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The digger wasps of the genus *Alysson* Panzer (Hymenoptera: Crabronidae: Bembicinae) of Russia and adjacent territories, with a key to species and new synonymies

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Abstract

Nine species of *Alysson* Panzer 1806 are recorded from Russia and adjacent territories. The new synonymy is proposed for *Alysson pertheesi* Gorski 1852 = *A. fuscatus* var. *jaroslavensis* Kokujev 1906, = *A. harbinensis* Tsuneki 1967; *Pompilus spinosus* (Panzer 1801) = *Alysson katkovi* Kokujev 1906. The number of valid species-group taxa in the genus *Alysson* is reduced to 39 species. An original key to the species is provided.

Key words: sand wasps, *Alysson*, Palaearctic, fauna

Introduction

Alysson Panzer 1806 currently includes 42 species distributed worldwide except the Neotropical Region (Pulawski 2013). Seventeen species are known from the Palearctic Region and six from Russia (Nemkov 2012b). Most of the species are rarely collected, and some are known from the type series only. The females construct nests with one to several cells in hard or more often in sandy soil. The larvae feed on different Homoptera, mainly leafhoppers (Bohart & Menke 1976, Evans & O'Neill 2007, Nemkov 2012a).

This paper deals with *Alysson* of Russia and the adjacent territories (countries of the former Soviet Union, Mongolia, northern China, Korean Peninsula, and northern Japan). These wasps have been revised only by Kokujev (1906) more than a century ago. Within the area considered here there are keys to the species of South and East Asia (Tsuneki 1968), European part of former USSR (Pulawski 1978), Kazakhstan and Middle Asia (Kazenas 1978), China (Wu & Zhou 1987), and Russian Far East (Nemkov *et al.* 1995).

The current number of the valid species in the genus *Alysson* (including the new synonymies from this paper) is reduced to 39, to 14 in the Palaearctic Region, and to five in Russia.

Materials and methods

About 150 specimens have been studied. The following are abbreviations of the names of institutions in which the type specimens and studied materials are deposited:

CAS	California Academy of Sciences, San Francisco, USA
ELKU	Entomological Laboratory, Kyushu University, Fukuoka, Japan
IBSS	Institute of Biology and Soils Science, Vladivostok, Russia
MNHAH	Museum of Nature and Human Activities, Hyogo, Japan
NNML	Nationaal Natuurhistorisch Museum, Leiden, Netherlands
TMB	Természettudományi Múzeum, Budapest, Hungary
ZIN	Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia

ZMB	Museum für Naturkunde, Berlin, Germany
ZMLU	Zoologiska Museet Lunds Universitet, Lund, Sweden
ZMMU	Zoological Museum of Moscow State University, Moscow, Russia

Descriptive terminology follows Bohart and Menke (1976), but the terms "mesosoma" instead of "thorax" and "metasoma" instead of "gaster" are used. Distributions of the species are based on Pulawski (2013) and the material examined.

***Alysson* Panzer 1806**

Alysson Jurine in Panzer 1801a: 164, suppressed by ICZN (1939).

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

Alysson Jurine 1807: 195. Type species: *Pompilus spinosus* Panzer 1801, by monotypy. Objective junior synonym of *Alysson* Panzer 1806.

The genus is closely related to the other two genera of the tribe Alyssontini de Dalla Torre 1897: *Didineis* Wesmael 1852 and *Analysson* Krombein 1985, but differs from them in having the labrum truncate or slightly biemarginate apically (trilobate in *Analysson*), in having the clypeal median lobe tridentate (straight in *Analysson*), in having the inner eye margins nearly parallel (moderately converging toward the clypeus in *Analysson*), in having the forewing media diverging at or beyond *cu-a* (before *cu-a* in *Didineis*), in having the metapleuron about half as long as high (much less than half as long as high in *Didineis*), and in having metasomal tergum II with two lateral pale spots (without lateral pale spots in *Didineis*). For a key to genera of the tribe Alyssontini see Nemkov & Lelej (2013).

Key to species

1. Females: flagellum with 10 articles; metasoma with six visible terga; last tergum with pygidial plate. 2
- Males: flagellum with 11 articles; metasoma with seven visible terga; last tergum without pygidial plate (unknown in *A. verhoeffi*) 10
2. Metasomal base red. 3
- Metasomal all black 5
3. Mesosoma black. Length 6.5–7.5 mm *A. spinosus* (Panzer)
- Mesosoma entirely red or with red propodeum 4
4. Mesosoma entirely red. Length 6.0 mm *A. maracandensis* Radoszkowski
- Mesosoma mostly black with red propodeum. Length 5–7 mm *A. pertheesi* Gorski
5. Mesosoma mostly red. Length 6.0–7.0 mm *A. tricolor* Lepeletier de Saint Fargeau et Audinet-Serville
- Mesosoma black 6
6. Propodeal enclosure apically triangularly pointed (Fig. 5). 7
- Propodeal enclosure apically rounded (Fig. 6) 9
7. Interantennal yellow spot extending upward much above level of antennal sockets (Fig. 2); flagellomeres I and II yellow beneath. Length 7.0 mm *A. monticola* Tsuneki
- Interantennal yellow spot not extending upward; flagellomeres I and II dark beneath 8
8. Frons with distinct medial furrow; flagellomere I nearly 2-times as long as wide at apex. Length 7.0–9.0 mm *A. ratzeburgi* Dahlbom
- Frons without distinct medial furrow (Fig. 1); flagellomere I nearly 4-times as long as wide at apex. Length 7.0–8.5 mm. *A. japonicus* Tsuneki
9. Apical teeth of clypeus rounded; flagellomere I nearly 2-times as long as wide at apex. Length 6.0–6.5 mm *A. verhoeffi* Tsuneki
- Apical teeth of clypeus pointed; flagellomere I nearly 4-times as long as wide at apex. Length 7.0–12.0 mm. *A. cameroni* Yasumatsu et Masuda
10. Propodeal enclosure triangular, apically pointed 11
- Propodeal enclosure apically rounded. 15
11. Flagellum yellow or reddish below. 12
- Flagellum entirely black or dark-brown 13
12. Flagellum yellow below and reddish above; legs mainly yellow. Length 5.0 mm. *A. maracandensis* Radoszkowski
- Flagellum reddish below and brownish above; legs reddish or brownish. Length 5.0–6.0 mm. *A. tricolor* Lepeletier de Saint Fargeau et Audinet-Serville
13. Interantennal yellow spot extending upward much above level of antennal sockets (Fig. 4). Length 5.5–7.0 mm

- *A. monticola* Tsuneki
- Interantennal yellow spot not extending upward 14
- 14. Frons with broad and deep medial furrow; scutellum and postscutellum medially deeply furrowed. Length 5.0–7.0 mm
- *A. ratzeburgi* Dahlbom
- Frons without distinct medial furrow; scutellum and postscutellum not furrowed. Length 5.5–7.0 mm
- *A. japonicus* Tsuneki
- 15. Clypeus yellow, with dark basal spot (Fig. 3); pronotal collar and scutellum without light spots. Length 6.0–10.0 mm
- *A. cameroni* Yasumatsu et Masuda
- Clypeus entirely yellow or with narrow dark band from base to apex; pronotal collar and scutellum usually with light spots 16
- 16. Clypeus entirely yellow. Length 5.0–6.0 mm *A. pertheesi* Gorski
- Clypeus with narrow dark median band from base to apex. Length 4.5–6.0 mm. *A. spinosus* (Panzer)



FIGURES 1–4. Head, frontal view. 1. *Alysson japonicus*, ♀. 2. *A. monticola*, ♀. 3. *A. cameroni*, ♂. 4. *A. monticola*, ♂.

***Alysson cameroni* Yasumatsu et Masuda 1932**

(Fig. 3, 6)

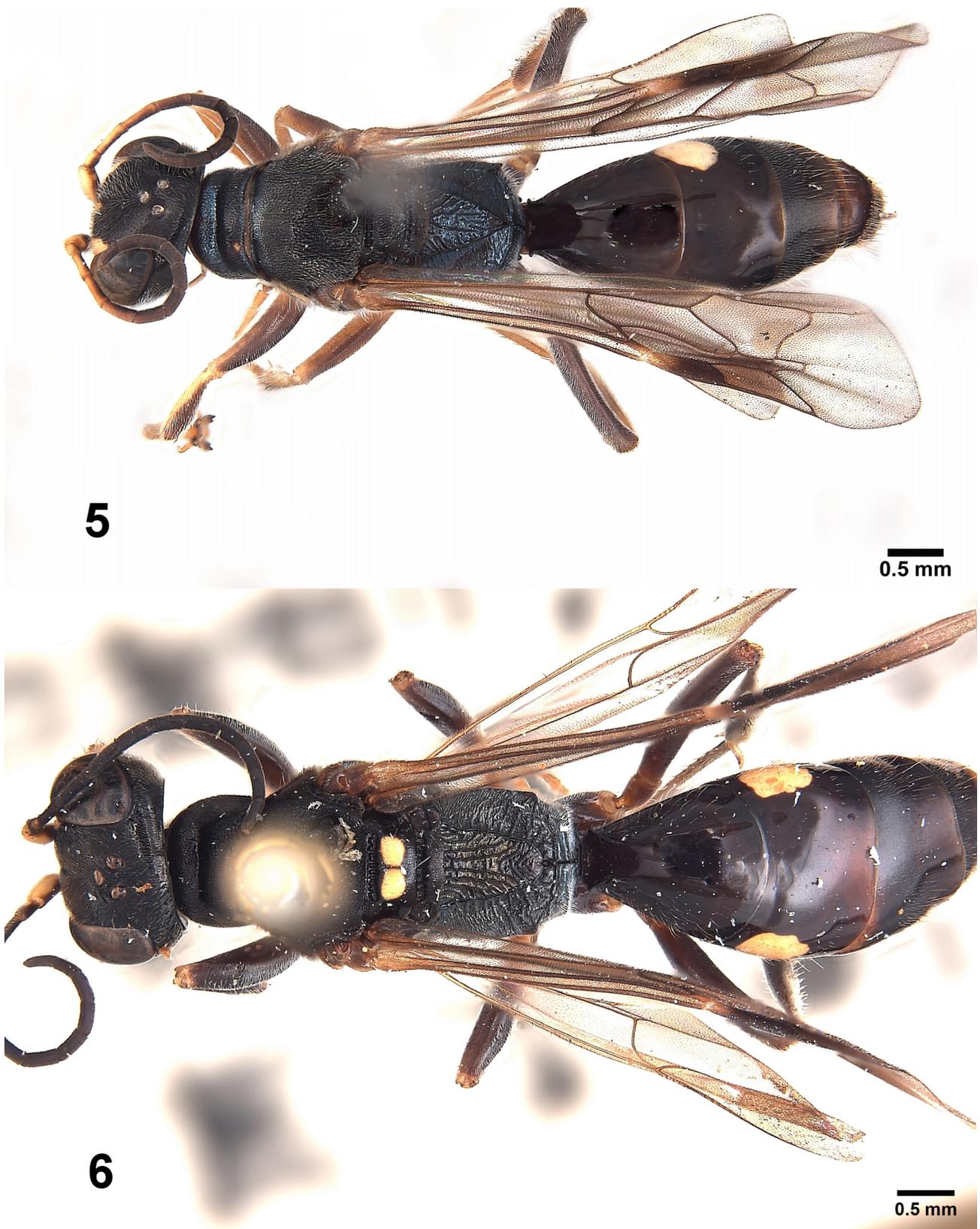
Alysson cameroni Yasumatsu & Masuda 1932: 53, ♀, ♂. Holotype: ♂, Japan, Yamanashi Prefecture, Mt. Mitsustôge near Kai (ELKU), examined.

Alysson cameroni: Tsuneki 1965: 26; 1968: 6; Bohart & Menke 1976: 458; Kazenas 1980: 85; Nemkov et al. 1995: 455; Terayama 2006: 2, 4; Nemkov 2008: 23; 2009: 127; 2012a: 119; 2012b: 445.

Material examined. Holotype of *A. cameroni* Yasumatsu et Masuda—♂, Japan: Honshu, Yamanashi Prefecture, Mt. Mitsustôge near Kai, 22.VIII 1931 (Masuda) (ELKU). **Russia:** 1♂, Primorskii Krai, Ilistaya River, Nikolaevka, 2.VII 1986 (Lelej) (IBSS); 7♂, Primorskii kraï, Iman River, Dersu, 20–23.VIII 1991

(Sidorenko) (IBSS). **Japan:** 1♂, Hokkaido, Hokkaido Prefecture, Sounkyo, 8–9.VIII 1958 (Tsuneki) (CAS); 1♀, Honshu, Fukui Prefecture, Hatogayu, 2.IX 1962 (Tsuneki) (CAS).

Distribution. Russia (Amurskaya Oblast, Primorskii Krai), Japan (Hokkaido, Honshu).



FIGURES 5–6. Habitus, dorsal view. 5. *Alysson monticola*, ♀. 6. *A. cameroni*, ♀.

Alysson japonicus Tsuneki 1977

(Fig. 1)

Alysson japonicus Tsuneki 1977: 26, ♀, ♂. Holotype: ♂, Japan, Ishikawa Prefecture, Mt. Haku near Ichinose (MNHAH), examined.

Alysson japonicus: Terayama 2006: 2, 4.

Material examined. Holotype of *Alysson japonicus* Tsuneki—♂, Japan: Honshu, Ishikawa Prefecture, Mt. Haku near Ichinose, 29.VII 1959 (Tsuneki) (MNHAH). **Japan:** 1♀, Honshu, Saitama Prefecture, Ôtaki, 27.VII 1978 (Nambu) (CAS); 1♀, Honshu, Fukui Prefecture, Aburasaka Pass, Izumi-mura, 4.VIII 1993 (Lelej) (IBSS).

Distribution. Japan (Honshu).

Alysson maracandensis Radoszkowski 1877

Alysson maracandensis Radoszkowski 1877: 34, ♀. Holotype: ♀, Uzbekistan, Samarkand (ZMMU), examined.

Alysson incertus Radoszkowski 1877: 34, ♂. Holotype: ♂, Uzbekistan, Peishambe (ZMMU), examined. Synonymized with *Alysson maracandensis* by Handlirsch 1888: 252.

Alysson incertus: de Dalla Torre 1897: 564; Kokujev 1906: 212.

Alysson maracandensis: de Dalla Torre 1897: 564; Kokujev 1906: 213; Bohart & Menke 1976: 458; Kazenas 1978: 94; 2001: 43.

Material examined. Holotype of *Alysson maracandensis* Radoszkowski—♀, Uzbekistan: Samarkand, 13.VI 1869 (Fedchenko) (ZMMU). Holotype of *A. incertus* Radoszkowski—♂, Uzbekistan: Peshambe-Siyab, 30.VI 1870 (Fedchenko) (ZMMU).

Distribution. Uzbekistan.

Alysson monticola Tsuneki 1977

(Fig. 2, 4, 5)

Alysson monticola Tsuneki 1977: 29, ♂, ♀. Holotype: ♂, Japan, Saitama prefecture, Karisaka Pass (MNHAH), examined.

Alysson monticola: Terayama 2006: 2, 4; Nemkov 2007a: 74, 2007b: 997, 2008: 24, 2009: 127, 2011: 95, 2012b: 445.

Material examined. Holotype of *Alysson monticola* Tsuneki—♂, Japan: Honshu, Saitama Prefecture, Karisaka Pass, 4.VIII 1974 (Nambu) (MNHAH); paratype—♂, Japan: Honshu, Gumma Prefecture, Konsei Pass, 8.VIII 1965 (Tano) (CAS). **Russia:** 7♂, Sakhalinskaya Oblast, Kunashir Island, caldera of volcano Golovna, 4.VIII 1989 (Nemkov) (IBSS); 1♂, Sakhalinskaya Oblast, Kunashir Island, Cape Stolbchatyi, 10.VIII 1989 (Lelej) (IBSS). **Japan:** 1♀, Honshu, Fukushima Prefecture, Mt. Aizu-koma, 28.VIII 1979 (Nambu) (CAS).

Distribution. Russia (Kunashir Island), Japan (Hokkaido, Honshu).

Alysson pertheesi Gorski 1852

Alysson pertheesi Gorski 1852: 178, ♀. Syntypes: ♀♀, Lithuania, Vilnius (ZMHU).

Alysson festivus Mocsáry, 1879: 129, ♀ (as *festivum*, incorrect original termination). Holotype or syntypes: ♀, Hungary, Budapest (TMB). Synonymized with *Alysson pertheesi* by Handlirsch, 1888: 250.

Alysson pertheesi: Handlirsch 1888: 251; de Dalla Torre 1897: 564; Kokujev 1906: 216; Tsuneki 1965: 25, 1968: 5, 1974: 361; Bohart & Menke 1976: 458; Kolesnikov 1977: 318; Pulawski 1978: 212; Kazenas 1980: 85; Mityaev et al. 1980: 119; Tsuneki 1982: 18; Nemkov 1986: 106; Wu & Zhou 1987: 214; Tsuneki 1991: 199; Nemkov Kazenas, Budrys & Antropov 1995: 455; Shlyakhtenok & Skibinska 2002: 34; Nemkov 2005: 158; Hua 2006: 277; Terayama 2006: 2, 4; Nemkov 2007a: 74, 2007b: 997, 2008: 24, 2009: 127; Baghirov 2011: 141; Nemkov 2012b: 445.

Alysson fuscatus var. *jaroslavensis* Kokujev 1906: 216, ♀. Holotype: ♀, Russia, Yaroslavskaya Oblast, Yaroslavl (ZIN), examined. **New synonymy.**

Alysson harbinensis Tsuneki 1967: 7, ♀. Holotype: ♀, China, Heilongjiang, Harbin (NNML). **New synonymy.**

Alysson harbinensis: Tsuneki 1968: 5; Bohart & Menke 1976: 458; Wu & Zhou 1987: 214; 1996: 136; Hua 2006: 277.

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).

Alysson spinosus jaroslavensis: Bohart & Menke 1976: 458; Shlyakhtenok & Skibinska 2002: 34.

Alysson jaroslavensis: Pulawski 1978: 212, 213; Pankevich et al. 1989: 95; Blagoveshchenskaya 1994: 91; Voblenko et al. 1996: 15.

Material examined. Holotype of *Alysson fuscatus* var. *jaroslavensis* Kokujev—♀, Russia: Yaroslavskaya Oblast, Yaroslavl, 14.IX 1896 (Kokujev) (ZIN). **Russia:** 1♂, Leningradskaya Oblast, Tolmachevo, 13.VII 1936 (Shtakelberg) (ZIN); 2♀, 1♂, Kostromskaya Oblast, Kostroma, 24.VII 1924, 22.VII 1926, 10.VIII 1933 (Gussakovskij) (ZIN); 1♂, Kostromskaya Oblast, Troitsk, 25.VII 1924, 22.VII 1929 (Gussakovskij) (ZIN); 1♀, Kostromskaya Oblast, Vasilevskoe, 21.VII 1933 (Gussakovskij) (ZIN); 1♀, 3♂, Kostromskaya Oblast, Baidarki, 19.VII, 1.VIII 1933 (Gussakovskij) (ZIN); 1♀, Volgogradskaya Oblast, Volgograd (coll. F. Morawitz) (ZIN); 2♀, Krasnoyarskii Krai, Malaya Minusa, 4, 7.VII 2012 (Proshchalykin, Loktionov) (IBSS); 2♀, Krasnoyarskii Krai, 40 km NE Minusinsk, Tes, Tuba River, 7.VII 2012 (Proshchalykin, Loktionov) (IBSS); 1♀, Krasnoyarskii Krai, Minusinsk, 9.VII 2012 (Proshchalykin, Loktionov) (IBSS); 4♀, 2♂, Irkutskaya Oblast, Angarsk, 11.VII–9.IX 1983 (Nemkov) (IBSS); 4♀, Irkutskaya Oblast, 15 km E Ust-Orda, Ordinsk, 2–6.VIII 1994 (Nemkov) (IBSS); 1♀, Khabarovskii Krai, Khabarovsk, 22.VIII 1979 (Ermolenko) (ZIN); 1♂, Khabarovskii Krai, Amurzet, 17.VI 1985 (Belokobylskij) (ZIN); 1♀, Primorskii Krai, Yakovlevka, 23.VIII 1926 (Dyakonov, Filipev) (ZIN); 1♀, Primorskii Krai, Olga, 27.VII 1979 (Belokobylskij) (ZIN); 1♀, Primorskii Krai, Ussuriiskii Reserve, Kamenushka, 12.VIII 1982 (Nemkov) (IBSS); 1♀, Primorskii Krai, Ussuriiskii Reserve, Staraya Baza, 29.VI 1991 (Lelej) (IBSS); 1♀, Primorskii Krai, Ryazanovka, 15.VII 1992 (Lelej) (IBSS); 2♂, Primorskii Krai, Khasan, 12.VIII 1998 (Belokobylskij) (ZIN); 3♀, Sakhalinskaya Oblast, Sakhalin Island, 10 km E Boshnyakovo, 24.VII 2003 (Lelej, Storozhenko) (IBSS). **Mongolia:** 1♂, Khövsgöl aimag, Delger-Muren River near Buren-Khan, 28–29.VI 1968 (Kozlov) (ZIN).

Distribution. Netherlands, France, Denmark, Austria, Poland, Slovakia, Hungary, Lithuania, Belarus, Ukraine, Russia (Leningradskaya Oblast, Yaroslavskaya Oblast, Kostromskaya Oblast, Moskovskaya Oblast, Bryanskaya Oblast, Volgogradskaya Oblast, Ulyanovskaya Oblast, Altai, Krasnoyarskii Krai, Irkutskaya Oblast, Buryatiya, Amurskaya Oblast, Khabarovskii Krai, Primorskii Krai, Sakhalin, Kuril Islands: Kunashir), Mongolia, China (Heilongjiang, Taiwan), Republic of Korea, Japan (Honshu).

Justification of New Synonymy. Kokujev (1906) described var. *jaroslavensis* as a form of *A. fuscatus* (correctly *A. spinosus*). Bohart and Menke (1976) treated *A. fuscatus jaroslavensis* as a subspecies of *A. spinosus*. However, it differs from the latter in having a red propodeum (black in *A. spinosus*) and is similar in this and other characters to *A. pertheesi*. Pulawski (1978) regarded *A. jaroslavensis* as a valid species. The examination of the holotype of *Alysson fuscatus* var. *jaroslavensis* demonstrated that it is a junior subjective synonym of *A. pertheesi*.

In the original description of *A. harbinensis* Tsuneki (1967) indicated that the female (the male was still unknown) differs from *A. pertheesi* mainly in having a red metapleuron and the propodeal enclosure (enclosure all black in *pertheesi*). The considerable color variation in the Eastern Asian populations of *A. pertheesi* was noted later by Tsuneki and Itami (1973). I was not able to examine the holotype of *A. harbinensis* because of the temporary closure of the collection at the Leiden Museum, but the diagnostic characters of this species are clearly within the limits of the individual variation of *A. pertheesi*. Specimens with a red propodeal enclosure (as in *harbinensis*) occur in all parts of Russia along with the typically colored specimens (with a black enclosure), although in the western Russia the typical form prevails over the *harbinensis* form, while in the eastern Russia the specimens with black enclosure are found very rarely. Therefore I regard *A. harbinensis* as a junior subjective synonym of *A. pertheesi* Gorski.

Alysson ratzeburgi Dahlbom 1843

Alysson ratzeburgi Dahlbom 1843: 145, ♀, ♂. Lectotype: ♂, Norway, Ostre Naess Vaerdaliae (ZMLU), designated by de Beaumont 1953: 197.

Alysson ratzeburgi: Eversmann 1849: 388; Handlirsch 1888: 242; F. Morawitz 1893: 112; Westerlund 1893: 26; de Dalla Torre

1897: 564; Kokujev 1906: 214; Tsuneki 1965: 25, 1968: 5; Bohart & Menke 1976: 458; Pulawski 1978: 212; Tsuneki 1982: 18; Nemkov 1986: 106; Pankevich et al. 1989: 95; Nemkov et al. 1995: 455; Shlyakhtenok 1995: 193; Minoranskiy & Shkuratov 1996: 81; Shlyakhtenok & Skibinska 2002: 34; Nemkov 2008: 24, 2009: 127; Shoreno & Konovalov 2010: 13; Nemkov 2012b: 445.

Material examined. Ukraine: 1♀, Crimea (coll. F. Morawitz) (ZIN). **Russia:** 3♀, 1♂, Leningradskaya Oblast, Mednyi Zavod, 27.V–26.VI 1920 (Barovski) (ZIN); 1♀, Leningradskaya Oblast, 40 versts S Luga, 1871 (Solski) (ZIN); 1♀, Tatarstan, Kazan, 10.VI (coll. Eversmann) (ZIN); 1♀, Krasnoyarskii Krai, Berezovka, 1.VII 2012 (Proshchalykin, Loktionov) (IBSS); 1♂, Krasnoyarskii Krai, Znamenka, 6.VII 2012 (Proshchalykin, Loktionov) (IBSS); 1♂, Krasnoyarskii Krai, Malaya Minusa, 7.VII 2012 (Proshchalykin, Loktionov) (IBSS); 4♂, Khakassiya, Belyi Yar, Abakan River, 12.VII 2012 (Proshchalykin, Loktionov) (IBSS); 1♂, Khakassiya, Zhemchuzhnoe, Shira Lake, 14.VII 2012 (Proshchalykin, Loktionov) (IBSS); 1♀, Irkutskaya Oblast, Baikalsk, 16.VII 1986 (Nemkov) (IBSS); 1♂, Irkutskaya Oblast, Irkutsk (coll. Eversmann) (ZIN); 4♂, Irkutskaya Oblast, Irkutsk (Yakovlev) (ZIN); 1♂, Irkutskaya Oblast, Kultuk, 23.VII 1933 (coll. Gussakovskij) (ZIN); 1♀, Zabaikalskii Krai, 12 km N Darasun, Tura River, 26.VI 1975 (Kasparyan) (ZIN); 1♀, Zabaikalskii Krai, 16 km ESE Nerchinskii Zavod, 23.VII 1975 (Kasparyan).

Distribution. Belgium, France, Spain, Switzerland, Italy, Germany, Austria, Serbia, Poland, Slovakia, Hungary, Romania, Norway, Sweden, Finland, Belarus, Ukraine, Russia (Karelia, Leningradskaya Oblast, Rostovskaya Oblast, Tatarstan, Khakassiya, Krasnoyarskii Krai, Irkutskaya Oblast, Zabaikalskii Krai, Primorskii Krai), Republic of Korea, Japan (Honshu), Algeria.

Alysson spinosus (Panzer 1801)

Sphex bimaculatus Panzer 1798: 4, ♀. Holotype or syntypes: ♀, Germany, Nürnberg (depository unknown), junior primary homonym of *Sphex bimaculatus* Fueßlin, 1775 (now in Scoliididae).

Sphex fuscatus Fabricius (misidentification): Panzer 1798: 3.

Pompilus spinosus Panzer 1801b: 17, ♀. Holotype or syntypes: ♀, Germany: no specific locality (depository unknown). Synonymized with *Alysson bimaculatus* (Panzer 1798) by Jurine 1807: 196.

Alysson katkovi Kokujev 1906: 214, ♀. Holotype: ♀, Ukraine, Vinnitskaya Oblast, near Olgopol (ZIN), examined. **New synonymy.**

Alysson bimaculatus: Eversmann 1849: 387; Assmuss 1859: 611; Becker 1880: 150; Bohart & Menke 1976: 458; Kolesnikov 1977: 318.

Alysson fuscatus: Handlirsch 1888: 246, 1895: 831; de Dalla Torre 1897: 563; Kokujev 1906: 216; Birula 1912: 540, 1914: 386; Bischoff 1925: 300; Romanova 1969: 134.

Alysson spinosus: Bohart & Menke 1976: 458; Pulawski 1978: 212, 213; Wu & Zhou 1987: 215; Pankevich et al. 1989: 95; Kuznetzova 1990: 20; Blagoveshchenskaya 1994: 91; Gorobchishin 1995: 18; Krasnobayev et al. 1995: 138; Gorobchishin 1996: 53; Minoranskiy & Shkuratov 1996: 81; Voblenko et al. 1996: 15; Wu & Zhou 1996: 136; Kazenas 2001: 43, 2002: 113; Shlyakhtenok & Skibinska 2002: 34; Gorobchishin 2006: 135; Hua 2006: 277; Kazenas 2008: 104; Shoreno & Konovalov 2010: 13; Mokrousov, Berezin & Egorov 2011: 66; Nemkov 2012a: 119; Prisniy 2012: 50.

Alysson katkovi: Bohart & Menke 1976: 458; Pulawski 1978: 212.

Material examined. Holotype of *Alysson katkovi* Kokujev—♀, Ukraine: Nikolaevskaya Oblast, near Olgopol, 4–8.IX 1898 (Katkov) (ZIN). **Ukraine:** 7♀, 5♂, Kharkovskaya Oblast, Kuryazh, 1, 26.VI, 6.VII 1884, 19.VI, 5.VII 1885, 25–27.VI 1987, 12, 21.VIII 1889 (Yaroshevski) (ZIN); 1♀, 1♂, Kievskaya Oblast, Kiev, 8.VIII 1918 (Dobrzhanski) (ZIN); 1♀, Kievskaya Oblast, Lukyanovka, 14.VIII 1918 (Aleksandrovski) (ZIN); 2♀, Poltavskaya Oblast, Poltava, 8.VIII 1926 (Lukyanovich) (ZIN). **Russia:** 1♀, Leningradskaya Oblast, St. Petersburg, Moskovskoe Shosse, 29.V 1863 (A. Morawitz) (ZIN); 1♂, Pskovskaya Oblast, Glebova Gorka, VII 1861 (A. Morawitz) (ZIN); 1♀, Yaroslavskaya Oblast, Yaroslavl, 5.VII (Kokujev) (ZIN); 1♀, 1♂, Kostromskaya Oblast, Kostroma, 25.VII 1928, 11.VII 1929 (Gussakovskij) (ZIN); 2♀, 3♂, Kostromskaya Oblast, Vasilevskoe, 21.VII 1933 (Gussakovskij) (ZIN); 3♀, Kostromskaya Oblast, Baidarki, 26.VII 1933 (Gussakovskij) (ZIN); 1♂, Kurskaya Oblast, Blagodatnoe, 22.VI 1909 (Malyshev) (ZIN); 3♀, 1♂, Kurskaya Oblast, Borisovka, 10, 11.VII 1916 (Malyshev) (ZIN); 3♀, Kurskaya Oblast, Borisovka, 15, 16.VIII 1926 (Goltsgauer) (ZIN); 1♂, Kurskaya Oblast, Khotmyzhskie Peski, 6.VI 1929 (Pesotskaya) (ZIN); 1♀, Kurskaya Oblast, Krasnyi Kutok, 22.VII 1929 (Ahrens) (ZIN); 2♀, 2♂, Volgogradskaya Oblast, Volgograd, 1867, 1868 (Becker) (ZIN); 1♀, Krasnodarskii Krai, Krasnaya

Polyana, 14.VII 1984 (Shalepo) (ZIN); 1♀, Stavropolskii Krai, Stavropol, 21.VII 1985 (Nemkov); 1♂, Ulyanovskaya Oblast, Karsun, 21.VII 1864 (Chekanovski) (ZIN); 1♀, 1♂, Tatarstan, Kazan, 30.VII (coll. Eversmann) (ZIN). **Georgia:** 1♀, Kakheti, Lagodekhi (Mlokosevich) (ZIN). **Kazakhstan:** 1♂, Zapadno-Kazakhstanskaya Oblast, Yanvartsevo, 11.VI 1950 (Rudolf) (ZIN).

Distribution. Great Britain, Netherlands, Belgium, France, Portugal, Spain, Switzerland, Italy (including Sicilia), Denmark, Germany, Austria, Slovenia, Croatia, Serbia, Greece, Poland, Czech Republic, Slovakia, Hungary, Romania, Bulgaria, Cyprus, Latvia, Lithuania, Belarus, Ukraine, Turkey, Russia (Pskovskaya Oblast, Leningradskaya Oblast, Yaroslavskaya Oblast, Kostromskaya Oblast, Moskovskaya Oblast, Chuvashiya, Bryanskaya Oblast, Kurskaya Oblast, Belgorodskaya Oblast, Voronezhskaya Oblast, Volgogradskaya Oblast, Rostovskaya Oblast, Krasnodarskii Krai, Stavropolskii Krai, North Caucasus, Ulyanovskaya Oblast, Tatarstan), Georgia, Kazakhstan.

Justification of New Synonymy. The examination of the holotype of *A. katkovi* shows that actually it is a small (length 5 mm instead of 6.5–7.5 mm usually) specimen of *A. spinosus*. I regard it as a junior subjective synonym of *Alysson spinosus* (Panzer). Pulawski (1978) also supposed such synonymy.

***Alysson tricolor* Lepeletier de Saint Fargeau et Audinet-Serville 1825**

Alysson tricolor Lepeletier de Saint Fargeau & Audinet-Serville 1825: 50, ♀. Syntypes: ♀♀, France, Luc in Normandie and Paris area (lost).

Alysson tricolor: Handlirsch 1888: 244, 1895: 831; de Dalla Torre 1897: 565; Bohart & Menke 1976: 458; Kazenas 1978: 94; Pulawski 1978: 212; Gorobchishin 2006: 135; Shorenko & Kononov 2010: 13.

Material examined. Ukraine: 2♀, 1♂, Kharkovskaya Oblast, Kuryazh, 6.VII 1884, 5.VII 1885 (Yaroshevski) (ZIN).

Distribution. Belgium, France, Spain, Switzerland, Italy, Germany, Austria, Slovenia, Serbia, Czech Republic, Slovakia, Hungary, Romania, Bulgaria, Ukraine, Turkey.

***Alysson verhoeffi* Tsuneki 1967**

Alysson verhoeffi Tsuneki 1967: 8, ♀. Holotype: ♀, China, Heilongjiang, Harbin (NNML).

Alysson verhoeffi Tsuneki: Tsuneki 1968: 6; Bohart & Menke 1976: 458; Wu & Zhou 1987: 215; Hua 2006: 277.

Material examined. China: 1♀, Heilongjiang, Trans-Manchurian Railway near Harbin, 14.VII 1909 (Smirnov) (ZIN).

Distribution. China (Heilongjiang).

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