alysson madecassus* Arnold, 1945:50, ♀. Holotype: ♀, Madagascar: Behara (MNHH). – Leclercq, 1960a:100 (Madagascar); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Pulawski, 2003b:795 (in checklist of Malagasy Sphecidae); Madl, 2014a:939 (in catalog of Ampulicidae, Crabronidae, and Sphecidae of Malagasy sub-region, with synonymy and locality records).

**15. maracandensis Radoszkowski**

*Alysson maracandensis* Radoszkowski, 1877:34, ♀ (as *Maracandensis*, incorrect original capitalization). Holotype or syntypes: ♀, Uzbekistan: Samarkand (ZMMU). – Handlirsch, 1888a:252 (original description copied); Dalla Torre, 1897:564 (in catalog of world Sphecidae); Kokujev, 1906:213 (in revision of Russian Alyssontini); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Kazenas, 1978b:94 (in key to Sphecidae of Kazakhstan and Central Asia), 2001b:43 (in checklist of Sphecidae of Kazakhstan and Central Asia); Nemkov, 2014a:277 (in key to

*Alysson* of Russia and adjacent countries), 280 (in revision of *Alysson* of Russia and adjacent countries), 2017:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae).

*Alysson incertus* Radoszkowski, 1877:34, ♂. Holotype or syntypes: ♂, Uzbekistan: Peishambe (ZMMU). Synonymized with *Alysson maracandensis* by Handlirsch, 1888a:244 (as tentative synonym of *Alysson tricolor*), 252 (as tentative synonym of *Alysson maracandensis*); Dalla Torre, 1897:564 (in catalog of world Sphecidae); Kokujev, 1906:212 (in revision of Russian Alyssontini).

### 16. *melleus* Say

*Alysson melleus* Say, 1837:380, ♀. Holotype or syntypes: ♀, USA: Indiana: no specific locality (lost). – F. Smith, 1856:373 (in catalog of Hymenoptera in British Museum); Le Conte, 1859b:762 (original description copied); Cresson, 1862:235 (in catalog of North American Hymenoptera); Packard, 1867:422 (revision); Cresson, 1887:280 (in catalog of North American Hymenoptera); Handlirsch, 1888a:253 (in revision of world Bembicinae); Cameron, 1890a:70 (Mexico: Huastec); W. Fox, 1894b:87 (in revision of North American *Alysson*); Handlirsch, 1895:831 (additional bibliography); Dalla Torre, 1897:564 (in catalog of world Sphecidae); Ashmead, 1899d:329 (in checklist of North American Crabronidae); Bridwell, 1899:209 (Kansas: no specific locality); J. Smith, 1900:521 (in list of insects of New Jersey); Harrington, 1902:223 (Canada: Ontario: Ottawa); Hartman, 1905:41 (nesting habits); H. Smith, 1908b:342 (in revision of Nebraskan Sphecidae); J. Smith, 1910:680 (in new list of insects of New Jersey); Rohwer, 1916b:654 (in catalog of Hymenoptera of Connecticut); Mickel, 1918b:347 (in catalog of Nebraskan Sphecidae); Rau and Rau, 1918:140 (nesting habits); J.Ch. Bradley, 1920:130 (New York, Tennessee, Texas, Quebec); Rau, 1922:18 (USA: Missouri: St. Louis; nesting in the ground); Rohwer *in* Viereck, 1925:654 (in key to Sphecidae of Connecticut); J.Ch. Bradley, 1928:1014 (in catalog of New York Sphecidae); Brimley, 1938:446 (North Carolina: Bryson City, Lake Waccamaw, Raleigh, Tarboro); K. Cooper, 1950:105 (Massachusetts: Cape Code: Woods Hole); Krombein, 1950a:269 (North Carolina: Dare County), 1951a:143 (Virginia: Dunn Loring; visiting tulip-tree honeydew); Krombein *in* Muesebeck et al., 1951:981 (in catalog of North American Hymenoptera); Krombein, 1952a:94 (USA: Virginia: Westmoreland State Park), 1953a:333 (North Carolina: Kill Devil Hills); Krombein and Evans, 1955:233 (Florida); Evans and Lin, 1956b:41 (description of larva); Krombein, 1958f:192 (in supplement to catalog of North American Hymenoptera: description of larva by Evans and Lin, 1956a, reported); Evans, 1959b:150 (additional larval characters); Krombein, 1963f:276 (Maryland: Plummers Island near Washington, D.C.); Evans, 1966d:17 (nesting habits), 1968:1344 (prey records); Kurczewski and Kurczewski, 1971b:335 (prey record); Thorp, 1973:89 (Oklahoma: Lake Texoma region, used as prey by asilid *Promachus bastardii* (Macquart)); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); L. Davis, 1978:216 (North Carolina: Kill Devil Hills, data from Krombein, 1953a); Krombein, 1979b:1685 (in catalog of North American Hymenoptera, nesting sites, list of prey); Finnamore, 1982:204 (in Sphecid Fauna of Southern Quebec); Piek and Spanjer, 1986:179 (in list of Sphecidae with known prey); Steiner, 1986:109 (references to publications on nesting habits); Kurczewski and Acciavatti, 1990:61 (New York: Cayuga County); Spofford, Kurczewski, and Downes, 1989:257 (nest parasite: *Phrosinella fulvicornis* (Coquillett), a miltogrammine fly); Spofford and Kurczewski, 1992:999 (species of miltogrammine parasites listed); Ahlstrom, 1995:112 (in checklist of insects of North Carolina); Kurczewski, 1998d:250 (pine barrens in upstate New York); Amarante, 2002:7 (in catalog of Neotropical Crabronidae); Buck, 2004:27 (in checklist of Crabronidae of Ontario, Canada); Evans and O'Neil, 2007:25 (summary of information on nesting habits); Nemkov, 2012b:119 (review of known prey).

### 17. *monticola* Tsuneki

*Alysson monticola* Tsuneki, 1977b:29, ♂, ♀. Holotype: ♂, Japan: Saitama Prefecture: Karisaka Pass (originally K. Tsuneki coll., now Hyogo Mus.). – Tano, 1994a:7 (holotype in K. Tsuneki coll., as *monticola monticola*); Hashimoto and Nakanishi, 1997:23 (holotype transferred to Hyogo Mus.); Haneda, Nosaka, Tano, Kurokawa, and Murota, 2004:37 (Japan: Gifu Prefecture, as *monticola monticola*); Haneda, Nozaka, Tano, Kurokawa, and Murota,

2005:54 (Japan: Gifu Prefecture, as *monticola monticola*), 2006a:29 (Japan: Toyama Prefecture, as *monticola monticola*); Nagase, 2006a:55 (Japan: Kanagawa Prefecture: Mount Komagatake near Hakone, as *monticola monticola*); Terayama, 2006:2, 4 (in key to Japanese Bembicinae); Nemkov, 2007b:74 (first record from Russia: Kuril Islands: Kunashir Island), 2007c:997 (in Appendix to Key to identification of Sphecidae of Far East of Russia), 2008b:24 (in catalog of Crabronidae of Asiatic Russia), 2009b:127 (in new catalog of Sphecidae and Crabronidae of Asiatic Russia), 2011:95 (known only from Kuril Islands and Japan), 2012c:445 (in catalog of Crabronidae of Russian Far East), 2014a:277, 278 (in key to *Alysson* of Russia and adjacent countries), 280 (in revision of *Alysson* of Russia and adjacent countries), 2017a:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae).

As *Alysson ratzeburgi*: Nemkov in Nemkov, Kazenas, Budrys, et Antropov, 1995:455 (in key to Sphecidae of Russian Far East), corrected to *Alysson monticola* by Nemkov, 2007:74.

### **ssp. ezoensis Tsuneki**

*Alysson monticola ezoensis* Tsuneki, 1977b:32, ♀, ♂. Holotype: ♀, Japan: Hokkaido: Sapporo (originally K. Tsuneki coll., now Hyogo Mus.). – Tano, 1994a:7 (holotype in K. Tsuneki coll.); Hashimoto and Nakanishi, 1997:23 (holotype transferred to Hyogo Mus.); Nemkov, 2017b:219 (in catalog of Bembicinae of Russia).

### **18. nigrilabius Wu and Zhou**

*Alysson nigrilabius* Wu and Zhou, 1987:219 and 222, ♂. Holotype: ♂: China: Sichuan: Emei (Inst. Zool. Beijing). – Wu and Zhou, 1987:215 (in key to *Alysson* of China), 1996a:134; Hua, 2006:277 (in list of Chinese insects, geographic distribution); Nemkov, 2017:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae).

### **19. ocellatus de Beaumont**

*Alysson ocellatus* de Beaumont, 1967a:327, ♀, ♂. Holotype: ♀, Turkey: Amasya (BMNH). – R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Ljubomirov and Yildirim, 2008:62 (in catalog of Crabronidae of Turkey); Yildirim, Ljubomirov, and Lelej, 2014:5 (distribution in Turkey by biogeographic provinces), 19 (is an endemic of Turkey); Koçak and Kemal, 2015:136 (in checklist of Hymenoptera of Turkey); Nemkov, 2017:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae).

### **20. oppositus Say**

*Alysson oppositus* Say, 1837:380, ♀, ♂. Syntypes: USA: Indiana: no specific locality (lost). – F. Smith, 1856:373 (in catalog of Hymenoptera in British Museum); Le Conte, 1859b:761 (reprint of Say, 1837:380); Cresson, 1862:235 (in catalog of North American Hymenoptera); Packard, 1867:421 (revision); Provancher, 1883b:636 (in revision of Canadian Hymenoptera); Cresson, 1887:280 (in catalog of North American Hymenoptera); Handlirsch, 1888a:249 (in revision of world Bembicinae); Ashmead, 1890:32 (in checklist of Hymenoptera of Colorado); W. Fox, 1894b:87 (in revision of North American *Alysson*); Handlirsch, 1895:831 (additional bibliography); Dalla Torre, 1897:564 (in catalog of world Sphecidae); Ashmead, 1899d:329 (in checklist of North American Crabronidae); Bridwell, 1899:209 (Kansas: no specific locality); J. Smith, 1900:521 (in list of insects of New Jersey); Harrington, 1902:223 (Canada: Ontario: Ottawa); J. Smith, 1910:680 (in new list of insects of New Jersey); Rohwer, 1916b:654 (in catalog of Hymenoptera of Connecticut); Mickel, 1918b:348 (in catalog of Nebraskan Sphecidae); J.Ch. Bradley, 1920:130 (New York, Quebec); Rohwer in Viereck, 1925:654 (in key to Sphecidae of Connecticut; Thompson, Connecticut); J.Ch Bradley, 1928:1015 (in catalog of New York Sphecidae); Brimley, 1938:446 (North Carolina: Raleigh, Swannanoa); Krombein in Muesebeck et al., 1951:981 (in catalog of North American Hymenoptera); Krombein, 1952a:94 (USA: Virginia: Westmoreland State Park), 1963f:276 (Maryland: Plummers Island near Washington, D.C.); Evans, 1966d:28 (habitat, prey); Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Krombein, 1979b:1685 (in catalog of North American Hymenoptera); Finnermore, 1982:205 (in Sphecidae Fauna of Southern Quebec); Ahlstrom, 1995:112 (in checklist of insects of North Carolina); Amarante, 2002:7 (in catalog of Neotropical Crabronidae); Buck, 2004:27 (in checklist of Crabronidae of Ontario, Canada); Evans and O'Neil, 2007:26 (summary of information on nesting habits).



## 21. *pertheesi* Gorski

*Alysson pertheesi* Gorski, 1852:178, ♀ (as *Perthéesi*, incorrect original capitalization and diacritic mark). Syntypes: Lithuania: Vilnius (lost, except one specimen in ZMHU). – Handlirsch, 1888a:251 ((in revision of world Bembicinae); Kohl, 1893a:28 (Austria: Niederösterreich: Wiener Prater and Donauauen); Dalla Torre, 1897:564 (in catalog of world Sphecidae); Mocsáry, 1897:81 (Hungary: Budapest); Kokujev, 1906:216 (in revision of Russian *Alyssontini*); Schmiedeknecht, 1907:225 (in key to Hymenoptera of Central Europe); de Gaulle, 1908:120 (in catalog of French Hymenoptera); Noskiewicz, 1918:137 (Galicia, now western Ukraine: Brzuchowice and Hołosko near Lwów, Janów); Berland, 1925d:96 (in Sphecid Fauna of France); Koornneef, 1925:364 (first record from Netherlands: Gelderland: Dieren); Bouwman, 1927:94 (in revision of Sphecidae of Netherlands); Schmiedeknecht, 1930:686, 687 (in keys to Hymenoptera of North and Central Europe); Szulczewski, 1947:112 (Poland: Wielkopolski National Park 15 km S Poznań); Šnoflák *in* Zavadil and Šnoflák, 1948:78, 79 (in key to Sphecidae of Czechoslovakia, not yet found in Czechoslovakia); Szulczewski, 1950:107 (Poland: Wielkopolski National Park 15 km S Poznań); Bajári, 1957a:94, 95 (in key to Hungarian Sphecidae, as *Parthéesi*); Benno, 1958b:10 (in review of Dutch Sphecidae); Noskiewicz and Puławski, 1960:83, 84 (in key to Polish Sphecidae); Tsuneki, 1965c:25 (in key to Bembicinae of Japan and Korea; first record from Asia); Benno, 1967:34 (in checklist of Sphecidae of Netherlands); Itami, 1967:4 (nesting habits), 1968B:17 (Japan); Nambu, 1968:22 (Japan); Tsuneki, 1968h:5 (in key to *Alysson* of South and East Asia); Itami, 1969:46 (Japan: Niigata Prefecture); Oehlke, 1970:705 (not recorded from Democratic Germany); Tsuneki, 1970b:9 (central Japan); Tumšs, 1970:77 (first record from Latvia); Balthasar, 1972:352 (in Sphecid Fauna of Czechoslovakia: may be expected in the country); Tsuneki and Itami, 1973:13 (Japan: Niigata Prefecture; color variation); Tsuneki, 1974a:361 (Korea); Nambu, 1975b:72 (Japan: Saitama Prefecture); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Kolesnikov, 1977:318 (Russia: Bryansk Oblast'); Pulawski, 1978:212 (in key to Sphecidae of European part of former USSR); Lefeber, 1979:11 (in checklist of Sphecidae of Netherlands), 56 (Netherlands: distribution map); Kazenas, 1980e:85 (Russia: Far East); Mityaev, Matesova, Kulenova, Kazenas, and Zhdanko, 1980:119 (Russia: Siberia: Altayskiy Kray: basin of Aley River); Tsuneki, 1982b:18 (known from Korea); Dollfuss, 1983a:75 (endangered in Niederösterreich, Austria), 80 (endangered in Tirol, Austria), 1983b:20 (in catalog of Sphecidae of Austria); Paik, 1985:203 (in list of Sphecidae of Korea); Nemkov, 1986:106 (Russia: Irkutsk Oblast'); Tyrner, 1987:282 (Slovakia); Pádr *in* Šedivy, 1989a:167 (in checklist of Czechoslovakian Sphecidae); Jacobs and Oehlke, 1990:204 (unknown from Democratic Germany); Schwammerberger and Priesner, 1990:550 (Austria: Kärnten); Day, 1991:xii (in summary of European Endangered Hymenoptera Lists); Dollfuss, 1991:181 (in key to Sphecidae of North and Central Europe); Tsuneki, 1991:199 (Korea); Budrys, 1992:28 (in list of Sphecidae of Lithuania); Dollfuss, 1994:97 (endangered in Austria); Nemkov *in* Nemkov, Kazenas, Budrys, et Antropov, 1995:455 (in key to Sphecidae of Russian Far East); Bitsch, Barbier, Gayubo, Schmidt, and Ohl, 1997:124 (in Sphecid Fauna of Western Europe); Celary, 1997:60 (in checklist of Animals of Poland); Shlyakhtenok, Blinov, and Belyavskaya, 1997:152 (Belarus': Pripyatskiy National Park); Zettel, Gross, and Mazzucco, 2001:79 (Austria: Wien, not collected after 1870); Shlyakhtenok and Skibinska, 2002:34 (Belarus': no specific locality); Skibińska *in* Bogdanowicz, Chudzicka, Pilipiuk, and Skibińska, 2004:354 (in catalog of Polish Crabronidae); van Achterberg and Peeters, 2004:32 (in checklist of Sphecidae of Netherlands); Wiśniowski, 2004:50 and 62 (in checklist of Polish Sphecidae); Nemkov, 2005a:158 (Russia: Island of Sakhalin); Terayama, 2006:2, 4 (in key to Japanese Bembicinae); Evans and O'Neil, 2007:26 (summary of information on nesting habits); Jacobs, 2007:159, 160 (in key to Crabronidae of Germany, not yet found in Germany); Nemkov, 2007b:74 (Russia: Kuril Islands: Kunashir Island), 2007c:997 (in Appendix to Key to identification of Sphecidae of Far East of Russia); Vepřek and Straka, 2007:207 (in catalog of Sphecidae of Czech Republic and Slovakia, known from Slovakia only); Nemkov, 2008b:24 (in catalog of Crabronidae of Asiatic Russia); Mokrousov, 2009:278 (Russia: Republic Mari El); Nemkov, 2009b:127 (in new catalog of Sphecidae and Crabronidae of Asiatic Russia); Bitsch, 2010:108 (in supplement to vol. II of Faune de France, 1997: recent records reviewed; the only French specimen comes from Var: La Roquebrussanne); Mokrousov, 2010a:61 (Russia: Kostroma and Nizhny Novgorod Ob-

last's, Mari El Republic: no specific localities); Baghirov, 2011b:141 (Russia: recorded from Altayskiy Kray by Kazenas, Mityaev, Matesova, Kulenova, and Zhdanko, 1979); Józán, 2011:183 (in checklist of Sphecidae s.l. of Hungary); Nemkov, 2012c:445 (in catalog of Crabronidae of Russian Far East); Shlyakhtenok, 2012b:91 (Belarus': Beresina National Reserve: overgrowing dry meadow), 2013:221 (in annotated catalog of aculeate wasps of Belarus'); J.-K. Kim, 2014:420 (in catalog of Sphecidae s.l. of Korean Peninsula); Nemkov, 2014a:277, 278 (in key to *Alysson* of Russia and adjacent countries), 280 (in revision of *Alysson* of Russia and adjacent countries), 2017a:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae), 2017b:219 (in catalog of Bembicinae of Russia, as *pertheesi pertheesi*).

*Alysson festivus* Mocsáry, 1879:129, ♀ (as *festivum*, incorrect original termination. Holotype or syntypes: ♀, Hungary: Budapest (TMB). Synonymized with *Alysson pertheesi* by Handlirsch, 1888a:250. – Haris, 2016:16 (in list of species described by S. Mocsáry from Carpathian Basin).

*Alysson fuscatus* var. *jaroslavensis* Kokujev, 1906:216, ♀. Holotype: ♀, Russia: Yaroslavl' (originally N. Kokujev coll., now ZIN). Synonymized with *Alysson pertheesi* by Nemkov, 2014a:280. – **As *Alysson spinosus jaroslavensis***: R. Bohart and Menke, 1976:458 (new status, in checklist of world Sphecidae); Shlyakhtenok and Skibinska, 2002:34 (new status, Belarus': no specific locality). – **As *Alysson jaroslavensis***: Pulawski, 1978:212, 213 (new status, in key to Sphecidae of European part of former USSR); Pankevich, Belyavskaya, Molchanova, Shlyakhtenok, and Blinov, 1989:95 (Belorussia: Berezinskiy Nature Reserve); Blagoveshchenskaya, 1994:91 (Russia: Ul'yanovsk Oblast', misspelled *jaroslavensis*); Voblenko, Gorobchishin, and Nesterov, 1996:15 (Ukraine: Polesye Region); Shlyakhtenok, Blinov, and Belyavskaya, 1997:152 (Belarus': Pripyatskiy National Park); Mokrousov, 2002:150 (Russia: Nizhniy Novgorod Oblast': Kerzhenskiy Nature Reserve); Pankov, 2013:228 (Russia: Ivanovo Oblast').

*Alysson harbinensis* Tsuneki, 1967e:7, ♀. Holotype: ♀, China: Heilongjiang: Harbin (RMNH). Synonymized with *Alysson pertheesi* by Nemkov, 2014a:280. – Tsuneki, 1968h:5 (in key to *Alysson* of South and East Asia); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Wu and Zhou, 1987:214 (in key to *Alysson* of China), 1996a:136 (in revision in Economic Insect Fauna of China); Hua, 2006:277 (in list of Chinese insects, geographic distribution).

*Alysson pertheesi* forma *typica* Tsuneki and Itami, 1973:13. Not available (Article 16).

*Alysson pertheesi* forma *nigra* Tsuneki and Itami, 1973:13, ♀. Syntypes: ♀, Japan: Niigata Prefecture: Shidaihana (Itami coll., K. Tsuneki coll.). Not available (Article 16).

### **spp. *formosanus* Tsuneki**

*Alysson pertheesi formosanus* Tsuneki, 1968h:4, ♀. Holotype: ♀, Taiwan: Nantou Prefecture: Puli (originally K. Tsuneki coll., now USNM). – Tsuneki, 1977c:6 (Taiwan: Chia Prefecture: Chuchi; comparison with Japanese populations of *Alysson pertheesi*). – **As *Alysson formosanus***: R. Bohart and Menke, 1976:458 (new status, in checklist of world Sphecidae); Wu and Zhou, 1987:214 (in key to *Alysson* of China); Nuhn and Menke, 1994:25 (holotype transferred to USNM); Porter, Stange, and Wang, 1999:13 (in checklist of Sphecidae of Taiwan); Hua, 2006:277 (in list of Chinese insects, geographic distribution).

### **22. *picteti* Handlirsch**

*Alysson picteti* Handlirsch, 1895:830, ♂ (as *Picteti*, incorrect original capitalization). Syntypes: Algeria: Constantine Province: Col des Oliviers in El Kantour Mountains (NHMW). – Dalla Torre, 1897:564 (in catalog of world Sphecidae); Schmiedeknecht, 1900:233 (Tunisia, description of ♀); Graeffe, 1906:455 (Tunisia: Tunis area); von Schulthess, 1926b:216 (Tunisia); de Beaumont, 1950f:403 (Algeria: Maison Carrée); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Nemkov, 2017:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae).

### **23. *radiatus* W. Fox**

*Alysson radiatus* W. Fox, 1894b:87, ♀, ♂. Lectotype: ♀, USA: Nevada: no specific locality (ANSP), designated by Cresson, 1928:48. – Handlirsch, 1895:832 (original description translated into German); Dalla Torre, 1897:564 (in catalog of world Sphecidae); Ashmead, 1899d:329 (in checklist of North American Crabronidae); H. Smith,

1908b:341 (in revision of Nebraskan Sphecidae); Mickel, 1918b:348 (in catalog of Nebraskan Sphecidae); Brimley, 1938:446 (North Carolina: Raleigh, Shining Rock); Krombein *in* Muesebeck et al., 1951:981 (in catalog of North American Hymenoptera); Evans, 1970:493 (Wyoming: Jackson Hole); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Krombein, 1979b:1685 (in catalog of North American Hymenoptera); Ahlstrom, 1995:112 (in checklist of insects of North Carolina); Ratzlaff, 2016:23 (first record from Canada: British Columbia: Southern Interior), 30 (British Columbia: Oliver, Osoyoos, Penticon).

#### 24. *ratzeburgi* Dahlbom

*Alysson ratzeburgi* Dahlbom, 1843:145, ♀, ♂ (as *Ratzeburgi*, incorrect original capitalization). Lectotype: ♂, Norway: Ostre Naess Vaerdaliae (Lund), designated by de Beaumont, 1953h:197. – Dahlbom, 1845:474 (in key to European Nyssoninae), 1847:279 (nest and prey); Erichson, 1848:137 (Dahlbom's biological observations reported); Eversmann, 1849:388 (Russia: Kazan' Province); Taschenberg, 1858:86 (in key to Sphecidae of Germany); Brischke, 1862:100 (Germany: Preussen Province, now Poland: Pomorze Region); Taschenberg, 1866:199 (in revision of Hymenoptera of Germany); nec Costa, 1867c:77 and 1869b:93 (= *Alysson costai*); Kirchner, 1867:219 (in catalog of European Hymenoptera); Thomson, 1870:249 (in revision of Swedish wasps), 1874:249 (in revision of Sphecidae of Scandinavia); nec Marquet, 1875:204 (= *Alysson spinosus*); Siebke, 1880:67 (Norway); Friese, 1883:202 (Germany: Thüringen: Rothensteiner Felsen); Brischke, 1887:87 (Germany: Seeresen near Karthaus, now Poland: near Kartuzy), 1888b:97 (Germany: Preussen Province, now Poland: Pomorze Region); Handlirsch, 1888a:242 ((in revision of world Bembicinae); F. Morawitz, 1893a:112 (Russia: Karelian Isthmus); Westerlund, 1893:26 (Russia: Karelian Republic: northern shore of Lake Ladoga); De Stefani Perez, 1895:228 (in catalog of Sicilian Hymenoptera, may actually be *Alysson costai*); Handlirsch, 1895:830 (one of Dahlbom's specimens examined); Dalla Torre, 1897:564 (in catalog of world Sphecidae); Strand, 1898b:95 (Norway); Ferton, 1901a:104 (prey in Algeria), 107 (preying on Fulgoridae); Adlerz, 1904:138 (known prey: cicadellids); Aurivillius, 1904:275 (in revision of Swedish Sphecidae); Kokujev, 1906:214 (in revision of Russian Alyssontini); Schmiedeknecht, 1907:224, 225 (in key to Hymenoptera of Central Europe); de Gaulle, 1908:120 (in catalog of French Hymenoptera); Adlerz, 1910:42 (Sweden, nesting habits); nec Dittrich, 1911b:24 (= *Alysson spinosus*); Morice, 1911:10 (Algeria: Constantine); Kohl, 1912a:63 (Austria: Tirol: Innsbruck; and Südtirol: Bad Ratzes, now Italy: Trentino-AltoAdige: Razzes); Stöckert, 1919:40 (Germany: Franken); Enslin, 1922c:246 (Germany: Bayern: Fürth); Lundblad, 1924:22 (Sweden: Lappland: Lycksele); Berland, 1925d:97 (in Sphecid Fauna of France); Schütze, 1925:113 (Germany: Lausitz Region); Bouwman, 1927:94 (in key to Sphecidae of Netherlands, not yet found in Netherland); Barovskij, 1929:149 (Russia: N Sankt Petersburg); Gaunitz, 1929:199 (Sweden: Lapland); Schmiedeknecht, 1930:686, 687 (in keys to Hymenoptera of North and Central Europe); Pulkkinen, 1931:66 (in revision of Sphecidae of Finland); Giordani Soika, 1932a:22 (Italy: Lido di Venezia); E. Nielsen, 1933:302 (summary of nesting habits); Jansson, 1934:290 (Sweden); Forsius *in* Forsius and Hellén, 1935:12 (in checklist of Hymenoptera of Finland); Grandi, 1935a:110 (Italy); Móczár, 1938:64 (Hungary); Móczár, 1939:5 (Hungary: Jászberény); Zavadil, 1939:129 (Czech Republic: Morava: Ubušín); Schneid, 1941:1042 (Germany: Bayern: Bamberg area); Giner Marí, 1943a:153 (in Sphecid Fauna of Spain); de Beaumont, 1945:475 (Switzerland: Valais); Szulczewski, 1947:112 (Poland: Wielkopolski National Park); Šnoflák *in* Zavadil and Šnoflák, 1948:68 (in key to Sphecidae of Czechoslovakia); Aerts, 1950a:51 (Germany: Nordrhein-Westfalen: Rheidter Wertchens near Köln); Szulczewski, 1950:107 (Poland: Wielkopolski National Park 15 km S Poznań); Leininger, 1953:18 (Germany: Baden-Württemberg: Hinterzarten); Grandi, 1954:234 (Italy); Valkeila, 1954:87 (Finland: Lappeenranta); Hellén, 1955a:125 (Finland: 16 localities, including Terijoki, now Russia: Zelenogorsk); Vogrin, 1955:36 (Yugoslavia); Bajári, 1957a:94 (in key to Hungarian Sphecidae); Wolf, 1959b:29 (Germany: Nassau); Noskiewicz and Puławski, 1960:83, 84 (in key to Polish Sphecidae, not yet found in Poland); Valkeila, 1962b:67 (southwestern Finland); de Beaumont, 1964c:63 (in Sphecid Fauna of Switzerland); Valkeila, Brander, and Käpylä, 1964:75 (Finland: Southern Finland: Forssa); Tsuneki, 1965c:25 (in key to Bembicinae of Japan and Korea; first record from Asia); Bonelli, 1966c:216 (Italy: Trentino–Alto Adige: Razzes); Evans,



1966d:28 (review of known behavioral data); Gauss, 1967:553 (Germany: Baden-Württemberg: Südlicher Schwarzwald); J. Heinrich, 1967:74 (Germany: Bayern: Kahl, Lohr, Obernau); Niedl and Deneš, 1967:83 (Czech Republic: Třeboň area); T. Iida, 1968:21 (Japan); Nambu, 1968:22 (Japan); Tano, 1968:33 (Japan); Tsuneki, 1968h:5 (in key to *Alysson* of South and East Asia); Itami, 1969:46 (Japan: Niigata Prefecture); Schmidt, 1969:163 (Germany: Rhein-Main area: Wilbrands-Schneißer south of Darmstadt); Oehlke, 1970:705 (Democratic Germany); Tsuneki, 1970b:9 (central Japan); Tumšs, 1970:77 (first record from Latvia); Balthasar, 1972:351 (in Sphecidae Fauna of Czechoslovakia); Kofler, 1972:106 (Austria: eastern Tirol); Niedl and Deneš, 1972:153 (Czech Republic: Třeboň area); Suda, 1973:123 (Japan: Yamanashi Prefecture); Lomholdt, 1975c:221 (in Sphecidae Fauna of Fennoscandia and Denmark); Nambu, 1975b:72 (Japan: Saitama Prefecture); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Eck, 1976:90 (Democratic Germany); Pulawski, 1978:212 (in key to Sphecidae of European part of former USSR); Schmidt, 1979b:308 (Germany: Baden-Württemberg); Casolari and Casolari Moreno, 1980:125 (specimens in M. Spinola collection); Dollfuss and Ressler, 1981:317, 324 (Austria: Niederösterreich: Scheibbs District); Axelsson, 1982:79 (Sweden); Leclercq, 1982e:100 (Norway: Nord-Trøndelag and Hedmark provinces); Tsuneki, 1982b:18 (known from Korea); Dollfuss, 1983a:76 (endangered in Niederösterreich, Austria), 78 (endangered in Oberösterreich, Austria), 80 (endangered in Tirol, Austria), 1983b:20 (in catalog of Sphecidae of Austria); Paik, 1985:203 (in list of Sphecidae of Korea); Westrich and Schmidt, 1985b:110 (Germany: extinct in Baden-Württemberg); Nemkov, 1986:106 (Russia: Irkutsk Oblast'); Vikberg, 1986:78 (Finland); Dollfuss, 1987:23 (Austria); Wu and Zhou, 1987:215 (in key to *Alysson* of China, as *rozenburgii*); Nilssen, 1989:48 (Sweden); Pádr *in* Šedivy, 1989a:167 (in checklist of Czechoslovakian Sphecidae); Pankevich, Belyavskaya, Molchanova, Shlyakhtenok, and Blinov, 1989:95 (Belorussia: Berezinskiy Nature Reserve); Scobiola-Palade, 1989:88 (Romania: delta of Danube); Jacobs and Oehlke, 1990:122 and 204 (not collected in Democratic Germany after 1960); Pagliano, 1990:67 (in catalog of Italian Sphecidae); Schwammberger and Priesner, 1990:550 (Austria: Kärnten); Day, 1991:xii (in summary of European Endangered Hymenoptera Lists); Dollfuss, 1991:181 (in key to Sphecidae of North and Central Europe); Pagliano, 1992:31 (in key to Italian Nyssoninae); K. Weber, 1992:86 (Germany: Bayern: Bamberg District); Dollfuss, 1994:101 (endangered in Austria); Negrisol *in* Minelli, Ruffo, and La Posta, 1995b:3 (in catalog of Italian fauna); nec Nemkov *in* Nemkov, Kazenas, Budrys, et Antropov, 1995:455 (= *Alysson monticola*); Shlyakhtenok, 1995:193 (Belarus': Berezinsky Nature Reserve); Jakubzik, 1996:251 (Germany: Köln); Minoranskiy and Shkuratov, 1996:81 (Russia: Rostov Oblast'); Schmid-Egger, Schmidt, and Doczkal, 1996:376 (Germany: Baden-Württemberg: last collected in 1952); Wu and Zhou, 1996a:136 (in revision in Economic Insect Fauna of China); Bitsch, Barbier, Gayubo, Schmidt, and Ohl, 1997:125 (in Sphecidae Fauna of Western Europe); Pagliano and Alma, 1997:179 (known prey listed); Schmidt and Schmid-Egger, 1997:5 (in checklist of German Sphecidae); Schnee, 1997:100 (Germany: Sachsen: Nature Reserve Heidewald- und Moorgebiet; first collected in Sachsen since 1919); Shlyakhtenok, Blinov, and Belyavskaya, 1997:151 (Belarus': Pripyatskiy National Park); K. Weber, 1998:133 (Germany: Bayern: Bamberg area); Mandery, 1999:104 (Germany: Bayern: Coburg area); Pauly, 1999:111 (in catalog of Belgian aculeates); M. Schwarz, 1999:88 (Austria: Oberösterreich: city of Linz area); Blösch, 2000:359 (in Sphecidae Fauna of Germany); Ohl et al., 2001:137 (distribution in Germany by provinces); Shlyakhtenok and Skibinska, 2002:34 (Belarus': no specific locality); Mandery, Kraus, Voith, Wickl, Scheuchl, Schubert, and Warncke, 2003:63 (in catalog of wasps and bees of Bayern, Germany); Wickl, Voith, Mandery, Weber, Kraus, Bausenwein, and Blösch, 2003:195 (Germany: Bayern: no longer endangered); Esser, Jakubzik, and Sonnenburg, 2004:18 (Germany: Nordrhein-Westfalen); Esser, Jakubzik, Sonnenburg, and Woydak, 2004:261 (in checklist of Sphecidae of Nordrhein-Westfalen State of Germany); Shkuratov, 2004a:76 (Russia: Rostov Oblast': Migulinskaya), 2004b:166 (Russia: Rostov Oblast': Gosudarstvennyi Muzei-Zapovednik M.A. Sholokhova); Skibińska *in* Bogdanowicz, Chudzicka, Pilipiuk, and Skibińska, 2004:354 (in catalog of Polish Crabronidae); Wiśniowski, 2004:50 and 62 (in checklist of Polish Sphecidae); Burger, 2005:31 (Germany: Thüringen); Kofler, 2005:182 (Austria: Tirol: Lienz District: Tessenberg in Heinfels Common); Pagliano and Negrisol, 2005:112 (in Sphecidae Fauna of Italy); Hua, 2006:277 (in list of Chinese insects, geographic distribution); Liebig,

2006:37 (Germany: Sachsen: Muskauer Heide); Jacobs, 2007:159, 160 (in key to Crabronidae of Germany); Pettersson, Hellqvist, and Gabrielsson, 2007:7 (Sweden: Västerbotten: Ammarnäs); Saure, 2007:81 (in checklist of Aculeata of Brandenburg Land, Germany); Vepřek and Straka, 2007:207 (in catalog of Sphecidae of Czech Republic and Slovakia, known from Bohemia and Moravia only); Nemkov, 2008b:24 (in catalog of Crabronidae of Asiatic Russia); U. Frommer, 2009a:26 (Germany: in checklist of Sphecidae of central Hessen, locality records, 30 (currently not occurring in Hessen); Humala and Polevoi, 2009:63 (Russia: Republic of Karelia east of Lake Onega); Nemkov, 2009b:127 (in new catalog of Sphecidae and Crabronidae of Asiatic Russia); Ødegaard, Sverdrup-Thygeson, Hansen, Hanssen, and Öberg, 2009:70 (Norway: locality records); Bitsch, 2010:108 (in supplement to vol. II of Faune de France, 1997: revue of recent records from Europe); Mokrousov, 2010a:61 (Russia: Kirov and Nizhny Novgorod Oblast's, Tatarstan: no specific localities), 2010b:100 (Russia: Kirov and Nizhny Novgorod Oblast's, Tatarstan: no specific locality); Mokrousov and Zryanin, 2010:98 (needs to be protected in Russia: Novgorod Oblast'); Rudoiskatel', 2010:152 (Russia: central Ural Mountains); Schmid-Egger, 2010a:13 (in red list of Aculeata of Germany: very rare); Shorenko and Konovalov, 2010:13 (Ukraine: Donetsk); Józán, 2011:183 (in checklist of Sphecidae s.l. of Hungary); Tischendorf, Frommer, and Flügel et al., 2011:40 (Germany: extinct in Hessen: last collected in 1961); Nemkov, 2012c:445 (in catalog of Crabronidae of Russian Far East); Saure, 2012:30 (Germany: Brandenburg: Döberitzer Heide at 52.521°N 13.064°E); Shlyakhtenok, 2012b:91 (Belarus: Beresina National Reserve: overgrowing dry meadow), 2013:221 (in annotated catalog of aculeate wasps of Belarus); Çubuk and Gülméz, 2013:34 (first record from Turkey: Tokat Province: 10 km Ormandibi road); Danilov and Odintseva, 2013:333 (Russia: Western Siberia: 65 km NNE Tobol'sk at 58°45'N 68°74'E); Shlyakhtenok, 2013:221 (in annotated catalog of aculeate wasps of Belarus); Bitsch, 2014:398 (record by Saure, 2012 reported); Hellqvist, Abenius, and Norén, 2014:90 (in catalog of Ampulicidae, Sphecidae, and Crabronidae of Sweden, by provinces); J.-K. Kim, 2014:421 (in catalog of Sphecidae s.l. of Korean Peninsula); Mokrousov and Vafin, 2014:55 (Russia: Republic of Tatarstan); Nemkov, 2014a:277, 278 (in key to *Alysson* of Russia and adjacent countries), 281 (in revision of *Alysson* of Russia and adjacent countries); Pagliano, 2014:118 (specimens in M. Spinola collection, Torino, are *Alysson ratzeburgi*); Yıldırım, Ljubomirov, and Lelej, 2014:5 (distribution in Turkey by biogeographic provinces); Koçak and Kemal, 2015:136 (in checklist of Hymenoptera of Turkey); Nemkov, 2017a:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae), 2017b:219 (in catalog of Bembicinae of Russia).

### 25. *ruficollis* Cameron

*Alyson* [sic] *ruficollis* Cameron, 1898b :25, "♂" = ♀ (as *ruficolle*, incorrect original termination). Holotype: ♀, Sri Lanka: Kandy (OXUM). – Tsuneki, 1968h:5 (in key to *Alysson* of South and East Asia); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Krombein, 1985a:11 (Sri Lanka; redescription, description of ♂).

### 26. *seyrigi* Arnold

*Alysson seyrigi* Arnold, 1945:49, ♀ (as *Seyrigi*, incorrect original capitalization). Holotype: ♀, Madagascar: Perinet (MNHN). – R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Pulawski, 2003b:795 (in checklist of Malagasy Sphecidae); Madl, 2014a:939 (in catalog of Ampulicidae, Crabronidae, and Sphecidae of Malagasy subregion, with synonymy and locality records).

### 27. *sichuanensis* Wu and Zhou

*Alysson sichuanensis* Wu and Zhou, 1987:219 and 221, ♀. Holotype: ♀, China: Sichuan: Wenchuan Wolun (Inst. Zool. Beijing). – Wu and Zhou, 1987:215 (in key to *Alysson* of China), 1996:134 (in revision in Economic Insect Fauna of China); Hua, 2006:277 (in list of Chinese insects, geographic distribution); Nemkov, 2017:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae).

### 28. *spinus* (Panzer)

*Sphex bimaculatus* Panzer, 1798, Heft 51:4, [♀], junior primary homonym of *Sphex bimaculatus* Fueßlin, 1775 (a scoliid). Holotype or syntypes: ♀, Germany: Norimbergae = Nürnberg (depository?). – As *Alysson bimaculatus*:

Panzer, 1806:171 (new combination, in critical review of his previous work); Lepeletier de Saint Fargeau and Audinet-Serville, 1825:50 (redescription); Vander Linden, 1829:90 (bibliographic references, France: Paris, Germany); Herrich-Schaeffer, 1840:292 (Germany: Bayern: Regensburg area); Dahlbom, 1843:142 (in revision of Sphecidae and Pompilidae, as *Alyson bimaculatum*), 1845:474 (in key); Lepeletier de Saint Fargeau, 1845:88 (in revision of world Hymenoptera, as *Alyson*); Eversmann, 1849:387 (Russia: Kazan' Province); von Kiesenwetter, 1849:89 (Germany: Kingdom of Saxony: Dresden); Wissmann, 1849:12 (Germany: Kingdom of Hannover: Scharzfels in Harz Mountains.); Wesmael, 1852:262 (Belgium); Kirschbaum, 1853:44 (Germany: Herzogtum Nassau: Mainz-Mombach, as *bimaculatum*); F. Smith, 1856:373 (in catalog of Hymenoptera in British Museum); Ruthe and Stein, 1857:313 (Germany: Berlin area, as *bimaculatum*); Schenck, 1857:178 (in revision of fossorial wasps of Nassau Region, Germany); Taschenberg, 1858:86 (Germany); Assmus, 1859:611 (Russia: Moscow Oblast', as *bimaculatum*); A. Costa, 1859:50 (in revision of Sphecidae of Kingdom of Naples, Italy, as *bimaculatum*); Funk, 1859:59 (Germany: Bayern: Bamberg); Schenck, 1860:148 (Germany: Nassau Region); Brischke, 1862:100 (Germany: Preussen Province, now Poland: Pomorze Region); Siła-Nowicki, 1864:54 (Poland: Kraków), 1865:54 (western Ukraine: Galicia region: no specific locality); Taschenberg, 1866:198 (in revision of Hymenoptera of Germany); A. Costa, 1867c:76 (in revision of Italian Sphecidae); Kirchner, 1867:219 (in catalog of European Hymenoptera); Schenck, 1867a:355 (Germany: Nassau Region); Wierzejski, 1868:117 (Poland: Kraków; Ukraine: Podole Region; as *bimaculatum*); A. Costa, 1869b:92 (in revision of Italian Sphecidae, as *bimaculatum*); Dours, 1874:142 (in catalog of Hymenoptera of France, as *Alyson bimaculatum*); Mocsáry, 1874:120 (Siebenbürgen, now Romania: Transylvania: no specific locality); Wierzejski, 1874:259 (Poland: Kraków; Ukraine: Podole Region: Sinkov; as *bimaculatum*); Taschenberg, 1875:370 (Germany: Halle); Frivaldszky, 1876:354 (Hungary: Temes Komitat: Grebenáčz, now in Timiș District in Romania); Becker, 1880:150 (Russia: Sarepta, now Krasnoarmeysk S Volgograd); Kohl, 1880:173 (Austria: Tirol, and Italy: Trentino–Alto Adige), 230 (preys on cicadellids, not a parasite), 1883e:668 (Switzerland); von Heyden, 1884:118 (Germany: Frankfurt am Main); Brischke, 1888b:97 (Germany: Preussen Province, now Poland: Pomorze Region, as *bimaculatum*); Radoszkowski, 1892:590 (male genitalia); De Stefani Perez, 1895:228 (in catalog of Sicilian Hymenoptera); Meunier, 1896:272 (Belgium: Bruxelles area); Acloque, 1897:85 (in Sphecid Fauna of France and Algeria); Borries, 1897:64 (review of nesting habits); Chyzer, 1902:34 (Hungary, as *bimaculatum*); Adlerz, 1904:138 (known prey: cicadellids); Kubes, 1905:84 (Czech Republic: Kolín); Váňgel, 1905:167 (Hungary); Cavro, 1910:685 (France: Département du Nord: Roubaix); Graeffe, 1911:47 (Italy: Trieste area); Rudow, 1912:55 (nesting in rotten poplar trunks, clearly in error); de Beaumont, 1951g:316 (Italy); Nouvel and Ribaut, 1953:178 (France: recorded from Hautes-Pyrénées: Gèdre, par Berland, 1925); Grandi, 1954:234 (Turkey); Steiner, 1955:145 (France: Dordogne); Bytinski-Salz, 1956:226 (Turkey: Aydın); Nouvel and Ribaut, 1958:12 (France: Pyrénées-Orientales: Banyuls-sur-Mer); de Beaumont, 1959a:22 (Italy), 1964c:63 (in Sphecid Fauna of Switzerland); Evans, 1966d:28 (review of known behavioral data); de Beaumont, 1967a:326 (Turkey); Gauss, 1967:553 (Germany: Baden-Württemberg); J. Heinrich, 1967:73 (Germany: Aschaffenburg, Kahl, Miltenberg); Benedek, 1968:72 (Hungary, floral records), 1969a:83 (Hungary; marshy meadow), 1969b:421 (Hungary: Csopak, collected in vicinity of aphid *Hyalopteritena pruni* (Geoffroy)); Zangheri, 1969:1703 (Italy: in catalog of flora and fauna of Romagna Region); Babiy, 1970:20 (Austria: Land Salzburg); Benedek, 1970:98 (Hungary: Tapolca); Oehlke, 1970:705 (Democratic Germany); Dathe, 1971:234 (Germany: Berlin Zoological Garden; phenology); Schmidt, 1971b:32 (Germany: Rheinland-Pfalz: Gonsenheimer Wald, Mainzer Sand); Stritt, 1971a:104 (Germany: Baden-Württemberg: Karlsruhe); Haeseler, 1972:155 (Germany: Schleswig-Holstein; anthropogenic habitats); Kofler, 1972:106 (Austria: eastern Tirol); Diniz, 1973:49 (Portugal: Coimbra); Lefeber, 1974:77 (Belgium: Maasmechelen, Plombières); Lefeber and Petit, 1974:163 (Belgium: Plombières); Simon Thomas, 1974:57 (Netherlands: Limburg: Tienray); Frilli and Pizzaghi, 1975:76 (Italy: Badagnano in Piacenza Province); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Kolesnikov, 1977:318 (Russia: Bryansk Oblast'); Marion, 1978:88 (France: Nièvre Department); Benedek, 1979:231 (Hungary: Bakony Hills); Casolari and Casolari Moreno, 1980:125 (specimens in M. Spinola collection); Donath, 1982:213 (Germany: Cottbus Bezirk);

Józán, 1983:100 (Hungary); Delarze, 1992:67 (Switzerland: Valais: Les Follatères); Pagliano, 2014:118 (specimens in M. Spinola collection, Torino, are *Alysson spinosus*, *Alysson pertheesi*, and *Didineis lunicornis*).

*Pompilus spinosus* Panzer, 1801, Heft 80:17, [♀]. Holotype or syntypes: ♀, Germany: no specific locality (depository?). Synonymized with *Alyson bimaculatus* by Jurine, 1807:196. – **As *Alyson spinosus***: Jurine, 1807:196 (new combination, listed) and pl. 10, Fig. 21 (illustration of habitus); Lepeletier de Saint Fargeau and Audinet-Serville, 1825:50 (redescription); Stephens, 1829:362 (in catalog of British insects), 1829b:33 (in checklist of British insects); Vander Linden, 1829:91 (bibliographic references, possibly a synonym of *Alysson bimaculatus*, Belgium: Bruxelles, Germany); Lepeletier de Saint Fargeau, 1845:87 (in revision of world Hymenoptera); A. Costa, 1864b:104 (specimen from Torino, Italy, in Napoli Museum), 1869a:17 (Italy: Piemonte); Dours, 1874:142 (in catalog of Hymenoptera of France, as *spinusum*); Frei-Gessner, Kohl, and Kriechbaumer, 1882:393 (Jurine's specimens are *Alyson bimaculatus*); Acloque, 1897:84 (in Sphecidae Fauna of France and Algeria); Szczepko and Kowalczyk, 2001:189 (Poland: Kampinos National Park near Warszawa); Kowalczyk, Szczepko, and Świątek, 2002:155 (Poland: Kampinos National Park near Warszawa). – **As *Alysson spinosus***: Lomholdt, 1975c:220 (new combination, in Sphecidae Fauna of Fennoscandia and Denmark); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Haeseler, 1977a:23 (NW Germany); Leclercq, 1978b:map 1168 (distribution in Belgium); Lefeber, 1978:137 (Netherlands: Schaesberg); Petit, 1978:86 (Belgium: Vance); Pulawski, 1978:212, 213 (in key to Sphecidae of European part of former USSR); Lefeber, 1979:11 (in checklist of Sphecidae of Netherlands), 57 (Netherlands: distribution map); Schmidt, 1979b:308 (Germany: Baden-Württemberg); Casolari and Casolari Moreno, 1980:125 (specimens in M. Spinola collection); Dollfuss and Ressler, 1981:324 (Austria: Niederösterreich: Scheibbs District); Gayubo, 1982b:34 (Spain: Salamanca: Valdefuentes de Sangusín); Dollfuss, 1983b:20 (in catalog of Sphecidae of Austria); Gayubo, 1983e:232 (Spain: Salamanca Province); Haack, Tschardtke, and Vidal, 1984:124 (Germany: Hamburg area); Józán, 1985b:60 (Hungary S Lake Balaton), 81 (floral records), 84 (ecological and zoogeographic characteristics); Radović, 1985:65 (sting apparatus analyzed); Scobiola-Palade, 1985:96 (Romania: delta of Danube); Brechtel, 1986:60 (Germany: Südpfalz); Gayubo and Heras, 1986:60 (Spain: Segovia Province); Gayubo and Sanza, 1986:72 (Spain: Burgos); Józán, 1986:373 (Hungary: Kiskunság National Park); Skibińska, 1986b:154 (Poland: suburbs of Warszawa), 157 (rural and suburban parks); Riemann, 1987b:32 (Germany: Niedersachsen: Nature Reserve Dünengebiet near Neumühlen); Schmidt and Westrich, 1987:362 (Germany: Mainz area); Wu and Zhou, 1987:215 (in key to *Alysson* of China); Dollfuss, 1988:18, 29 (Austria: Bisamberg near Vienna; Niederösterreich: Oberweiden); Karsai, 1988:101 (Hungary: Kiskunság National Park); Jacobs, 1989:25 (Germany: Mecklenburg-Vorpommern); Pankevich, Belyavskaya, Molchanova, Shlyakhtenok, and Blinov, 1989:95 (Belorussia: Berezinskiy Nature Reserve); Scobiola-Palade, 1989:88 (Romania: delta of Danube); Skibińska, 1989a:204 (Poland: Warszawa area); Gayubo, Asís, and Tormos, 1990b:77 (Spain: Toledo Province); Jacobs and Oehlke, 1990:204 (new records from Democratic Germany); Kuznetzova, 1990:20 (Russia: Voronezh Oblast': Galich'ya Gora Nature Reserve); Pagliano, 1990:67 (in catalog of Italian Sphecidae); Schwammberger and Priesner, 1990:550 (Austria: Kärnten); Barbier, Rasmont, and Wahis, 1990:32 (Belgium: Hainaut); Day, 1991:xii (in summary of European Endangered Hymenoptera Lists); Dollfuss, 1991:181 (in key to Sphecidae of North and Central Europe); Gayubo, Borsato, and Osella, 1991:412 (Italy); Gayubo and Torres, 1991:Table I (Spain: Salamanca; effects of urban pressure); Jacobs, 1991:46 (Germany: Mecklenburg-Vorpommern: Nature Reserve Elbtaldünen); Jakubzik, 1991:75 (Germany: Köln); Józán, 1991:604 (Hungary: Bátorliget Nature Reserve); Kowalczyk, 1991a:89, 93, 97, 99, 101, 107 (Poland: Łódź), 1991b:120 (Poland: Augustów Forest); Negrisolo, 1991:322 (Italy: Treviso and Udine Provinces); Scobiola-Palade, 1991:220 (Romania: Danube delta); Budrys, 1992:28 (in list of Sphecidae of Lithuania); Józán, 1992b:175 (Hungary: Boronka-melléki Protected Area), 1992c:289 (Hungary: Zselic Hills); Pagliano, 1992:31 (in key to Italian Nyssoninae); K. Weber, 1992:86 (Germany: Bayern: Bamberg District); Kuhlmann, 1993:75 (Germany: known from Westfalen); Sorg and Wolf, 1993:59 (Germany: Rheinland-Westfalen: Nature Reserve Die Spey); Torregrosa, Gayubo, Tormos, and Asís, 1993:20 (Spain: Alicante Province); Blagoveshchenskaya, 1994:91 (Russia: Ul'yanovsk Oblast'); Kowalczyk, 1994:73 (Poland: Łagiewniki forest in

Łódź); Theunert, 1994c:32 (summary of records from Niedersachsen and Bremen, Germany); Gorobchishin, 1995:18 (Ukraine: Kanev Nature Reserve); Józán, 1995:105 (Hungary: projected Duna-Dráva National Park); Krasnobayev et al., 1995:138 (Russia: Zhiguli Hills NW Samara); Negrisola *in* Minelli, Ruffo, and La Posta, 1995b:3 (in catalog of Italian fauna); Saure and Dürrenfeld, 1995:29 (Germany: Brandenburg: Gabower Hänge near Bad Freienwalde); Scharrer, 1995:28 (Austria: Niederösterreich: Donau-Auen); Schmid-Egger, Risch, and Niehuis, 1995:163 (summary of records from Germany: Rheinland-Pfalz State); Gorobchishin, 1996:53 (Ukraine: Kanev Nature Reserve); Jakubzik, 1996:251 (Germany: Köln); Jakubzik and Cölln, 1996b:398 (Germany: Rheinland-Pfalz); Minoranskiy and Shkuratov, 1996:81 (Russia: Rostov Oblast'); Saure, 1996:503 (Germany: Berlin-Pankow: sewage irrigation field); Schmid-Egger, Schmidt, and Doczkal, 1996:376 (Germany: Baden-Württemberg: potentially endangered); Voblenko, Gorobchishin, and Nesterov, 1996:15 (Ukraine: Polesye Region); Witt, 1996:105 (Germany: Brandenburg), 106 (locality records); Woydak, 1996:89 (Germany: Westfalen: summary of distribution and nesting habits); Wu and Zhou, 1996a:136 (in revision in Economic Insect Fauna of China); Bitsch, Barbier, Gayubo, Schmidt, and Ohl, 1997:126 (in Sphecidae Fauna of Western Europe); Celary, 1997:60 (in checklist of Animals of Poland); Lauterbach, 1997b:64 (Germany: Nordrhein-Westfalen: Bielefeld); Pagliano and Alma, 1997:178, 179 (prey: *Cicadella viridis* (L.)); Schmidt and Schmid-Egger, 1997:5 (in checklist of German Sphecidae); Shlyakhtenok, Blinov, and Belyavskaya, 1997:152 (Belarus: Pripyatskiy National Park); Dollfuss, Gusenleitner, and Bregant, 1998:521 (Austria: summary of collecting records from Burgenland); Flügel, 1998:59 (Germany: Brandenburg: Unteres Odertal National Park); Józán, 1998:312 (Hungary: Duna-Dráva National Park); N. Schneider and Wahis, 1998:19 (Luxemburg: sandstone quarries); van der Smissen, 1998:53 (Germany: Schleswig-Holstein, Niedersachsen); K. Weber, 1998:133 (Germany: Bayern: Bamberg area); Gayubo, García, Torres, and González, 1999:91 (Spain: Soria Province); Kuhlmann, Wolf, and Woydak, 1999:569 (endangered in Nordrhein-Westfalen State of Germany); Ljubomirov, 1999a:22 (Bulgaria); Majzlan, Rychlík, and Deván, 1999:145 (Slovakia: Čenkovská Step Nature Reserve); Mandery, 1999:104 (Germany: Bayern: Coburg area); Neumayer, Schwarz, and Bregant, 1999:223 (Austria: in checklist of Sphecidae of Land Kärnten); Pauly, 1999:111 (in catalog of Belgian aculeates); M. Schwarz, 1999:88 (Austria: Oberösterreich: city of Linz area); Blösch, 2000:359 (in Sphecidae Fauna of Germany); Dressler, 2000:30 (Germany: Hessen: Darmstadt area); Esenbekova and Kazenas, 2000:57 (southeast Kazakhstan: no specific locality); Giachino, Grosso, Marchetti, Pagliano, Scaramozzino, and Vailati, 2000:108 (Greece); Jacobs, 2000:6 (Germany: Land Mecklenburg-Vorpommern: not endangered); Józán, 2000:112 (Hungary: Bakony Mountains); Ljubomirov, 2000:12 (Bulgaria, specimens in N. Nedelkov collection); Pijfers, 2000:4 (Netherlands: Twente Region); Schmid-Egger, 2000b:275 (Germany: Baden-Württemberg: shores of Rhine River); Józán, 2001:280 (Hungary: Somogy County); Kazenas, 2001b:43 (in checklist of Sphecidae of Kazakhstan and Central Asia); Ohl et al., 2001:137 (distribution in Germany by provinces); Reemer and van der Meer, 2001:16 (Netherlands: along Almelo-Nordhorn canal); Skibińska, 2001:220 (Poland: Białowieża Primeval Forest); van der Smissen, 2001:58 (Germany: Schleswig-Holstein: not endangered); Zettel, Gross, and Mazzucco, 2001:79 (Austria: Wien); Józán, 2002:54 (Hungary: Mecsek Mountains); Kazenas, 2002a:113 (geographic distribution, collecting localities in Kazakhstan); Reemer and van der Meer, 2002:Bijlage 5 (Netherlands: Gelderland: Zaltbommel area); Shlyakhtenok and Skibinska, 2002:34 (Belarus: no specific locality); Józán, 2003:228 (Hungary: Látványi Puszta Nature Conservation Area); Lukáš, 2003:73 (Slovakia: Bratislava: old fruit orchard); Mandery, Kraus, Voith, Wickl, Scheuchl, Schubert, and Warncke, 2003:63 (Germany: in catalog of wasps and bees of Bayern); Reemer, 2003:62 (Netherlands: Gelderland: Zaltbommel area); von der Heide and Metscher, 2003:101 (Germany: Niedersachsen: Emsland area); Wiśniowski *in* Dylewska and Wiśniowski, 2003:174 (Poland: Ojców National Park); Beron, 2004:839 (Bulgaria, eastern Rhodope Mountains: Arda Hut, citation of Ljubomirov, 1999:22); Esser, Jakubzik, Sonnenburg, and Woydak, 2004:261 (in checklist of Sphecidae of Nordrhein-Westfalen State of Germany); Shkuratov, 2004a:76 (Russia: Rostov Oblast'), 2004b:166 (Russia: Rostov Oblast': Gosudarstvennyi Muzei-Zapovednik M.A. Sholokhova); Skibińska *in* Bogdanowicz, Chudzicka, Pilipiuk, and Skibińska, 2004:354 (in catalog of Polish Crabronidae); Szczepko and Kowalczyk, 2004:127 (Poland: Kampinos National Park near



Warszawa); van Achterberg and Peeters, 2004:32 (in checklist of Sphecidae of Netherlands); Wiśniowski, 2004:50 and 62 (in checklist of Polish Sphecidae); Dubitzky, Blank, and Schönitzer, 2005:271 (Germany: Bayern: area north of Dachau); Jacobs, 2005a:438 (Bulgaria); Kofler, 2005:183 (Austria: Tirol: Lienz District: Lesach in Kals Common, Lavant, Tschule Alm in Thurn Common); Kowalczyk and Kurzac, 2005:104 (Poland: Botanical Garden in Łódź); Mandery, 2005:173 (Germany: Bayern: Heinberg Nature Reserve near Nürnberg); Pagliano and Negrisola, 2005:113 (in Sphecidae Fauna of Italy); Riemann and Hohmann, 2005:543 (Germany: Niedersachsen: city of Bremen and adjacent area); Saure, 2005:13 (Germany: Berlin); Theunert, 2005a:16 (Germany: in checklist of Sphecidae of Niedersachsen and Bremen); Venne and Bleidorn, 2005:42 (Germany: Nordrhein-Westfalen: Moosheide Nature Reserve); Bock, 2006:41 (Germany: Bayern: Kelheim District: Abensberg sands); Gorobchishin, 2006:135 (Ukraine: several localities); Hua, 2006:277 (in list of Chinese insects, geographic distribution); Liebig, 2006:37 (Germany: Sachsen: Muskauer Heide); Liška, 2006:88 (Slovakia: Váh river valley near Trenčín); Shlyakhtenok, 2006:113 (Belarus: Polesye Radiological Nature Reserve); Evans and O'Neil, 2007:23 (summary of information on nesting habits); Guldmond, Pijfers, and den Belder, 2007:202 (Netherlands: Gelderland: dairy farm in de Graafschap); Jacobs, 2007:159, 160 (in key to Crabronidae of Germany); Jansen and Kaluza, 2007:22 (Germany: northwestern Sachsen); Józán, 2007:180 (Hungary: Zselic hills); Saure, 2007:81 (in checklist of Aculeata of Brandenburg Land, Germany); Sipos and Móczár, 2007:205 (Hungary: Bács-Kiskun megye: vicinity of Foktő); Smit and Megens, 2007:17 (Netherlands: Noort Brabant: vicinity of Leende); Vago, 2007:174 (France: départements d'Aisne and Pas-de-Calais); Venne, Bleidorn, and Lauterbach, 2007:300 (Germany: Nordrhein-Westfalen: Bielefeld); Vepřek and Straka, 2007:207 (in catalog of Sphecidae of Czech Republic and Slovakia); Kazenas, 2008a:104 (Southeastern Kazakhstan: 5 km E Chemolgan); Livory, Chevin, Lair, Sagot, and Baldock, 2008:30 (France: Département de la Manche); Ljubomirov and Ban-Calefariu, 2008:203 (Romania: Maramureş District: Repedea, Vişeu Valley); Ljubomirov and Yildirim, 2008:62 (in catalog of Crabronidae of Turkey); Theunert, 2008:7 (Germany: map of distribution in Niedersachsen and Bremen); U. Frommer, 2009a:26 (Germany: in checklist of Sphecidae of central Hessen); González, Gayubo, Asís, and Tormos, 2009:625 (Spain: Salamanca and Zamora provinces: Arribes del Duero Natural Park); Straka, Dvořák, and Bogusch, 2009:257 (Czech Republic: Jizerské Mountains and Frýdlant region); van Diemen, 2009:49 (Netherlands: airbase Gilze-Rijen); Bitsch, 2010:108 (in supplement to vol. II of Faune de France, 1997: prey record of Pagliano and Alma reported); Esser, Fuhrmann, and Venne, 2010:35 (Germany: in checklist of aculeates of Nordrhein-Westfalen); Hable, Wickl, Krauss, and von der Dunk, 2010:26 (Germany: Bayern: Sulz- and Ottmaringer Tal); Mokrousov, 2010a:61 (Russia: Kostroma, Nizhniy Novgorod, and Yaroslavl' Oblast's, Chuvash Republic, Tatarstan: no specific localities); Saure, 2010b:174 (Germany: Berlin-Reinickendorf: airport Tempel and Flughafensee Protected Area); Schmid-Egger, 2010a:13 (in red list of Aculeata of Germany: relatively common); Schmidt, 2010:131 (Germany: Bayern: collected along Main-Donau canal); Shorenko and Konovalov, 2010:13 (Ukraine: Khar'kov Oblast': Kupyansk); Smetana, Roller, Beneš, Bogusch, Dvořák, Holý, Karas, Macek, Straka, Šima, Tyrner, Vepřek, and Zeman, 2010:100 (Western Slovakia: recorded from Borská nížina); van der Smitten, 2010a:332 (Germany: Schleswig-Holstein: locality records); Gogala, 2011:26 (Slovenia: Podčetrtek); Józán, 2011:183 (in checklist of Sphecidae s.l. of Hungary); Mokrousov, Berezin, and Egorov, 2011:66 (Russia: Chuvash Republic); Saure, 2011a:5 (Germany: Berlin: former airport Tempelhof), 2011c:197 (Germany: Berlin-Spandau: Fort Hahneberg); Schmid-Egger, 2011c:555 (Austria: Tirol: Tiroler Lech Nature Park); Theunert, 2011a:18 (Germany: in checklist of aculeates of Niedersachsen including city of Bremen); Tischendorf, Frommer, Flügel et al., 2011:66 (Germany: Hessen: endangered); Ziska and Saure, 2011:108 (Germany: Berlin: Tegeler Fließ valley); Cölln, Jakubzik, and Kinkler, 2012:24 (Germany: Nordrhein-Westfalen: Leverkusen); Nemkov, 2012b:119 (review of known prey); Prisiy, 2012:50 (Russia: Belgorod Oblast'); Saure, 2012b:228 (Germany: Berlin-Spandau: Spandauer Forst); Shlyakhtenok, 2012b:91 (Belarus: Beresina National Reserve: overgrowing dry meadow); Strumia, Pagliano, and Gayubo, 2012:56 (Italy: Toscana: Riserva di San Rossore); Dyuzhaeva, 2013:116 (Russia: Samara Oblast': Zhiguli Nature Reserve); Shlyakhtenok, 2013:222 (in annotated catalog of aculeate wasps of Belarus); Wiśniowski and Szczepko, 2013:23 (Poland: Kampinos National Park

near Warszawa); Bitsch, 2014:398 (France: Ardèche: Saint-Remèze; record from France by Vago, 2007 reported); Mokrousov and Vafin, 2014:55 (Russia: Republic of Tatarstan); Nemkov, 2014a:277, 278 (in key to *Alysson* of Russia and adjacent countries), 282 (in revision of *Alysson* of Russia and adjacent countries); Pagliano, 2014:118 (specimens in M. Spinola collection, Torino, are *Alysson spinosus*); Yıldırım, Ljubomirov, and Lelej, 2014:5 (distribution in Turkey by biogeographic provinces); Koçak and Kemal, 2015:136 (in checklist of Hymenoptera of Turkey); P. Rosa and Pagliano, 2015:97 (Italy: Lombardia and Piemonte: Parco del Ticino); Samin and Bagriacik, 2015:71 (Iran: Northern Khorasan: Bojnord at 37°35'N 57°20'E); Simon, Lorthiois, and Macé, 2015:53 (France: alluvial terraces in Eure Department: Courcelles-sur-Seine); Mokrousov and Popov, 2016:566 (Russia: Krasnodarskiy Krai); Stolle and Saure, 2016:921 (Germany: in list of Sphecidae of Sachsen-Anhalt); Wiśniowski, 2016:127 (Poland: Ojców National Park); Jahantigh, Rakhshani; Mokhtari, and Ramroodi, 2017:32 (Iran: known from North Khorasan Province); Le Divelec, Chapelin-Viscardi, Larivière, and Adamski, 2017:62 (potential host of *Nysson dimidiatus* and *N. distinguendus*); Nemkov, 2017a:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae), 2017b:219 (in catalog of Bembicinae of Russia).

*Alysson katkovi* Kokujev, 1906:214, ♀. Holotype: ♀, Ukraine: Ol'gopol' District: no specific locality (originally N. Kokujev coll., now ZIN). Synonymized with *Alysson spinosus* by Nemkov, 2014a:282. – R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Pulawski, 1978:212 (in key to Sphecidae of European part of former USSR).

As *Sphex fuscatus* Fabricius (misidentification): Panzer, 1798, Heft 51:3 (in revision of German insects, illustration of habitus). – As *Alysson fuscatus*: Panzer, 1806:163 (new combination, in critical review of his previous work); Lepeletier de Saint Fargeau, 1845:88 (new combination, in revision of world Hymenoptera, as *Alysson*); Handlirsch, 1888a:246 (in revision of world Bembicinae); Kohl, 1893a:28 (Austria: Niederösterreich); Krieger, 1894:9 (Germany: Kingdom of Saxony); Handlirsch, 1895:8831 (additional bibliography); Dalla Torre, 1897:563 (in catalog of world Sphecidae); Mocsáry, 1897:81 (Kingdom of Hungary, some localities are in today's Croatia and Romania); Dominique, 1901a:506 (France: Loire-Inférieure, now Loire-Atlantique: Le Pouliguen); de Cobelli, 1903:114 (Italy: Province of Trentino); Antiga and Bofill, 1904:14 (Spain: Cataluña Province); W. Schulz, 1904b:97 (Czechoslovakia); Kokujev, 1906:216 (in revision of Russian Alyssontini); Schmiedeknecht, 1907:224, 225 (in key to Hymenoptera of Central Europe); de Gaulle, 1908:120 (in catalog of French Hymenoptera); Dittrich, 1911b:24 (Germany: Niederschlesien Province, now Poland: Dolny Śląsk Region); Birula, 1912:540 (Ukraine: Zhytomyr Oblast': Radomyshl'); Schirmer, 1912:167 (Germany: Berlin area); Birula, 1913:540 (Ukraine: Zhytomyr Oblast': Radomyshl'); Szilády, 1913:89 (Hungary: Nagyenyed); Birula, 1914:386 (Belarus': Luskopol' near Vitebsk); Dubois, 1919:96 (Belgium: Bruxelles: Uccle); O. Meyer, 1919:154 (Germany: Posen Province, now Poland: Poznań Region); A. Wagner, 1920:36 (Germany: Lower Elbe region, not found but can be expected); Dubois, 1921c:204, 205 (in key to Belgian Sphecidae); Fahringer, 1922:181 (Turkey); Hedicke, 1922:271 (Germany: Brandenburg: Gross Machnower Weinberg); Berland, 1925d:96 (in Sphecid Fauna of France); Bischoff, 1925:300 (Latvia: Wezkukkul; Lithuania: Dolny near Vilnius; Poland: Grajewo area); Coulon, 1925:120 (France: Oise); Friese, 1926:161 (in key to Sphecidae of Central Europe, short morphological and biological characteristics); Bouwman, 1927:94 (in revision of Sphecidae of Netherlands); F. Werner, 1927:66 (Austria: Niederösterreich: River Kamp valley); Crèvecoeur and Maréchal, 1928:172 (Belgium: Uccle); van der Vecht, 1928:93 (Netherlands: Meijendel sand dunes); Schmiedeknecht, 1930:686, 687 (in keys to Hymenoptera of North and Central Europe); Pulkkinen, 1931:66 (in revision of Sphecidae of Finland, not yet found in Finland); Bondroit, 1932:32 (Belgium: Solbosch); Giordani Soika, 1932a:22 (Italy: Lido di Venezia); Bondroit, 1934:59 (Belgium: Watermael); Bernard, 1935:64 (France: Var: Fréjus area); Crèvecoeur and Maréchal, 1936:253 (in catalog of Belgian Hymenoptera); Zavadil, Šustera, and Bat'a, 1937:195 (in catalog of Sphecidae of Czechoslovakia); Móczár, 1938c:81 (Hungary: Kőszeg Hills); A. Wagner, 1938a:121 (northwestern Germany); Móczár, 1939:5 (Hungary: Jászberény); Balthasar, 1941b:112 (Czech Republic: eastern Moravia); Paul, 1941:44 (Germany: Pommern: Mittel- and Ostpommern: no specific locality now Poland: Pomorze środkowe i wschodnie); Schneid, 1941:1042 (Germany: Bayern: Bamberg

area); Giner Marí, 1943a:152 (in Sphecidae Fauna of Spain); Bat'a, 1944a:26 (Czech Republic), 1944b:92 (Czech Republic: Veselí); Guiglia, 1944a:147 (Cyprus: Limassol), 1944b:22 (Italy); Šnoflák, 1944a:144 (Czech Republic: serpentine steppe near Mohelno); Šnoflák *in* Zavadil and Šnoflák, 1948:78, 79 (in key to Sphecidae of Czechoslovakia); Ceballos, 1949:100 (Spain); de Andrade, 1949:17 (Portugal); Sala de Castellarnau, 1949:89 (Spain: Teruel: Bronchales, as *fuscatus*); Cavo, 1950:36 (France: Département du Nord); Pittioni, 1950:24 (Cyprus); Szulczewski, 1950:107 (Poland: Wielkopolski National Park 15 km S Poznań, as *fasciatus*); Caruel, 1951:100 (France: Marne Department); Leininger, 1951:117 (Germany: Baden-Württemberg); Bat'a, 1952:167 (Czech Republic); Głowacki, 1953:520 (Poland: Podkowa Leśna near Warszawa); Móczár, 1953:310 (Hungary); Bischoff and Stadler, 1954:126 (Germany: Bayern: Romberg); Puławski, 1954:106 (Poland: Błędów); Aerts, 1955:62 (Germany: Rheinland); Vergne, 1955:4 (France: Auvergne); Vogrin, 1955:36 (Yugoslavia); Ceballos, 1956:379 (in catalog of Hymenoptera of Spain); Bajári, 1957a:94, 95 (in key to Hungarian Sphecidae); Zirngiebl, 1957:182 (Germany: Rheinland-Pfalz: Birkenheide, Frankenthal, Leistadt); Benno, 1958b:10 (in review of Dutch Sphecidae); Diniz, 1959:29 (Portugal: Pao de Rei); Olberg, 1959:338-339 (photograph of female carrying cicadellid prey); Wolf, 1959b:29 (Germany: Nassau); Noskiewicz and Puławski, 1960:82, 83 (in key to Polish Sphecidae); Hoop, 1963a:73 (Germany: Schleswig-Holstein: Reher Kratt), 1963b:7 (Germany: Schleswig-Holstein: Lauenburg, Reher Kratt); Lehrer and Scutaru, 1963:283 (Romania: Moldova Pașcani and Mircești in Iași District, Baia in Suceava District); Babić, 1964:116 (Austria: Land Salzburg); Benno, 1967:34 (in checklist of Sphecidae of Netherlands); Balthasar, Hrubant, and Hrubant, 1967:174 (Bulgaria: Slanchev Bryag near Nessebyr); Niedl and Deneš, 1967:84 (Czech Republic: Třebon area); Scobiola-Palade, 1967b:47 (Romania), 1968b:142 (Romania: Island of Letea in delta of Danube), 1968c:384 (Romania: Budești, Dăraști, Giurgiu, Tigănești); Dathe, 1969:439 (Germany: Berlin Zoological Garden); Lefeber, 1969a:78 (Netherlands: Bergen op Zoom); Romanova, 1969:134 (Russia: North Caucasus); Tumšs, 1970:77 (Latvia); Balthasar, 1972:350 (in Sphecidae Fauna of Czechoslovakia); Niedl and Deneš, 1972:153 (Czechoslovakia); Scobiola-Palade, 1972a:150 (Romania: delta of Danube: Caraorman), 1972b:253 (Romania), 1974:144 (Romania: Sărăturile sandbank in Danube delta); Georghiou, 1977:188 (Cyprus); Radović and Krunić, 1979:unpaginated foldout (nesting in sand, foreleg structure); Casolari and Casolari Moreno, 1980:125 (specimens in M. Spinola collection); Józán, 1981:305 (Hungary: Hortobágy National Park); Skibińska, 1981:357 (Poland: Warszawa-Białoleka), 1982:123 (Poland: Warszawa area); Holtappels, 1987:26 (Germany: Nordrhein Westfalen: Offender Waldsee); Kowalczyk, 1988b:64 (Poland: environs of Łódź); Pádr *in* Šedivý, 1989a:167 (in checklist of Czechoslovakian Sphecidae); Pádr, 1990:73 (Czech Republic: Praha area); Kowalczyk, 1990:291 (Poland: Góry Świętokrzyskie); Skibińska, 1995:424, 425 (Poland: pine forest in Białowieża Primeval Forest); Pawlikowski and Kruszyński, 1996:86 (Poland: Toruń Basin); Pagliano, 2014:118 (specimens in M. Spinola collection, Torino, are *Alysson costai*, *Alysson spinosus*, and *Alysson tricolor*).

As *Alysson pertheesi*: Nedelkov, 1914:197 (Bulgaria), corrected to *Alysson spinosus* by Ljubomirov, 1999a:22.

As *Alysson ratzeburgi*: Marquet, 1875:204 (France: Hérault: Montpellier), corrected to *Alysson bimaculatus* by Marquet, 1881:181; Dittrich, 1911b:24 (Germany: Niederschlesien: Mirkau, now Poland: Dolny Śląsk: Mirków near Wrocław), corrected to *Alysson fuscatus* by Noskiewicz and Chudoba, 1949:409; Nedelkov, 1914:197 (Bulgaria), corrected to *Alysson spinosus* by Ljubomirov, 1999a:22.

As *Alysson tricolor*: Dittrich, 1911b:23 (Germany: Niederschlesien: Mirkau, now Poland: Dolny Śląsk: Mirków near Wrocław), corrected to *Alysson fuscatus* by Noskiewicz and Chudoba, 1949:409.

## 29. *striatus* W. Fox

*Alysson striatus* W. Fox, 1894b:88, ♂. Lectotype: ♂, USA: District of Columbia (ANSP), designated by Cresson, 1928:48. – Handlirsch, 1895:834 (original description translated into German); Dalla Torre, 1897:565 (in catalog of world Sphecidae); Ashmead, 1899d:329 (in checklist of North American Crabronidae); Bradley, 1928:1015 (in catalog of New York Sphecidae); Krombein *in* Muesebeck et al., 1951:981 (in catalog of North American Hymenop-

tera); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Krombein, 1979b:1685 (in catalog of North American Hymenoptera).

### 30. *taiwanus* Sonan

*Alysson taiwana* Sonan, 1940:14, ♀, incorrect original termination. Holotype: ♀, Taiwan: Shinchiku (depository?) – Tsuneki, 1968h:5 (in key to *Alysson* of South and East Asia); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Wu and Zhou, 1987:215 (in key to *Alysson* of China); Porter, Stange, and Wang, 1999:13 (in checklist of Sphecidae of Taiwan); Hua, 2006:277 (in list of Chinese insects, geographic distribution).

### 31. *takasago* Tsuneki

*Alysson takasago* Tsuneki, 1977j:266, ♂. Holotype: ♂, Taiwan: Fuhosho (TMB). – Hua, 2006:277 (in list of Chinese insects, geographic distribution).

### 32. *testaceitarsis* Cameron

*Alysson testaceitarsis* Cameron, 1902c:290, ♀. Holotype or syntypes: ♀, India: Himachal Pradesh: Simla (BMNH). – Tsuneki, 1968h:5 (in key to *Alysson* of South and East Asia); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae).

### 33. *tomentosus* McLeay

*Alysson tomentosus* McLeay, 1828:457, sex not indicated. Holotype or syntypes: Australia: no specific locality (depository unknown). – Not listed by Bohart and Menke, 1976; Cardale, 1985:303 (in catalog of Australian Sphecidae).

### 34. *triangularis* Krombein

*Alysson triangularis* Krombein, 1985a:13, ♀, ♂. Holotype: ♀, Sri Lanka: Central Province: Kandy District: Kandy - Udawattakele Sanctuary (USNM). – Evans and O'Neil, 2007:27 (summary of information on nesting habits); Nemkov, 2012b:119 (review of known prey).

### 35. *triangulifer* Provancher

*Alysson triangulifer* Provancher, 1887:272, ... Lectotype: ♂, Canada: ... (Laval Univ.), designated by Gahan and Rohwer, 1917:305. – W. Fox, 1894b:88 (in revision of North American *Alysson*, description of ♀, as *atrianguliferus*); Handlirsch, 1895:835 (original description translated into German); Dalla Torre, 1897:565 (in catalog of world Sphecidae); Ashmead, 1899d:329 (in checklist of North American Crabronidae); Harrington, 1902:223 (Canada: Ontario: Ottawa); H. Smith, 1908b:341 (in revision of Nebraskan Sphecidae); Mickel, 1918b:347 (in catalog of Nebraskan Sphecidae); J.Ch. Bradley, 1920:131 (New York, as *trianguliferus*), 1928:1015 (in catalog of New York Sphecidae); Hendrickson, 1930:158 (Iowa); Brimley, 1938:446 (North Carolina: Hendersonville); Krombein in Muesebeck et al., 1951:981 (in catalog of North American Hymenoptera); Krombein, 1963f:276 (Maryland: Plummers Island near Washington, D.C., as *triangulifer triangulifer*); Steiner, 1973:27 (Canada: Northwest Territories); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Krombein, 1979b:1685 (in catalog of North American Hymenoptera); Finnamore, 1982:206 (in Sphecid Fauna of Southern Quebec); Ahlstrom, 1995:112 (in checklist of insects of North Carolina); Finnamore, 1997:892 (Canada: Yukon, as *triangulifer triangulifer*); Buck, 2004:27 (in checklist of Crabronidae of Ontario, Canada); Ratzlaff, 2016:23 (Canada: British Columbia, after Bradley, 1920 and Krombein, 1979).

### *ssp. shawi* Bradley

*Alysson shawi* Bradley, 1920:130, ♀, ♂. Holotype: ♂, Canada: British Columbia: Carbonate on Columbia River (Cornell Univ.). – As *Alysson triangulifer shawi*: Krombein in Muesebeck et al., 1951:981 (new status, in catalog of North American Hymenoptera); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Krombein, 1979b:1685 (in catalog of North American Hymenoptera).

### 36. *tricolor* Lepeletier de Saint Fargeau and Audinet-Serville

*Alysson tricolor* Lepeletier de Saint Fargeau and Audinet-Serville, 1825:50, ♀. Syntypes: ♀, France: Normandie: Luc, and Paris area (lost). – Vander Linden, 1829:92 (bibliographic references, Belgium: Bruxelles); Lepeletier de Saint Fargeau, 1845:89 (in revision of world Hymenoptera); Wesmael, 1852:261 (Belgium); F. Smith, 1856:373 (in catalog of Hymenoptera in British Museum); A. Costa, 1864b:98 (two specimens from France in Napoli Museum), 1867c:151 (in revision of Italian Sphecidae); Kirchner, 1867:19 (in catalog of European Hymenoptera); A. Costa, 1871b:82 (in revision of Italian Sphecidae); Dours, 1874:142 (in catalog of Hymenoptera of France); Wüstnei, 1886:9 (known from Germany, but not from Nassau); Handlirsch, 1888a:244 ((in revision of world Bembicinae); Kohl, 1893a:28 (Austria: Niederösterreich: Wien); Handlirsch, 1895:831 (Switzerland: Grono); Acloque, 1897:85 (in Sphecid Fauna of France and Algeria); Dalla Torre, 1897:565 (in catalog of world Sphecidae); Mocsáry, 1897:81 (Hungary: Budapest); Adlerz, 1904:138 (known prey: cicadellids); W. Schulz, 1906:201 (correct authorship is Lepeletier de Saint Fargeau and Serville); Schmiedeknecht, 1907:224, 225 (in key to Hymenoptera of Central Europe); Ferton, 1908:558 (prey); de Gaulle, 1908:120 (in catalog of French Hymenoptera); nec Dittrich, 1911b:23 (= *Alysson spinosus*); Noskiewicz, 1918:137 (Galicia, now western Ukraine: Hołosko near Lwów); Grubod, 1919:857 (Italy: Piemonte: Susa); Steck, 1920:77 (Switzerland: Grono, Novaggio); Dubois, 1921c:204, 205 (in key to Belgian Sphecidae); Berland, 1925d:96 (in Sphecid Fauna of France); Bouwman, 1927:93, 94 (in key to Sphecidae of Netherlands, not yet found in Netherlands); Schmiedeknecht, 1930:686, 687 (in keys to Hymenoptera of North and Central Europe); Bondroit, 1932:32 (Belgium: recorded from Bruxelles area by Wesmael); Dusmet y Alonso, 1935:53 (Spain: Madrid: El Pardo); Vergne, 1935:118 (France: Auvergne: Lezoux); Crèvecoeur and Maréchal, 1936:253 (in catalog of Belgian Hymenoptera); Móczár, 1939:5 (Hungary: Jászberény); Zavadil, 1939:120 (Czech Republic: Morava: Kobylí); Giner Marí, 1943a:152 (in Sphecid Fauna of Spain); Šnoflák *in* Zavadil and Šnoflák, 1948:78, 79 (in key to Sphecidae of Czechoslovakia); Vogrin, 1955:36 (Yugoslavia); Ceballos, 1956:379 (in catalog of Hymenoptera of Spain); Bajári, 1957a:94, 95 (in key to Hungarian Sphecidae); Noskiewicz and Puławski, 1960:83, 84 (in key to Polish Sphecidae, not yet found in Poland); de Beaumont, 1964c:63 (in Sphecid Fauna of Switzerland), 1967a:326 (Turkey); Leclercq, 1968:map 1169 (Belgium: distribution); Scobiola-Palade, 1968c:384 (Romania: Pusnicu); Stritt, 1968:110 (Germany: Baden-Württemberg), 1969:131 (first record from Germany: Baden-Württemberg: Karlsruhe); Stritt, 1971a:104 (first record from Germany: Baden-Württemberg: Karlsruhe), 1971b:155 (first record from Germany: Karlsruhe area); Balthasar, 1972:351 (in Sphecid Fauna of Czechoslovakia); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Kazenas, 1978b:94 (in key to Sphecidae of Kazakhstan and Central Asia); Leclercq, 1978b:map 1169 (distribution in Belgium); Pulawski, 1978:212 (in key to Sphecidae of European part of former USSR); Schmidt, 1979b:332 (Germany: Baden-Württemberg); Casolari and Casolari Moreno, 1980:125 (specimens in M. Spinola collection); Dollfuss, 1983a:75 (endangered in Niederösterreich, Austria), 1983b:20 (in catalog of Sphecidae of Austria: Wien; last finding 1866); Westrich and Schmidt, 1985b:110 (Germany: endangered in Baden-Württemberg); Pádr in Šedivý, 1989a:167 (in checklist of Czechoslovakian Sphecidae); Pagliano, 1990:67 (in catalog of Italian Sphecidae); Day, 1991:xii (in summary of European Endangered Hymenoptera Lists); Dollfuss, 1991:182 (in key to Sphecidae of North and Central Europe); Pagliano, 1992:31 (in key to Italian Nyssoninae); Dollfuss, 1994:97 (endangered in Austria); Negrisoló *in* Minelli, Ruffo, and La Posta, 1995b:3 (in catalog of Italian fauna); Gusenleitner, 1996a:8 (Austria: Burgenland); Schmid-Egger, Schmidt, and Doczkal, 1996:376 (Germany: Baden-Württemberg: endangered); Bitsch, Barbier, Gayubo, Schmidt, and Ohl, 1997:128 (in Sphecid Fauna of Western Europe); Pagliano and Alma, 1997:179 (known prey listed); Schmidt and Schmid-Egger, 1997:5 (in checklist of German Sphecidae); Dollfuss, Gusenleitner, and Bregant, 1998:521 (Austria: Burgenland: Schützgraben E Minihof-Liebau); Ljubomirov, 1999a:22 (Bulgaria), 1999b:56 (Bulgaria: Mount Vitosha near Sofia); Pauly, 1999:111 (in catalog of Belgian aculeates); Blösch, 2000:360 (in Sphecid Fauna of Germany); Gayubo, González, and Torres, 2000:187 (Spain: Salamanca Province); Józán, 2001:280 (Hungary: Somogy County); Kazenas, 2001b:43 (tentatively in checklist of Sphecidae of Kazakhstan and Central Asia); Ohl et al., 2001:137 (distribution in Germany by provinces); Zettel,



Gross, and Mazzucco, 2001:79 (Austria: Wien, not collected in XXth century); Mandery, Kraus, Voith, Wickl, Scheuchl, Schubert, and Warncke, 2003:63 (in catalog of wasps and bees of Bayern, Germany); Deván, 2004:146 (western Slovakia); Pagliano and Negrisoló, 2005:113 (in Sphecidae Fauna of Italy); Gorobchishin, 2006:135 (Ukraine: Kyiv); Jacobs, 2007:159, 160 (in key to Crabronidae of Germany); Józán, 2007:171, 180 (Hungary: Zselic hills); Vepřek and Straka, 2007:207 (in catalog of Sphecidae of Czech Republic and Slovakia, known from Moravia and Slovakia only); Ljubomirov and Yildirim, 2008:63 (in catalog of Crabronidae of Turkey); González, Gayubo, Asís, and Tormos, 2009:625 (Spain: Salamanca and Zamora provinces: Arribes del Duero Natural Park); Pagliano, 2009:177 (Italy: Lazio: Morlupo); Bitsch, 2010:108 (in supplement to vol. II of Faune de France, 1997: revue of recent records from Europe); Schmid-Egger, 2010a:13 (in red list of Aculeata of Germany: very rare); Shorenko and Konovalov, 2010:13 (Ukraine: Khar'kov Oblast': Gaidary; Donetsk Oblast': Thorez); van der Smitsen, 2010b:383 (France: Gard: Collias; Vaucluse: Le Beaucet-Venasque); Gogala, 2011:26 (Slovenia: Ljubljana); Józán, 2011:183 (in checklist of Sphecidae s.l. of Hungary); Tischendorf, Frommer, Flügel et al., 2011:85 (Germany: Hessen: insufficient data to evaluate degree of endangerment); Strumia, Pagliano, and Gayubo, 2012:56 (Italy: Toscana: Riserva di San Rossore); Reder, 2013a:25 (Germany: Rheinland-Pfalz: three localities, review of German collecting localities with distribution map in Germany); Bitsch, 2014:398 (record from France by van der Smitsen, 1010b reported); Pagliano, 2014:118 (specimens in M. Spinola collection, Torino, are *Alysson tricolor*); Yıldırım, Ljubomirov, and Lelej, 2014:5 (distribution in Turkey by biogeographic provinces); Reder and Niehuis, 2014:6 (Germany: Birkenheide, Flörsheim-Dalsheim, and Worms); Koçak and Kemal, 2015:136 (in checklist of Hymenoptera of Turkey); Mokrousov, Shlyakhtenok, and Grebennikov, 2016:20 (Russia: Belgorod Oblast': Les na Vorskla Nature Reserve); Jansen, 2017:6 (Germany: Sachsen: Leipzig), 7 (color photographs); Nemkov, 2017a:Table p. 1 (in zoogeographic analysis of Palearctic Bembicinae), 2017b:219 (in catalog of Bembicinae of Russia).

### 37. *tridentatus* Wu and Zhou

*Alysson tridentatus* Wu and Zhou, 1987:218 and 221, ♀. Holotype: ♀, China: Jiangsi: Guli (Inst. Zool. Beijing). – Wu and Zhou, 1987:215 (in key to *Alysson* of China), 1996:133 (in revision in Economic Insect Fauna of China); Hua, 2006:277 (in list of Chinese insects, geographic distribution).

### 38. *verhoeffi* Tsuneki

*Alysson verhoeffi* Tsuneki, 1967e:8, ♀. Holotype: ♀, China: Heilongjiang: Harbin (RMNH). – Tsuneki, 1968h:6 (in key to *Alysson* of South and East Asia); R. Bohart and Menke, 1976:458 (in checklist of world Sphecidae); Wu and Zhou, 1987:215 (in key); Hua, 2006:277 (in list of Chinese insects, geographic distribution); Nemkov, 2014a:277 (in key to *Alysson* of Russia and adjacent countries); Nemkov, 2017b:219 (in catalog of Bembicinae of Russia).

### 39. *yunnanensis* Wu and Zhou

*Alysson yunnanensis* Wu and Zhou, 1987:215 and 221, ♀. Holotype: ♀, China: Yunnan: Xishuangbanna: Menglun (Inst. Zool. Beijing). – Wu and Zhou, 1987:214 (in key), 1996:131 (in revision in Economic Insect Fauna of China); Hua, 2006:277 (in list of Chinese insects, geographic distribution).

## NOMEN NUDUM IN ALYSSON

*Alysson triangularis* Fox: Ashmead, 1899d:329 (in checklist of North American Crabronidae).

## SPECIES DESCRIBED IN ALYSSON AND TRANSFERRED TO OTHER GENERA

*aculeatus* Cresson, 1865 = *Didineis*

*ater* Spinola, 1808 = *Pison*

*barbieri* de Beaumont, 1968 = *Didineis*

*latro* de Beaumont, 1967 = *Didineis*  
*nipponicus* Tsuneki, 1968 = *Didineis*  
*texanus* Cresson, 1872 = *Didineis*