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Taxonomic review of *Tipula* (*Vestiplex* Bezzi) crane flies (Diptera: Tipulidae) in Mongolia

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Abstract

Fourteen species of *Tipula* (*Vestiplex* Bezzi, 1924) crane flies (Diptera, Tipulidae) known from Mongolia are taxonomically revised. Identification keys for males and females, redescriptions and illustrations of all species are presented. Most genital structures are illustrated for the first time. *Tipula* (*V.*) *jakut* Alexander, 1934 is designated as junior synonym of *T.* (*V.*) *sintenisi* Lackschewitz, 1933; *T.* (*V.*) *kamchatkana* Alexander, 1934 is designated as junior synonym of *T.* (*V.*) *mediovittata* Mik, 1889. *Tipula* (*V.*) *balioptera* Loew, 1863 and *T.* (*V.*) *leucoprocta* Mik, 1889 are listed as new records for the Mongolian fauna.

Key words: distribution, hypopygium, new synonymy, ovipositor, species, taxonomy, Tipulinae

Introduction

The first specimens of *T.* (*Vestiplex* Bezzi, 1924) from Mongolia were collected by G.N. Potanin (1835–1920) in the first half of June 1880, in total three males of *T.* (*V.*) *kamchatkana* Alexander, 1934b and three males of *T.* (*V.*) *virgatula virgatula* Riedel, 1913 (Podenas *et al*. 2013). The next sets of *T.* (*Vestiplex*) crane flies were collected by P.K. Kozlov (1909, 1924 and 1925) and A.N. Kirichenko in 1926, followed by other Russian entomologists. This material was identified and described by Savchenko (1960, 1964).

The first publication which mentions crane flies from Mongolia is that of Riedel (1913), in which he describes *T. virgatula*, collected by the Austrian explorer Hans Leder in 1892 from "N Mongolei". Alexander (1922) described additional *T.* (*Vestiplex*) species (*T. edentata* and *T. subcarinata*) which now are synonyms of *T.* (*V.*) *virgatula virgatula* Riedel, 1913 based on material collected by B. du Chazaud. The other publications on Mongolian *Tipula* (*Vestiplex*) are Mannheims & Savchenko (1967, 1973), which were based on material collected by Z. Kaszab.

In 1995, the Academy of Natural Sciences (ANSP) began collaboration with the National University of Mongo-

lia and the Mongolian Academy of Sciences (MAS) in joint biodiversity research in the Hovsgol Nuur (lake) watershed. Additional collaborators included scientists at American and Russian universities and institutes. Expeditions sampling the biota of the lake and its tributaries occurred in the summers of 1995–1997 under U.S. National Science Foundation funding and continued with a Global Environment Facilities Grant (Goulden *et al*. 2006). Crane flies were sampled at 50 sites in the Lake Hovsgol watershed along with samples from scattered other sites in Mongolia. This project brought the Mongolian species of crane flies to 169 species (including undescribed species), in three families: Tipulidae—79 species, Limoniidae—71 species and Pediciidae—4 species, and 85 of these species were from Lake Hovsgol (Gelhaus & Podenas 2006).

The Mongolian Aquatic Insect Survey (MAIS) was a multi-national collaborative project between Mongolian, American and European scientists, funded primarily by grants from the U.S. National Science Foundation (Biotic Surveys and Inventories Program). Starting in 2002, this project focused on documenting the species diversity of aquatic insects with particular sampling emphasis on Coleoptera (beetles), Ephemeroptera (mayflies), Plecoptera (stoneflies), Trichoptera (caddisflies) and Diptera (true flies). Fieldwork included sampling for adult and immature stages, along with collecting physical and chemical measurements of the aquatic habitats (Gelhaus 2010; Iverson & Gelhaus 2010–2012). Sampling in the first phase of MAIS (2003–2006) involved the Selenge River Basin watershed (Arctic drainage) (Gelhaus *et al*. 2008). The second phase of the project (2008–2011) involved sampling the interior drainage basins of western Mongolia (Gelhaus 2010). In total 423 aquatic sites have been sampled (75% streams and rivers, 25% lakes, ponds and others), with an estimated 500,000 specimens collected.

Crane fly material collected during these expeditions has been analyzed in subsequent papers including descriptions of new species (Gelhaus *et al*. 2000; Podenas & Gelhaus 2000, 2001, 2011), descriptions of immature stages (Podeniene *et al*. 2006; Podeniene & Gelhaus 2010) and the first record of the family Cylindrotomidae (Gelhaus *et al*. 2007).

The crane flies are a species-rich group of insects in Mongolia composed of a primarily Palaearctic fauna with widespread geographic ranges. Of special interest are subgroups of species with endemic Mongolian, broader Central Asian, and even disjunct distributions between Mongolia and western Palaearctic or the Palaearctic Far East (Gelhaus & Podenas 2006; Podenas *et al*. 2013).

Material and methods

The main material used in this paper was collected in Mongolia during "*the Hovsgol Project*" (1995–1997), "*Selenge River Survey Expedition*" (2003–2006) (SRP) and "*Mongolian Aquatic Insect Survey*" (2008–2010) (MAIS) projects by the following participants: D. Altanchimeg, R.W. Bouchard, Jr., S. Chuluunbat, D. Enkhnasan, B. Erdene, J. Gelhaus, B. Hayford, E. Hunter, A. Maasri, K. Mankhbayar, T.A. McKnight, J. Morse, B. Namkhaidorj, C.R. Nelson, J. Oyunbileg, S. Podenas, V. Podeniene, A. Prather, J. Puntsagdulam, A. Reshchikov, E. Sanaa, A.E.Z. Short, C. Suvdtsetseg (Suvdaa), S. Togs-Erdene, D. Tumurtsooj, B. Uugantsetseg, O. Yadamsuren and C. Young. Most specimens were collected by sweep net, with some by Malaise traps and at lights. All specimens are labelled with the Survey name (SRP or MAIS) and are deposited at the Academy of Natural Sciences of Drexel University, Philadelphia, PA, USA.

Comparative material was examined from the following institutions: The Academy of Natural Sciences of Drexel University, Philadelphia, Pennsylvania, USA (ANSP); Natural History Museum, London, United Kingdom (BMNH); California Academy of Sciences, San Francisco, USA (CAS); the Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Canada (CNC); Finnish Museum of Natural History, Helsinki, Finland (MZH); Hungarian Natural History Museum, Budapest, Hungary (HNHM); Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA (MCZ); Museum für Naturkunde, Humboldt University, Berlin, Germany (ZMHB); Museum of Zoology, Vilnius University, Lithuania (MZVU); Naturalis Biodiversity Center, Leiden, the Netherlands (ZMA); Natural History Museum, Vienna, Austria (NHMV); Snow Entomological Museum, University of Kansas, Lawrence, USA (SEMC); University of Michigan at Ann Arbor, MI, USA (UMMZ); United States National Museum, Washington, D.C., USA (USNM); Zoological Museum of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia (ZIN). Additional abbreviations used in the text are as follows: Mongolian Aquatic Insect Survey Team (MAIST); Museum of Zoology of Lund University, Sweden (MZLU); National Museum of Natural History, Paris, France (MNHN); Selenge River Project Team (SRPT); Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany (SDEI).

The material collected by G.N. Potanin, P.K. Kozlov, A.N. Kirichenko and other Russian entomologists is preserved at ZIN. The material collected by B. du Chazaud is preserved at MNHN and material collected by Z. Kaszab is preserved at HNHM.

The collecting sites of *Tipula* (*Vestiplex*) crane flies based on previous publications are summarized in Table 1 and provided with approximate coordinates. The approximate coordinates were determined by Dr. O. Yadamsuren (Mongolian National University of Education, Ulaanbaatar, Mongolia), with several coordinates also determined by P.S. One locality that was published by Savchenko (1964) for *T.* (*V.*) *longitudinalis* Nielsen, 1929 and listed as Mongolia, is determined here being from Tuva, Russia (5 ♂, 2 ♀, Nikolskoje, Urianchay, 22.vi.–15.vii.1916, Miklashevskaja). The sampling locations from Hovsgol Lake (Yadamsuren *et al*. 2015) area were also incorporated in distribution maps

Specimens were studied with a Nikon SMZ800 stereomicroscope. Pictures were taken with camera INFINITY–1 mounted on stereomicroscope Nikon Eclipse 200 and camera Canon EOS 80D mounted on an Olympus SZX10 dissecting microscope. Genitalia were studied after clearing in 10 % NaOH solution for 5–10 minutes. All redescriptions and illustrations are based only on Mongolian material.

Descriptive terminology generally follows that of Cumming & Wood (2017). The term gonocoxal fragment for the inner structure covered by tergite 9 is adopted from Brodo (2018). General distribution of species is given according to Oosterbroek (2019).

Taxonomy

Tipula (*Vestiplex* Bezzi)

Tipula, subg. *Vestiplex* Bezzi, 1924: 230. Type species: *Tipula cisalpina* Riedel, 1913 (original designation). Additional references: Edwards, 1931: 79; Alexander, 1934b: 396; 1935: 117; 1965: 355; Mannheims, 1953: 116; Savchenko, 1964: 132.

Vestiplex was first proposed by Bezzi (1924) as a subgenus of genus *Tipula* for the type species *T. cisalpin* recorded from West Palaearctic (Italy, Switzerland). Additional characters of *T.* (*Vestiplex*) were provided by several subsequent authors (Edwards 1931; Alexander 1934b, 1935; Savchenko 1964).

Females belonging to the subgenus *T.* (*Vestiplex*) are characterized by the ovipositor with powerful, heavily sclerotised and horizontal cercus, the outer (ventral) margin of which is usually serrate, but smooth in several Asiatic species. The hypovalva is small to rudimentary (Alexander 1935, 1965; Alexander & Byers 1981). The male genitalia is extremely polymorphic (Savchenko 1964), typically with tergite 9 forming a shallowly concave and sclerotised saucer, while other species have tergite 9 completely divided longitudinally by a pale membrane (Alexander 1935; Alexander & Byers 1981).

The subgenus *T.* (*Vestiplex*) includes 181 extant species which are distributed throughout the Nearctic, Palaearctic and Oriental Regions (Oosterbroek 2019). No fossil species of *T.* (*Vestiplex*) are described so far and only Matthews & Telka (1997) mentioned ovipositors of possibly *T.* (*Vestiplex*) females from the Cape Deceit Formation in Western Alaska, 1.8 MYA.

The species of *T.* (*Vestiplex*) are separated into various species groups based on morphological structures of the male hypopygium, mainly details of tergite 9. The taxonomy of species with a saucer-shaped tergite 9 is comparatively well investigated by different authors (Hemmingsen 1956; Mannheims 1953; Theowald & Mannheims 1963; Savchenko 1960, 1964), and seven species groups are recognized: *coquillettiana*, *erectiloba*, *excisa*, *leucoprocta*, *nubeculosa*, *scripta*, and *virgatula* (Starkevich 2012).

Species with divided tergite 9 currently are separated into additional seven species groups (Starkevich 2012; Starkevich *et al*. 2019). Edwards (1928) proposed a *himalayensis* species subgroup of the *arctica* group for *T.* (*V.*) *avicularia* Edwards, 1928. Alexander later distinguished a *himalayensis* species group and included a number of species with divided tergite 9 (Alexander 1932, 1933, 1934c, 1935, 1936b, 1959, 1963). Savchenko (1964) also proposed several species complexes, *avicularia*, *divisotergata*, and *subtincta*, for various Asiatic species based on features of the male hypopygium. Additional species groups proposed based on revisionary study of the subgenus include: *bicornigera*, *deserrata* and *eurydice* (Starkevich 2012; Starkevich *et al*. 2019).

TABLE 1. Summarized collecting sites of *T.* (*Vestiplex*) crane flies based on previous publications.

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	Ulaan chodag, 16 km S von Somon Ondorschireet, 1500 m, 23.VII.1966	47°22'49"	105°20'09"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	Tal des Flusses Tola, zwischen Somon Altanbulad und Somon Tariat, cca 30 km ONO von Somon Tariat 1200 m, 24.VII.1966	47°42'52"	106°22'31"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	SO von Somon Bajancogt, 1600 m, 27–28.VII.1966	48°06'39"	105°48'56"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	11 km S vom Pass Zosijn davaa (cca 90 km S von Ulan-Baator), 1650 m, 15–16.VII.1967	47°02'08"	106°43'27"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	Tosgoni ovoo, 5–10 km von Ulan-Baator, 1500–1700 m, 19–20, 22–24.VII.1967	47°55'36"	106°54'27"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	Ulan-Baator, Nucht im Bogdo ul, 12 km SO von Zentrum, 1600 m, 21.VII.1967	47°51'57"	107°00'26"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	11 km OSO von Somon Bajancogt, 1600 m, 26.VII.1968	48°02'30"	105°54'01"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Bulgan	zwischen Somon Chischig-Ondor und Somon Orchon, 23 km NNO von Chischig-Ondor, 1390 m, 15.VI.1968	48°31'58"	103°35'53"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Bulgan	Namnan ul Gebirge, 23 km NW von Somon Chutag, 1150 m, 21.VII.1968	49°25'58"	102°20'13"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Bulgan	SO von Somon Daschincilen, 1050 m, 23.VII.1968	47°49'15"	104°01'37"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Bulgan	9 km O von Somon Abzaga, 1300 m, 22.VII.1966	47°43'52"	103°32'45"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Hovsgol	Bulgan aimak, 6 km WNW von Somon Tosoncengel, 1480 m, 18.VI.–20.VII.1968	49°27'32"	100°49'53"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Hovsgol	am See Tunamal nuur, 26 km WSW von Somon Scharga, 1950 m, 21.VI.1968	47°23'27"	98°32'21"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Hovsgol	zwischen Somon Cecerlag und Somon Bajan-ul, 65 km W von Cecerleg, 1700 m, 22.VI.1968	47°11'42"	100°40'53"	Mannheims and Savchenko, 1973

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TABLE 1. (Continued)

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *longitudinalis* Nielsen, 1929	Hovsgol	Alag Mort, 42 km NO vom Pass Chaldzan Sogotyn davaa, am Fluss Tesijn gol, 1900 m, 14.VII.1968	49°41'56"	96°43'55"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Hovsgol	8 km von Somon Burenchaan, am Fluss Delger moron, 1450 m, 16.VII.1968	49°36'06"	99°28'12"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Hovsgol	cca 10 km NO vom Fluss Delger moron (cca 16 km von Somon Burenchaan), 1700 m, 17.VII.1968	49°36'50"	99°48'35"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Hovsgol	8 km N von Somon Alag-erdene, am Fluss Egijn gol, 1600 m, 17.VII.1968	50°13'41"	100°05'40"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Hovsgol	N von Somon Chatgal am SW Rand des Sees Chövsgöl nuur, 1650 m, 18.VII.1968	50°32'12"	100°16'13"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Hovsgol	4 km NW von der Stadt Moron, 1500 m, 19.VII.1968	49°38'55"	100°06'56"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Zavkhan	24 km O von Somon Songino, 2000 m, 12.VII.1968	48°54'22"	95°34'01"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Zavkhan	Choit chunch, 26 km ONO vom See Telmen nuur, 2150 m, 13.VII.1968	48°57'14"	97°46'58"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Uvs	Sudrand des Sees Orog nuur, 1500 m, 28.VI.1968	45°02'10"	100°44'50"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Uvs	am Ostlichen Hang des Passes Ulaan davaa, zwischen dem See Orog nuur und der Stadt Ulaangom, 2050 m, 6.VII.1968	49°55'45"	92°06'24"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Uvs	2 und 4 km OSO vom Pass Ulaan davaa, zw. See Örög nuur und Ulaangom, 1700 m, 6.VII.1968	50°04'50"	91°38'38"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Uvs	am Fluss Chondlon gol, 32 km NW von der Stadt Ulaangom, 1200 m, 7.VII.1968	50°03'22"	91°38'01"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Bayan-Olgiy	NO ecke des Sees tolbo nuur, 2100 m, 1.VII.1968	48°30'24"	90°10'23"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Bayan-Olgiy	im Tal des Flusses Chavcalyn gol, 25 km O von Somon Cagaannuur, 1850 m, 2.VII.1968	48°55'51"	90°05'40"	Mannheims and Savchenko, 1973

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TABLE 1. (Continued)

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *longitudinalis* Nielsen, 1929	Arkhangay	Changaj Gebirge, zwischen Somon Ichtamir und Somon Culuut, cca 20 km W von Somon Ichtamir, 3 km S vom Tal des Flusses Chanuj gol, 2150 m, 19.VI.1966	47°46'04"	100°51'11"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Arkhangay	Changhaj Gebirge, 9 km N vom Pass Egijn davaa, 2500 m, 19.VII.1966	48°21'47"	100°13'31"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Bayankhon-gor	Changaj Gebirge, Ulaan Somon, 18 km S vom Pass Egijn davaa, 2300 m, 20.VI.1966	48°01'31"	100°30'30"	Mannheims and Savchenko, 1973
T. (*V.*) *longitudinalis* Nielsen, 1929	Ovorhangay	Changaj Gebirge, 21 km O von Somon Narijnteel, 2080 m, 27.VI.1964	45°52'26"	101°42'45"	Mannheims and Savchenko, 1967
T. (*V.*) *longitudinalis* Nielsen, 1929	Ovorhangay	Changaj Gebirge, 5 km von Somon Chuzirt, 1730 m, 29.VI.1964	46°56'32"	102°42'58"	Mannheims and Savchenko, 1967
T. (*V.*) *longitudinalis* Nielsen, 1929	Arkhangay	20 km N von Charchorin, 1640 m, 30.VI.1964	47°22'41"	102°50'04"	Mannheims and Savchenko, 1967
T. (*V.*) *longitudinalis* Nielsen, 1929	Arkhangay	30 km S vom See ogij nur am chogschin-Orchon, 1450 m, 1.VII.1964	47°29'30"	102°46'56"	Mannheims and Savchenko, 1967
T. (*V.*) *longitudinalis* Nielsen, 1929	Bulgan	5 km W von somon Daschintschilen, 1140 m, 2.VII.1964	47°52'13"	103°58'02"	Mannheims and Savchenko, 1967
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	26 km O von Somon Lun, 1180 m, 3.VII.1964	47°51'06"	105°38'24"	Mannheims and Savchenko, 1967
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	SO von Somon Bajacogt, 1600 m, 4.VII.1964	48°07'28"	105°48'37"	Mannheims and Savchenko, 1967
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	Ulan-Baator, Nucht im Bogdo ul, 1500–1800 m, 22.–23.VII.1965	47°52'00"	106°53'29"	Mannheims and Savchenko, 1967
T. (*V.*) *longitudinalis* Nielsen, 1929	Khentii	7 km NO von somon Moron, 1200 m, 28.VII.1965	47°25'40"	110°11'42"	Mannheims and Savchenko, 1967
T. (*V.*) *longitudinalis* Nielsen, 1929	Khentii	150 km NO von Ondorchaan, 10 km S vom Kerulen, 1000 m, 30.VII.1965	47°47'49"	105°48'37"	Mannheims and Savchenko, 1967
T. (*V.*) *tchukchi* Alexander, 1934	Bulgan	zw. Somon Chischig-Öndör und Somon Orchon, 23 km NNO von Somon Chischig-Öndör, 1390 m, 15.VI.–23.VII.1968	48°32'02"	103°36'20"	Mannheims and Savchenko, 1973

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TABLE 1. (Continued)

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *tchukchi* Alexander, 1934*	Tov	12 km SO von Ulan-Baator, Nucht im Bogdo ul, 1500 m, 6.VII.1964	47°43'58"	107°06'06"	Mannheims and Savchenko, 1967
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Hovsgol	6 km WNW von Somon Tosoncengel, 1480 m, 18.VI.1968	49°27'32"	100°49'53"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Hovsgol	8 km N von Somon Burenchaan, am Fluss Delger moron, 1450 m, 20.VI.1968	49°36'06"	99°28'12"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Hovsgol	3 km SW von Somon Burenchaan, 1650 m, 21.VI.1968	49°37'23"	99°33'43"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Hovsgol	am See Tunamal nuur, 26 km SW von Somon Scharga, 1950 m, 15.VII.1968	47°23'27"	98°32'21"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Hovsgol	zwischen Somon Cecerleg und Somon Bajan-ul, 65 km W. von Cecerleg, 1700 m, 22.VI.1968	47°11'42"	100°40'53"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Hovsgol	am See Tunamal nuur, 26 km SW von Somon Scharga, 1950 m, 21.VI.1968	47°23'27"	98°32'21"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Hovsgol	8 km N von Somon Burenchaan, am Fluss Delger moron, 1450 m, 20.VI.1968	49°36'06"	99°28'12"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Hovsgol	8 km N von Somon Alag-erdene, am fluss Egijn gol, 1600 m, 17.VII.1968	49°36'06"	99°28'12"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Hovsgol	N von Somon Chatgal am SW Rand des Sees Chövsgöl nuur, 1650 m, 18.VII.1968	50°32'12"	100°16'13"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Hovsgol	4 km NW von der Stadt Moron, 1500 m, 19.VII.1968	49°38'55"	100°06'56"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Zavkhan aimak	24 km O von Somon Songino, 2000 m, 12.VII.1968	48°54'22"	95°34'01"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Zavkhan aimak	Choit chunch, 26 km ONO vom See Telmen nuur, 2150 m, 13.VII.1968	48°57'14"	97°46'58"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Zavkhan aimak	am Pass Chaldzan Sogotyn davaa, 2300 m, 14.VII.1968	48°46'39"	98°09'24"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Zavkhan aimak	Alag Mort, 42 km NO vom Pass Ghaldzan Sogotyn davaa, am Fluss Tesijn gol, 1900 m, 14.VII.1968	48°37'35"	97°56'50"	Mannheims and Savchenko, 1973

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TABLE 1. (Continued)

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Uvs	am ostlichen Hang des Passes Ulaan davaa, zwischen dem See Orog nuur und der Stadt Ulaangom, 2050 m, 6.VII.1968	50°00'37"	91°32'07"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Uvs	2 km O vom Pass Ulaan davaa, zwischen dem See Orog nuur und der Stadt Ulaangom, 1950 m, 6.VII.1968	50°03'24"	91°37'09"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Uvs	4 km OSO vom Pass Ulaan davaa, zwischen dem See Orog nuur und der Stadt Ulaangom, 1700 m, 6.VII.1968	50°04'50"	91°38'38"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Arkhangay	Changaj Gebirge, 9 km N vom Pass Egijn davaa, 2500 m, 19.VII.1966	47°30'52"	99°52'40"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Arkhangay	Changaj Gebirge, zwishen Somon Ichtamir und Somon Čuluut, 20 km von Ichtamir, 2150 m, 19.VII.1966	47°06'33"	100°59'08"	Mannheims and Savchenko, 1973
T. (*V.*) *kiritshenkoi* Savchenko, 1960	Bayankhon-gor	Changaj Gebirge, Ulaan colon, 18 km S vom Pass Egijn davaa, 2300 m, 20.VI.1966, 21.VI.1966, 18.VII.1966	47°13'08"	99°40'52"	Mannheims and Savchenko, 1973
T. (*V.*) *laccata* Lundstrom and Frey, 1915	Tov	SO von Somon Bajanzcogt, 1600 m, 5.VII.1964	48°06'22"	105°50'03"	Mannheims and Savchenko, 1967
T. (*V.*) *laccata* Lundstrom and Frey, 1915	Gobi Altaj	Chasagt chajrchan ul, cca 20 km S vom Somon Zargalan, 2400 m, 15.VII.1966	46°50'34"	95°54'49"	Mannheims and Savchenko, 1973
T. (*V.*) *mediovittata* Mik, 1889	Hovsgol	am See Tunamal nuur, 26 km SW von Somon Scharga, 1950 m, 21.VI.1968	49°25'17"	98°26'10"	Mannheims and Savchenko, 1973
T. (*V.*) *mediovittata* Mik, 1889	Uvs	4 km OSO vom Pass Ulaan davaa, zw. See Örög nuur und Ulaangom, 1700 m, 6.VII.1968	50°04'50"	91°38'38"	Mannheims and Savchenko, 1973
T. (*V.*) *nubeculosa* Meigen, 1804	Tov	12km SO v. Ulan-Baator, Nucht i. Bogdo ul, 1500m, 6.VI.1964	46°50'34"	107°06'06"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Ovorhangay	Changaj Gebirge, 21 km O von somon Narijnteel, 2080 m, 27.VI.1964	45°52'26"	101°42'45"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Ovorhangay	Changaj Gebirge, 30 km N von Arbajcher, 1870 m, 29.VI.1964	46°32'40"	102°46'19"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Ovorhangay	Changaj Gebirge, 18 km S von Somon Chuzirt, 1830 m, 29.VI.1964	46°44'39"	102°47'39"	Mannheims and Savchenko, 1967

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TABLE 1. (Continued)

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *virgatula virgatula* Riedel, 1913	Ovorhangay	Changaj Gebirge, 5 km NO von somon Chuzirt, 1730 m, 29.VI.1964	46°56'32"	102°42'58"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Arkhangay	20 km N von Charchorin, 1640 m, 30.VI.1964	47°21'51"	102°44'40"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Arkhangay	24 km N von Somon Lun, 1520 m, 1.VII.1964	48°03'01"	105°22'56"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Arkhangay	30 km S vom See Ogij nur am chogschin-Orchon, 1450 m, 1.VII.1964	47°24'23"	102°44'40"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bulgan	5 km von Somon Daschintschilen, 1140 m, 2.VII.1964	47°52'47"	104°05'35"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Cojbalsan	Chamardavaa ul, 80 km SO von Somon Chalchingol, 600 m, 12.VIII.1965	47°09'20"	119°26'33"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Tov	26 km O von Somon Lun, 1180 m, 3.VII.1964	47°44'09"	105°32'21"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Tov	SO von Somon Bajancogt, 1600 m, 5.VII.1964	48°07'28"	105°48'37"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Tov	Zuun-Chara, 850 m, 8.VII.	48°49'51"	106°21'41"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Tov	Kerulen, 45 km O von Somon Bajandelger, 1340 m, 26.VII.1965	47°23'11"	108°28'16"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Tov	Ulan-Baator, Nucht im Bogdo ul, 1500–1800 m, 22.–23.VII.1965	47°51'57"	107°00'26"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	zwischen Somon Zenchermandal und Somon Zargaltch-aan, 1400 m, 27.–28.VII.1965	47°33'51"	109°15'15"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	7 km NO von Somon Moron, 1200 m, 28.VII.1965 (Nr. 234), 6 males; 28.–29.VII.1965	47°25'18"	110°22'48"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	15 km O von Ondorchaan, 1 km S vom Kerulen, 1000 m, 29.VII.1965	47°21'23"	110°50'38"	Mannheims and Savchenko, 1967
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	150 km ONO von Ondorchaan, 10 km S vom Kerulen, 1000 m, 30.VII.1965	47°46'55"	112°31'54"	Mannheims and Savchenko, 1967

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TABLE 1. (Continued)

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	Ulaan chodag, 16 km von Somon Ondorschireet, 1500 m, 23.VII.1966, 24.VII.1966	47°22'49"	105°20'09"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	Tal des Flusses Tola, zwischen Somon Altanbulag und Somon Tariat, cca 30 km ONO von Somon Tariat, 1200 m, 24.VII.1966	47°42'52"	106°22'31"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	80 km von Ulan-Baator, Tal des Flusses Tola, 1200 m, 25.VII.1966	47°33'06"	105°57'06"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	SO von Somon Bajancogt, 1600 m, 27.VII.1966	48°06'39"	105°48'56"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	11 km S vom Pass Zosijn davaa (cca 90 km von Ulan_ Baator), 1965 m, 15.VII.1967	47°02'08"	106°43'27"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	Tosgoni ovoo, 5–10 km N von Ulan-Baator, 1500–1700 m, 19.–20.,23.–24.VII.1967	47°55'36"	106°54'27"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khentii	zwischen Somon Lun und Somon Bajannuur, 25 km O von Bajannuur, 1200 m, 14.VI.1968	46°39'05"	105°36'10"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bulgan	cca 20 km W von Somon Bajannuur (220 km W von Ulan-Baator), 1100 m, 17.VI.1966	47°47'44"	104°19'27"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bulgan	9 km O von Somon Abzaga, 1300 m, 22.VII.1966, 23.VII.1966	47°43'52"	103°32'45"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bulgan	7 km NW von Somon Chanzargalant, 1350 m, 16.VI.1968	49°07'38"	103°42'06"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bulgan	SO von Somon Daschincilen, 1050 m, 23.VII.1968	47°49'15"	104°01'37"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bulgan	11 km W Somon Bajannuur, am Sudrand des Sees Bajannuur, 1000 m, 24.VII.1968	47°37'29"	104°52'15"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	6 km WNW von Somon Tosoncengel, 1480 m, 18.VI.1968	49°27'32"	100°49'53"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	50–54 km WNW von der Stadt Moron, 1740–1900 m, 19.VI.1968	49°39'18"	100°24'34"	Mannheims and Savchenko, 1973

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TABLE 1. (Continued)

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	60 km WNW von der Stadt Moron, 1800 m, 19.VI.1968	49°45’44”	99°23’33”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	3 km SW von Somon Burenchaan, 1650 m, 21.VI.1968	49°37’23”	99°33’43”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	am See Tunamal nuur, 26 km WSW von Somon Scharga, 1950, 21.VI.1968	47°23’27”	98°32’21”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	22 km W vom Somon Cecerleg im Tal des Flusses Tesijn gol, 1820 m, 22.VI.1968	47°31’47”	101°12’48”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	zwischen Somon Cecerleg und Somon Bajan-ul, 65 km W von Cecerleg, 1700 m, 22.VI.1968	47°11’42”	100°40’53”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	8 km W von Somon Burenchaan, am Fluss Delger moron, 1450 m, 16.VII.1968	49°36’06”	99°28’12”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	cca 10 km NO vom Fluss Delger (cca 16 km von Somon Burenchaan), 1700 m, 17.VII.1968	49°36’50”	99°48’35”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	8 km von Somon Alag-erdene, am fluss Egijn gol, 1600 m, 17.VII.1968	50°13’41”	100°05’40”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	4 km NW von der Stadt Moron, 1500 m, 19.VII.1968	49°38’55”	100°06’56”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Hovsgol	13 km O von der Stadt Moron, 1550 m, 20.VII.1968	49°33’28”	100°09’06”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Zavkhan	24 km O von Somon Songino, 2000 m, 12.VII.1968	48°54’22”	95°34’01”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Zavkhan	Choit chunch, 26 km ONO vom See Telmen nuur, 2150 m, 13.VII.1968	48°57’14”	97°46’58”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Uvs	Sandgebiet Altan els, 35 km WNW von Somon Tes, 1400 m, 23.VI.1968	49°51’14”	95°14’50”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Uvs	am Fluss changilcag gol, 6 km SW von Somon Baruuntu-ruun, 1350 m, 24.VI.1968	49°37’02”	94°18’32”	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Uvs	Sudrand des Sees Orog nuur, 1500 m, 28.VI.1968	45°03’58”	100°46’48”	Mannheims and Savchenko, 1973

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TABLE 1. (Continued)

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *virgatula virgatula* Riedel, 1913	Uvs	Senke des Sees Acit nuur, 26 km NO vom flusstal Altan gadasin chev gol, cca 33 km WSW vom Pass Zenklegijn davaa, 2150 m, 4.VII.1968	49°43'35"	90°47'25"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Uvs	Chag zwishen dem See Orog nuur und dem Pass Ulaan davaa, 14 km WSW vom Pass, 1900 m, 6.VII.1968	47°26'21"	107°43'00"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Uvs	am oslichines Hang des Passes Ulaan davaa, zwishen dem See Orog nuur und der Stadt Ulaangom, 2050 m, 6.VII.1968	49°55'45"	92°06'24"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Uvs	am Fluss Chondlon gol, 32 km NW von der Stadt Ulaan-gom, 1200 m, 7.VII.1968	50°07'04"	91°41'17"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Uvs	3 km NO von Somon Ondorchangaj, Gebirge Chanchochij ul, 2200 m, 11.VII.1968	49°42'36"	95°07'12"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bayan-Olgiy	im Tal des Flusses Chavcalyn gol, 24 km O von Somon Cagaannuur, 1890 m, 29.VI.1968	51°22'38"	99°42'13"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bayan-Olgiy	rechtes Ufer des Flusses Chovd gol bei der Stadt Olgij, 1750 m, 30.VI.1968	48°14'16.8"	92°12'19"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bayan-Olgiy	NO-ecke des Sees Tolbo nuur, 2100 m, 1.VII.1968	48°28'23"	90°09'15"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bayan-Olgiy	im Tal des Flusses Chavcalyn gol, 25 km O von Somon Cagaannuur, 1850 m, 3.VII.1968	51°14'19"	99°39'28"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Arkhangay	20 km W von Somon Ogijnnuur, 1500 m, 18.VI.1966	47°38'13"	102°29'44"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Arkhangay	Changaj Gebirge, 8 km W von Somon Urdtamir, 1620 m, 18.VI.1966, 19.VI.1966, 21.VII.1966	47°12'42"	101°37'33"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Arkhangay	Changaj Gebirge, zwischen Somon Ichtamir und Somon Culuut, cca 20 km W Somon Ichtamir, 3 km S von Tal des Flusses Changuj gol, 2150 m, 20.VI.1966, 19.VII.1966	47°32'44"	100°37'54"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Khovd	Chovd aimak, Mongol Altaj Gebirge, Uljasutajn gol, 45 km NNO von Somon Bulgan, 1400 m, 6.VII.1966	46°03'18"	91°34015"	Mannheims and Savchenko, 1973

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TABLE 1. (Continued)

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bayankhon-gor	Changaj Gebirge, Ulaan colon, 18 km S vom Pass Egijn davaa, 2300 m, 20.VI.1966 , 21.VI.1966, 18.VII.1966, 19.VII.1966	48°01'31"	100°30'30"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Bayankhon-gor	Changaj Gebirge, 120 km W von Somon Zag, 2280 m, 21.VI.1966	48°01'27"	99°12'49"	Mannheims and Savchenko, 1973
T. (*V.*) *virgatula virgatula* Riedel, 1913	Gobi Altaj	Chasagt Chajrchan ul, cca 20 km S von Somon Zargalan, 2400 m, 15.VII.1966	46°50'34"	95°54'49"	Mannheims and Savchenko, 1973
T. (V.) subcarinata Alexander, 1922**,***	Ovorhangay	Erden-dzou, July 1909	47°11'49"	102°47'28"	Alexander, 1922
T. (*V.*) *subcarinata* Alexander, 1922**,***	Khentii	Valle pres de la Koure de Bandie, altitude 1500 meters, July 1909	47°21'23"	110°50'38"	Alexander, 1922
T. (*V.*) *subcarinata* Alexander, 1922**,***	Arkhangay	Valle du Tamir-Gol, Afll. de. g. de l'Orkhon, July 1909 (Dr. Chazaud). Mission de Lacoste	47°45'21"	102°03'26"	Alexander, 1922
T. (*V.*) *pallitergata* Alexander, 1934	Selenge	Kentey, upper reaches of Sugu-Nur river before Hara-gol, 23 V – 2 VI 1924 (Kozlov)	48°55'23"	106°02'57"	Savchenko, 1964
T. (*V.*) *mediovittata* Mik, 1889	Hovsgol	West shore of Kosogol [Khövsgöl Nuur Lake], Urianchay range, valley of Uley river, 15 VI 1890 (Potanin)	51°39'	100°14'	Savchenko, 1964
T. (*V.*) *nubeculosa* Meigen, 1804	Tov	Suczukte Valley, south-west Kentey, 13 VI 1925 (Kozlov)	48°22′	106°44′	Savchenko, 1964
T. (*V.*) *subcentralis* Alexander, 1918	Tov	Suczukte Valley, south-west Kentey, 13–22 VI 1925 (Kozlov)	48°22′	106°44′	Savchenko, 1960
T. (*V.*) *kiritshenkoi* Savchenko, 1960***	Ovorhangay	Khangai Mts. (south-east), Lamyn-Gegen, 16 VII 1926 (Kirichenko)	47°12′	102°50′	Savchenko, 1960
T. (*V.*) *coronifera* Savchenko, 1960***	Ovorhangay	Khangai Mts. (south-east), Lamyn-Gegen, 16 VII 1926, 18 VII 1926 (Kirichenko)	47°12′	102°50′	Savchenko, 1960
T. (*V.*) *virgatula virgatula* Riedel, 1913	Tov	Suczukte Valley, south-west Kentey, 13–22 VI 1925 (Kozlov)	48°22′	106°44′	Savchenko, 1964
T. (*V.*) *virgatula virgatula* Riedel, 1913		Ulan-Bator, 30 VI–1 VII 1909 (Kozlov)	N47°53'	E106°50'	Savchenko, 1964
T. (*V.*) *virgatula virgatula* Riedel, 1913		Valley of Tol river near Ulan-Bator, 4 VI 1926 (Kirichenko)	N47°53'	E106°50'	Savchenko, 1964

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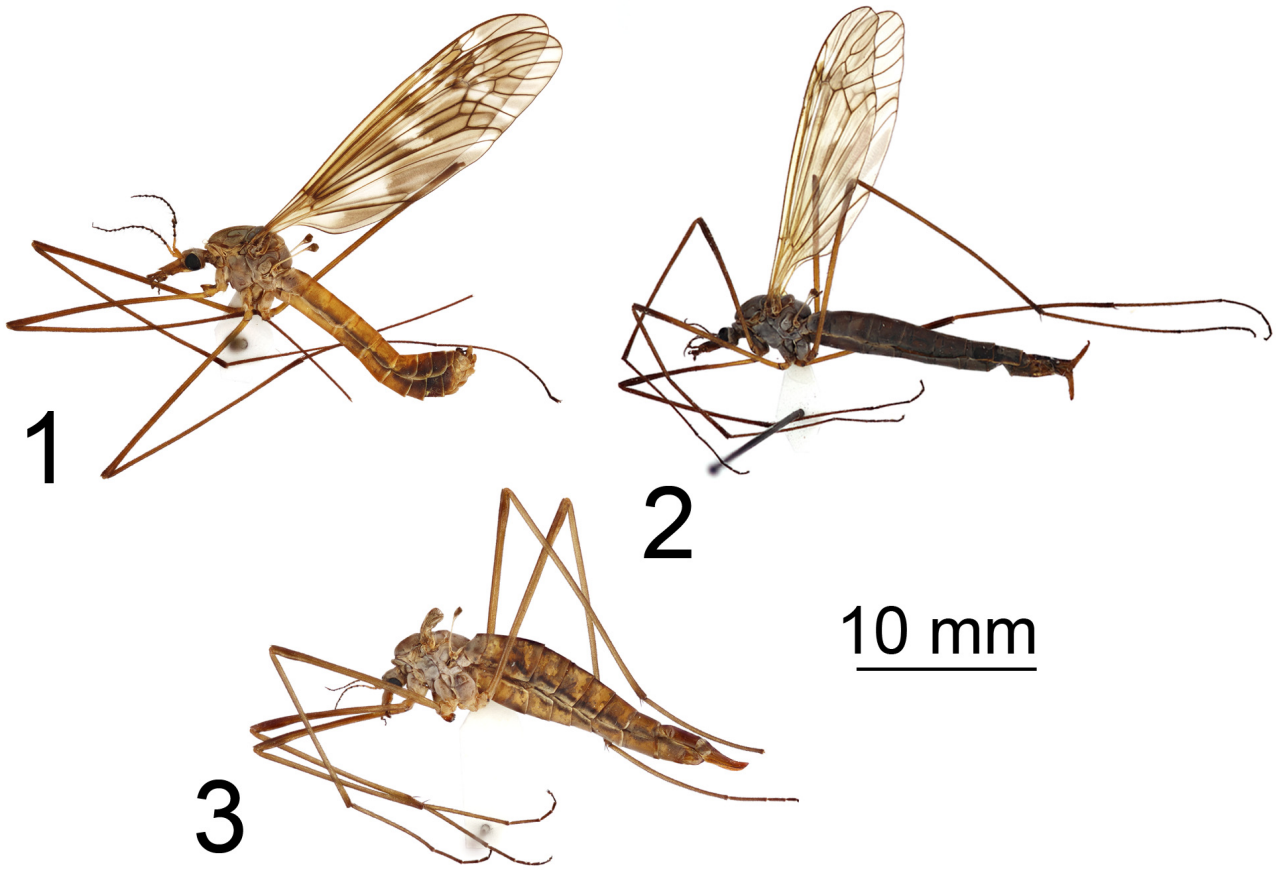
TABLE 1. (Continued)

Species	Aimag	Locality	Latitude	Longitude	Publication
T. (*V.*) *virgatula virgatula* Riedel, 1913	Tov	Manchurian road, 40 km from Ulan-Bator, 31 VII 1928 (Ivanov)	N48°12’	E106°44’	Savchenko, 1964
T. (*V.*) *virgatula virgatula* Riedel, 1913	Arkhangay	Holt, north Gobi, 10–15 VI 1926, 30 V 1926, 13 VII 1926 (Kozlov)	47°35′	100°40′	Savchenko, 1964
T. (*V.*) *virgatula virgatula* Riedel, 1913	Selenge	Kentey, upper Hara-gol river, 25 VI 1924 (Kozlov)	48°55’23”	106°02’57”	Savchenko, 1964
T. (*V.*) *virgatula virgatula* Riedel, 1913	Zavkhan	Ulan-Erig, north-west from Uliatsutay, 23 VI 1913, 17 VII 1913 (Yurganova)	47°44′	96°50′	Savchenko, 1964
T. (*V.*) *virgatula virgatula* Riedel, 1913	Ovorhangay	Uiczin-van, Tacin-Gol Halha river, 15 VII 1926 (Kirichenko)	45°51’20”	101°22’28”	Savchenko, 1964
T. (*V.*) *virgatula virgatula* Riedel, 1913	Zavkhan	Nearby lake Telmin-nur, 11 VI 1913 (Yurganova)	48°49’41”	97°05’57”	Savchenko, 1964
T. (*V.*) *virgatula virgatula* Riedel, 1913	Ovorhangay	Khangai Mts. (south-east), Lamyn-Gegen, 19 VII 1926, 22 VII 1926 (Kirichenko)	47°12′	102°50′	Savchenko, 1964
T. (*V.*) *longitudinalis* Nielsen, 1929	Ovorhangay	Khangai Mts. (south-east), Lamyn-Gegen, 16–20 VII 1926 (Kirichenko)	47°12′	102°50′	Savchenko, 1964
T. (*V.*) *longitudinalis* Nielsen, 1929	Tov	Gobi, shore of Tuul river, 17 VIII 1949 (Eglon)	48°02’	107°42’	Savchenko, 1964

*published as *T.* (*V.*) *laccata*; **synonyms of *T.* (*V.*) *virgatula*; ***type locality

Characteristics of Mongolian *T.* (*Vestiplex*) crane flies

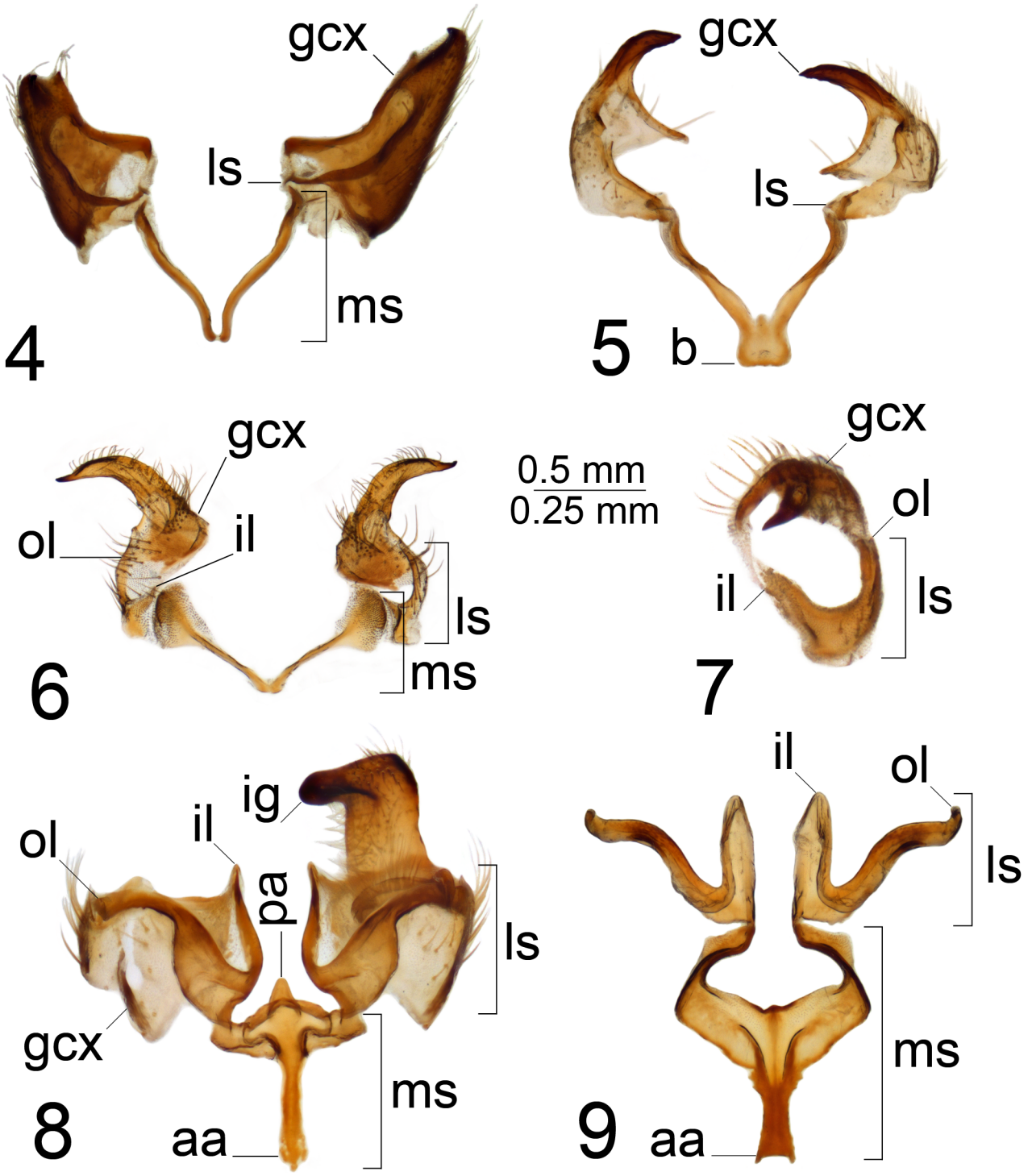
Diagnosis. Mongolian *T.* (*Vestiplex*) crane flies are medium to large sized, body length of males 11.0–22.0 mm, of females 15.9–31.0 mm. Body coloration varies from yellow to blackish brown (Figs 1–3). Antennae (males) length ranges from short, reaching pronotum to elongate, reaching the base of the abdomen if bent backwards. The shape of the flagellomeres varies from simple cylindrical to large basal enlargement and deep incision at middle.



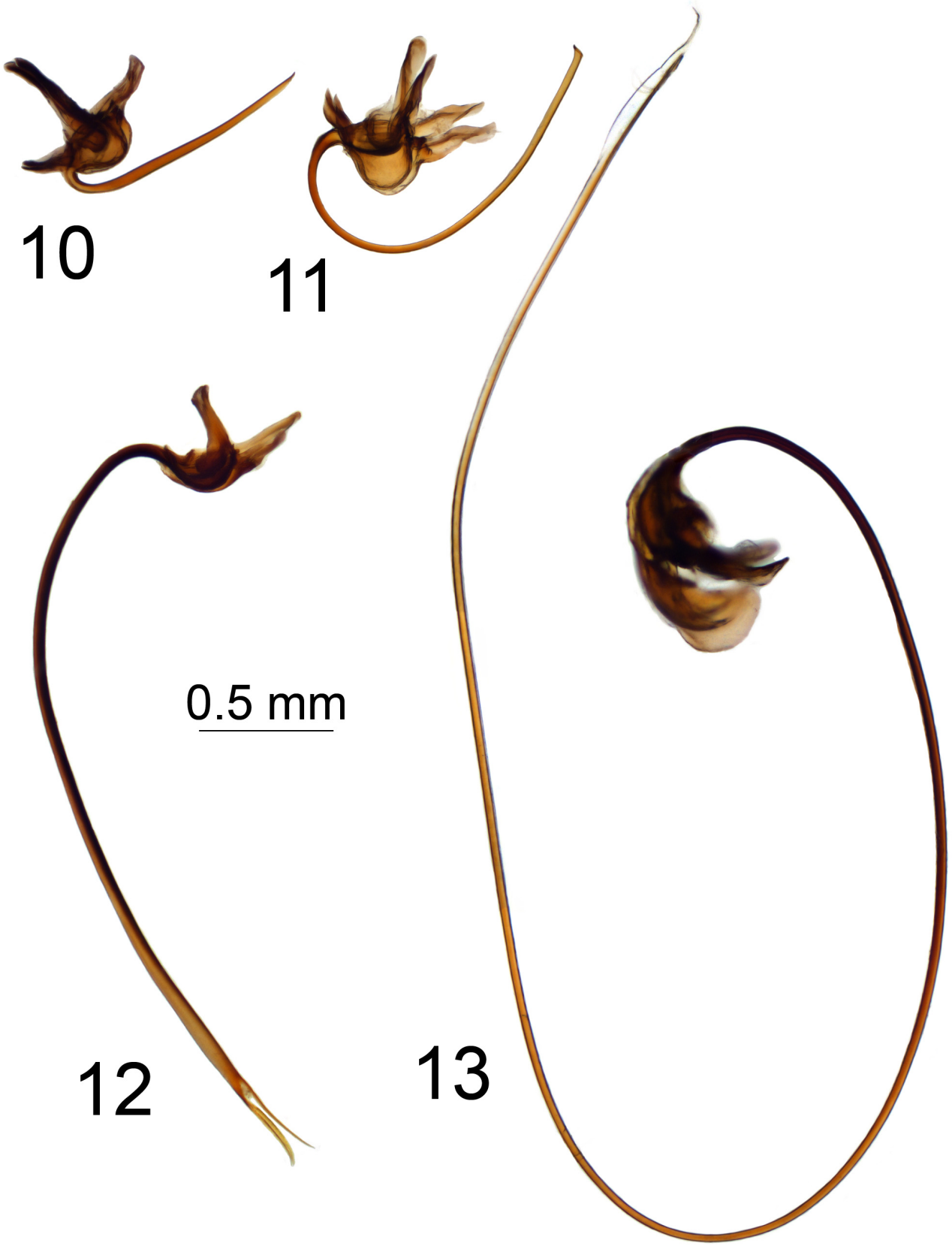
FIGURES 1–3. Adults of Mongolian *T.* (*Vestiplex*), general view. **1.** *T.* (*Vestiplex*) *subcentralis*, male habitus, left lateral view; **2.** *T.* (*Vestiplex*) *mediovittata*, female habitus, left lateral view; **3.** *T.* (*Vestiplex*) *longitudinalis*, female habitus, left lateral view.

Tergite 9 of the male hypopygium forms a flattish or shallowly concave plate with caudal portion forming a more or less distinct area with narrow rised rim termed the "tergal saucer" (Alexander 1934b), which varies in shape among the different species groups. The gonocoxite is separated from the sternite by a distinct suture, triangular or rectangular in shape (*T.* (*V.*) *virgatula* and *T.* (*V.*) *longitudinalis* Nielsen, 1929), with an extended and obtuse apex (*T.* (*V.*) *nubeculosa* Meigen, 1804), terminating with a horn or spine (*excisa* and *scripta* groups) or simple without extension (*leucoprocta* group). The inner gonostylus is generally a transversely curved, claw-shaped plate with preapical notch, bifid apex or middorsally toothed. The aedeagal guide is tube- or depressed, plate-shaped.

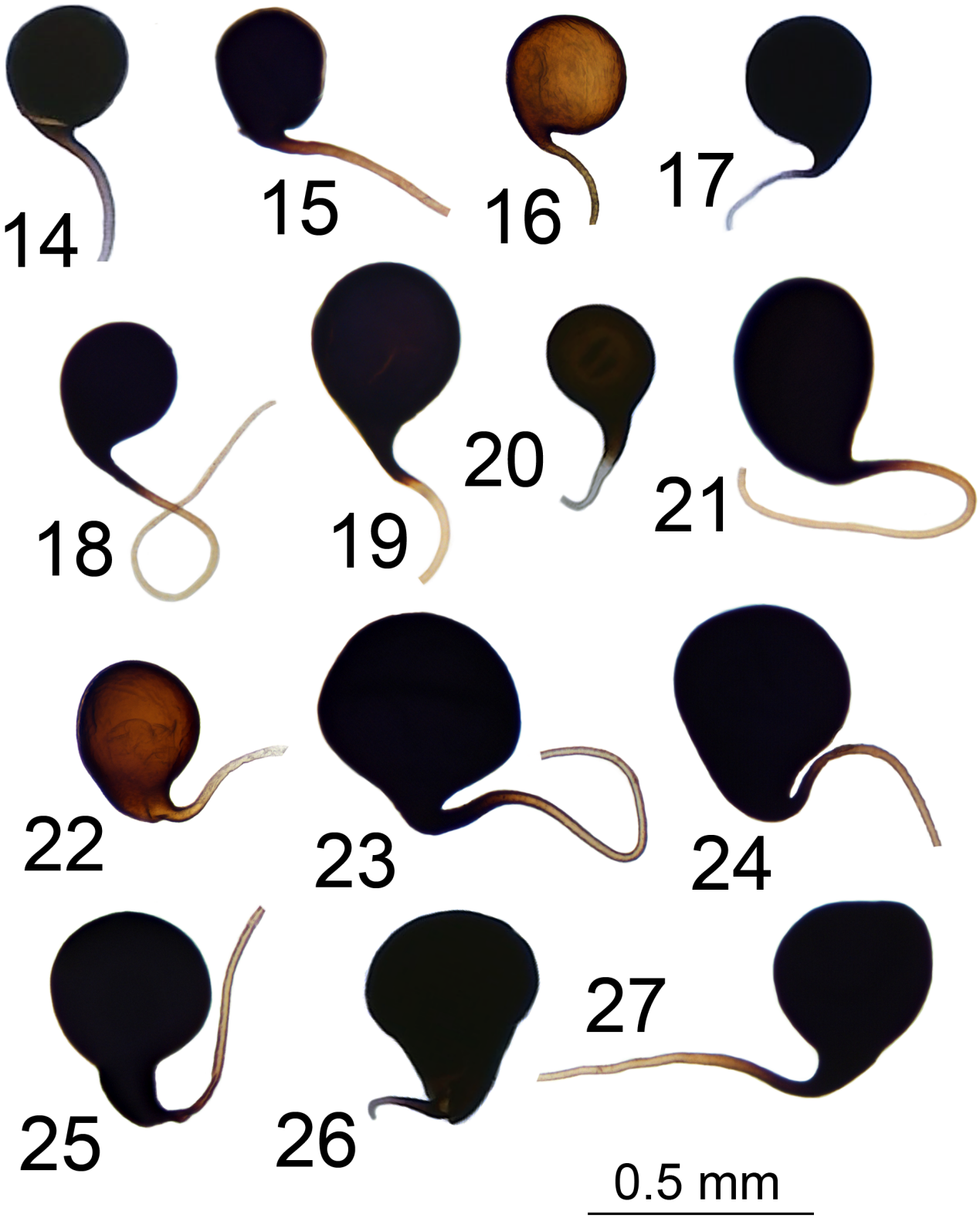
The gonocoxal fragment (sclerites *sp1* and *sp2*, Neumann 1958; genital bridge, Dobrotworsky 1968) differs among *T.* (*Vestiplex*) species and is composed of lateral and medial sclerites (Brodo 2018) with discussion of interpretation in Gelhaus (2005). The medial sclerite was designated sclerite *sp1* by Neumann (1958) and as central part of genital bridge by Tangelder (1985). A pair of lateral sclerites were designated sclerites *sp2* by Neumann (1958) and as lateral parts of genital bridge by Tangelder (1985). As indicated by Neumann (1958), sclerites *sp2* are paired structures, while sclerite *sp1* is a separate unpaired structure. This structure also was refered to as a single sclerite by Tangelder (1985). However the medial sclerite appears to be composed of two separate sclerites medially membranously fused. Mongolian members of the *virgatula* species group have the medial sclerite composed of two separate sclerites anteriorly membranously fused (Fig. 4). Other Mongolian *T.* (*Vestiplex*) species have the medial sclerites anteriorly fused with the base; e.g., *excisa*, *scripta* and *nubeculosa* species groups (Figs 5, 6, 133). The Mongolian members of the *leucoprocta* group have specific medial sclerites with the posterior (distal) parts forming an



FIGURES 4–9. Gonocoxal fragments of Mongolian *T.* (*Vestiplex*), epandrium and hypandrium removed, dorsal view. **4.** *T.* (*Vestiplex*) *longitudinalis*; **5.** *T.* (*Vestiplex*) *mediovittata*; **6.** *T.* (*Vestiplex*) *scripta*; **7.** *T.* (*Vestiplex*) *pallitergata*; **8.** *T.* (*V*). *balioptera*; **9.** *T.* (*Vestiplex*) *leucoprocta*. Abbreviations: aa, anterior apodeme of medial sclerite of gonocoxal fragment; pa, posterior apodeme of medial sclerite of gonocoxal fragment; b, base of medial sclerite of gonocoxal fragment; gcx, gonocoxite; ig, inner gonostylus; il, inner lobe of lateral sclerite of gonocoxal fragment; ls, lateral sclerite of gonocoxal fragment; ms, medial sclerite of gonocoxal fragment; ol, outer lobe of lateral sclerite of gonocoxal fragment. Scales of 4–6, 8–9 = 0.5 mm, 7 = 0.25 mm.



FIGURES 10–13. Aedeagus examples of Mongolian *T.* (*Vestiplex*), lateral view. **10.** *T.* (*Vestiplex*) *scripta*; **11.** *T.* (*Vestiplex*) *mediovittata*; **12.** *T.* (*Vestiplex*) *virgatula*; **13.** *T.* (*Vestiplex*) *kiritshenkoi*.



FIGURES 14–27. Spermathecae of Mongolian *T.* (*Vestiplex*). **14.** *T.* (*Vestiplex*) *longitudinalis*; **15.** *T.* (*Vestiplex*) *virgatula*; **16.** *T.* (*Vestiplex*) *pallitergata*; **17.** *T.* (*Vestiplex*) *laccata*; **18.** *T.* (*Vestiplex*) *balioptera*; **19.** *T.* (*Vestiplex*) *nubeculosa*; **20.** *T.* (*Vestiplex*) *scripta*; **21.** *T.* (*Vestiplex*) *kiritshenkoi*; **22.** *T.* (*Vestiplex*) *mediovittata*; **23.** *T.* (*Vestiplex*) *subcentralis*; **24.** *T.* (*Vestiplex*) *sintenisi*; **25.** *T.* (*Vestiplex*) *coronifera*; **26.** *T.* (*Vestiplex*) *tchukchi*; **27.** *T.* (*Vestiplex*) *leucoprocta*.

arched structure, the base developed into an anterior apodeme, with an additional posterior apodeme in *T.* (*V.*) *balioptera*, *T.* (*V.*) *laccata* and *T.* (*V.*) *tchukchi* (Figs 8, 9). The lateral sclerite in its simplest form is a very small and sometimes an unrecognizable structure attached to the dorsomedial edge of the gonocoxite. This state occurs in the *virgatula*, *excisa* and *nubeculosa* species groups. The Mongolian members of the *scripta* group have a small, slightly bilobed lateral sclerite (Fig. 6). The outer lobe is attached to the dorsomedial edge of the gonocoxite, with the inner lobe short and free in *T.* (*V.*) *scripta* or is attached to the mesal part of the gonocoxite membranously in *T.* (*V.*) *pallitergata* (Fig. 7). The members of the *leucoprocta* group have the lateral sclerite large and bilobed. Its outer lobe is attached to the dorsomedial edge of the gonocoxite, while the inner lobe is attached to the mesal part of the gonocoxite (Figs 8, 9). The sperm pump is usually flattened; compressor apodeme with or without median incision, and anterior immovable apodeme variable in shape from short to broadly flattened plate. The length of the aedeagus varies from short or relatively short (Fig. 10), moderately long (Fig. 11), to elongate or very long (Figs 12, 13). The distal part of the aedeagus is variously shaped, appearing trident (Figs 170, 181), funnel (Figs 35, 136, 149) or shovel-shaped (Figs 46, 57, 70, 82, 124).

The female cercus is strong and powerfully constructed, heavily sclerotised, oriented horizontally. The outer (ventral) margin bears small to distinct, rough serration. The hypovalva of sternite 8 is with apical filaments (Figs 37, 48, 59, 72, 84, 94, 104, 115, 126, 138, 150, 161) or with short and stout projections in the *virgatula* species group (Figs 172, 183). Some female Mongolian *T.* (*Vestiplex*) could be distinguished by the remarkable bursa copulatrix and associated structures; e.g., members of *leucoprocta* species group have the basal part of the spermathecal ducts modified into sclerotised processes (Figs 49, 62, 74, 95, 116), with blackened wall on connection sites with bursa copulatrix (Figs 85, 106, 128). In other cases the spermathecal ducts are membranous (Figs 38, 151 162, 173, 184), while the wall of the bursa copulatrix including cul-de-sac is distinctly sclerotised; e.g., *T.* (*V.*) *nubeculosa* (Fig. 141).

Three spermathecae are present. The spermathecal shape varies and it is more or less spherical (e.g., *T.* (*V.*) *longitudinalis*, *T.* (*V.*) *virgatula* and *T.* (*V.*) *pallitergata* (Figs 14–16, respectively)), lightly broadened at base (e.g., *T.* (*V.*) *laccata*, *T.* (*V.*) *balioptera*, *T.* (*V.*) *nubeculosa* (Figs 17–19, respectively)) and with base distinctly broadened, oval or nearly pear-shaped (e.g., *T.* (*V.*) *scripta*, *T.* (*V.*) *kiritshenkoi*, *T.* (*V.*) *mediovittata*, *T.* (*V.*) *subcentralis*, *T.* (*V.*) *sintenisi*, *T.* (*V.*) *coronifera*, *T.* (*V.*) *tchukchi* and *T.* (*V.*) *leucoprocta* (Figs 20–27, respectively)).

List of Mongolian *Tipula* (*Vestiplex*)

A total of 14 species of *T.* (*Vestiplex*) are currently known from Mongolia, belonging to the following five species groups:

Tipula (*V.*) *excisa* species group

Tipula (*Vestiplex*) *mediovittata* Mik, 1889

Tipula (*V.*) *leucoprocta* species group

Tipula (*Vestiplex*) *balioptera* Loew, 1863
Tipula (*Vestiplex*) *coronifera* Savchenko, 1960
Tipula (*Vestiplex*) *kiritshenkoi* Savchenko, 1960
Tipula (*Vestiplex*) *laccata* Lundström and Frey, 1916
Tipula (*Vestiplex*) *leucoprocta* Mik, 1889
Tipula (*Vestiplex*) *sintenisi* Lackschewitz, 1933
Tipula (*Vestiplex*) *subcentralis* Alexander, 1918
Tipula (*Vestiplex*) *tchukchi* Alexander, 1934b

Tipula (*V.*) *nubeculosa* species group

Tipula (*Vestiplex*) *nubeculosa* Meigen, 1804

***Tipula* (*V.*) *scripta* species group**

Tipula (*Vestiplex*) *pallitergata* Alexander, 1934b
Tipula (*Vestiplex*) *scripta* Meigen, 1830

***Tipula* (*V.*) *virgatula* species group**

Tipula (*Vestiplex*) *longitudinalis* Nielsen, 1929
Tipula (*Vestiplex*) *virgatula virgatula* Riedel, 1913

Key to Mongolian species of *Tipula* (*Vestiplex*)

Males

1 General body coloration blackish, heavily gray pruinose (Fig. 2); antenna with scape and pedicel black, sometimes pedicel reddish; tergite 9 brownish black with posteromedial spine and lateral lobes broadly truncated (Fig. 28) . . . . . *Tipula* (*Vestiplex*) *mediovittata*

\- General body coloration brownish-yellow or yellowish (Figs 1, 3); antenna with scape and pedicel yellow; tergite 9 not as above. 2

2 Antenna with flagellomeres (except first) bicolorous 3

\- Antenna with flagellum brown, dark brown or black. 6

3 Nasus very small or totally missing; abdomen without median stripe; tergite 9 forming plate reduced in size (Fig. 129); gonocoxite large with extended obtuse apex and small lateral denticle (Fig. 130) . . . . . *Tipula* (*Vestiplex*) *nubeculosa*

\- Nasus conspicuous; abdomen with distinct or pale median stripe; tergite 9 not as above; gonocoxite ends with spine (Figs 143, 153) or unarmed (Fig. 87) 4

4 Tergite 9 forming crescent saucer-shaped plate (Fig. 86); gonocoxite unarmed (Fig. 87); inner gonostylus claw-shaped with two mid-dorsal teeth (Fig. 89). . . . . *Tipula* (*Vestiplex*) *leucoprocta*

\- Tergite 9 with anterior border shaped as elevated sclerotised quadrate plate (Figs 142, 152); gonocoxite ends with spine (Figs 143, 153); inner gonostylus in shape of lightly curved plate, dorsally with sharp spine (Figs 145, 155) 5

5 Antenna if bent backward reaching wing base; sclerotised quadrate plate of tergite 9 about 1/3 length of tergite (Fig. 152) . . . . . *Tipula* (*Vestiplex*) *scripta*

\- Antenna if bent backward reaching base of abdomen; sclerotised quadrate plate of tergite 9 extremely small (Fig. 142). . . . . *Tipula* (*Vestiplex*) *pallitergata*

6 Stripes on prescutum and presutural scutum uniformly darkened without darker margins; inner gonostylus mid-dorsally with blackened hump (Fig. 66). . . . . *Tipula* (*Vestiplex*) *kiritshenkoi*

\- At least inner pair of prescutal stripes with darkened margins; inner gonostylus without mid-dorsal hump (Figs 42, 53, 78, 99, 110, 120, 166, 177). 7

7 Gonocoxite simple, unarmed (Figs 40, 51, 76, 97, 108, 118); tergite 9 sclerotized, crescent or polygonal, laterally terminating into two teeth (Figs 39, 50, 75, 107, 117) or narrowed, anteriorly with elevated transverse plate (Fig. 96) . . . . . .8.

\- Gonocoxite in shape of flattish, subrectangular or nearly triangular plate, apex blackened, obtuse or toothed (Figs 164, 175); tergite 9 not as above (Figs 163, 174) 13

8 Body length over 17 mm (17.5–23.3 mm); tergite 9 crescent-shaped (Figs 50, 107) 9

\- Body length less than 16 mm (13.5–15.9 mm); tergite 9 polygonal-shaped (Figs 39, 75, 117) or narrowed laterally (Fig. 96). 10

9 Wing distinctly patterned with brown (Fig. 1); inner gonostylus with single mid-dorsal tooth (Fig. 110) . . . . . *Tipula* (*Vestiplex*) *subcentralis*

\- Wing indistinctly patterned; inner gonostylus with two mid-dorsal teeth (Fig. 53). . . . . *Tipula* (*Vestiplex*) *coronifera*

10 General body coloration brownish-yellow; prescutum and presutural scutum with intermediate stripes separated 11

\- General body coloration grayish or blackish yellow; prescutum and presutural scutum with intermediate stripes fused. 12

11 Abdomen yellow with lateral stripe distinct; tergite 9 forming large, concave polygonal sclerotised saucer with anterior and lateral portions raised into sclerotised border (Fig. 39) . . . . . *Tipula* (*Vestiplex*) *balioptera*

\- Abdomen brownish-yellow with lateral stripe indistinct; tergite 9 in shape of relatively small narrower sclerotised plate with anterior portion elevated into transverse sclerotised plate (Fig. 96) . . . . . *Tipula* (*Vestiplex*) *sintenisi*

12 Antenna if bent backwards, reaching base of abdomen; posterior margin of tergite 9 with deep narrow median V-shaped notch and oblong black median tubercle at bottom (Fig. 75). . . . . *Tipula* (*Vestiplex*) *laccata*

\- Antenna if bent backwards, reaching base of wing; posterior margin of tergite 9 with median U-shaped notch, two yellow rounded projections and black median transverse sclerotisation (Fig. 117). . . . . *Tipula* (*Vestiplex*) *tchukchi*

13 Tergite 9 forming narrowed concave plate, anterior portion raised into broad sclerotised border (Fig. 163); gonocoxite shaped as large subrectangular plate, apex gently bifid with large obtuse black tooth and small denticle (Fig. 164). . . . . *Tipula* (*Vestiplex*) *longitudinalis*

\- Tergite 9 forming flattened plate dorsally with two oblique carina, anterior saucer missing (Fig. 174); gonocoxite shaped as

nearly triangular flattish plate with obtuse blackened apex and inconspicuous lateral tooth in middle of posterior surface (Fig. 175). . . . . *Tipula* (*Vestiplex*) *virgatula virgatula*

Females

1 Wing well-developed, extended beyond middle of abdomen (Fig. 2) 2
- Wing reduced, not reaching middle of abdomen (Fig. 3). 12
2 Sternum 8 apically with single medial incision between hypovalvae (Figs 37, 84, 104, 138, 150) 3
- Sternum 8 apically with three incisions, one medially and two lateral of hypovalvae (Figs 48, 59, 94, 115, 126, 161). 7
3 Nasus well-developed. 4
- Nasus very small or absent . . . . . *Tipula* (*Vestiplex*) *nubeculosa*
4 Body coloration blackish (Fig. 2); cercus apically with incision (Fig. 36) . . . . . *Tipula* (*Vestiplex*) *mediovittata*
- Body coloration yellowish to brownish-yellow (Figs 1, 3); cercus apically rounded (Figs 83, 103, 149) 5
5 Wing distinctly patterned; lateral margins of sternite 8 extending dorsally and nearly hiding base of tergite 10 (Fig. 103) . . . . . *Tipula* (*Vestiplex*) *sintenisi*
- Wing unpatterned, translucent or tinged with brown; lateral margins of sternite 8 not as above (Figs 83, 149). 6
6 Incision between hypovalvae shallow, not deeper than posterior margin of sclerite (Fig. 150) . . *Tipula* (*Vestiplex*) *pallitergata*
- Incision between hypovalvae deeper than posterior margin of sclerite (Fig. 84). . . . . *Tipula* (*Vestiplex*) *laccata*
7 Apex of cercus ending with tooth-like projection, defined by distinct notch (Fig. 125) . . . . . *Tipula* (*Vestiplex*) *tchukchi*
- Apex of cercus rounded, without incision (Figs 47, 58, 93, 114, 160) 8
8 Body length exceeds 18 mm (18–24 mm) 9
- Body length less than 16 mm (13.5–15.9 mm) 10
9 Flagellum bicolored; sternite 8 with very small lateral incision (Fig. 161) . . . . . *Tipula* (*Vestiplex*) *scripta*
- Flagellum brown; sternite 8 with deep lateral incision (Fig. 48) . . . . . *Tipula* (*Vestiplex*) *balioptera*
10 Wing distinctly patterned; prescutum and presutural scutum with intermediate stripes completely fused or separated anteriorly and fused posteriorly; cercus with indistinct serration (Figs 114, 93) 11
- Wing pattern indistinct; prescutum and presutural scutum with intermediate stripes completely separated from each other; cercus with ventral margin almost smooth (Fig. 58); sternite 8 as in Fig. 59 . . . . . *Tipula* (*Vestiplex*) *coronifera*
11 Prescutum and presutural scutum with intermediate stripes separated anteriorly and fused posteriorly; sternite 8 with narrow and deep lateral incision (about twice as deep as maximum width) (Fig. 94) . . . . . *Tipula* (*Vestiplex*) *leucoprocta*
- Prescutum and presutural scutum with intermediate stripes fused into brown median line; sternite 8 with small and broad lateral incision (depth of incision slightly longer or about as long as maximum width) (Fig. 115) . . . . . *Tipula* (*Vestiplex*) *subcentralis*
12 Hypovalva filamentous (Fig. 72) . . . . . *Tipula* (*Vestiplex*) *kiritshenkoi*
- Hypovalva short, stout or nearly missing (Figs 172, 183) 13
13 Hypovalva short, with distinct stout projection (Fig. 183). . . . . *Tipula* (*Vestiplex*) *virgatula virgatula*
- Hypovalva with projection indistinctly projecting (Fig. 172) . . . . . *Tipula* (*Vestiplex*) *longitudinalis*

Redescriptions

Tipula (*V.*) *excisa* species group

The *excisa* species group was proposed by Mannheims (1953) and discussed by Theowald & Mannheims (1963) and Savchenko (1964). Males of the *excisa* group are characterized by the following features: gonocoxite horn-shaped, tergite 9 forming a black polished plate with toothed posterior margin and two lateral and one medial spine- or horn-shaped projections. The *excisa* group is distributed in the Palaearctic Region and includes the following species: *T.* (*V.*) *crolina* Dufour, 1992, *T.* (*V.*) *excisa* Schummel, 1833, *T.* (*V.*) *franzi* Mannheims, 1950, *T.* (*V.*) *hemiptera* Mannheims, 1953, *T.* (*V.*) *mediovittata* Mik, 1889, *T.* (*V.*) *montana* Curtis, 1834, *T.* (*V.*) *riedeliana* Mannheims, 1953 and *T.* (*V.*) *sexspinosa* Strobl, 1898.

Tipula (*Vestiplex*) *mediovittata* Mik

(Figs 2, 5, 11, 18, 28–38; Map 1)

Tipula mediovittata Mik, 1889: 103.
Tipula (*Vestiplex*) *mediovittata*: Savchenko, 1964: 227 (= ? *T. hummeli* Alexander, 1936a)*;* Oosterbroek & Theowald, 1992: 156 (synonymy with *T. hummeli* uncertain);
Tipula (Vestiplex) kamchatkana Alexander, 1934b: 400, **syn. nov.**
References: Alexander, 1935: 118; Savchenko, 1964: 175; Oosterbroek & Theowald, 1992: 155.

Type material examined. *Tipula* (*Vestiplex*) *mediovittata* Mik: **HOLOTYPE** ♀: **KYRGYSTAN,** Asia Kirgisien, St. (Schrenk) Mik; *mediovittata* Mik; Type female *Tipula mediovittata* Mik det. M.P. Riedel; III 21; Mannheims vid. 1949; Holotypus (NHMV).

Tipula (Vestiplex) kamchatkana Alexander: **HOLOTYPE** ♂: **RUSSIA,** Kamchatka, alpine zone of the Shiveluch Range, 25.vi.1909, Dershavin, No. 399 (ZIN). **PARATYPES:** 2 ♂, topotypic (USNM); 1 ♂, Volcano Kluchenvskoje, Kyrgurich, 3000–4000 ft, 12.vi.1909, Dershavin, No. 327 (ZIN); 4 ♂, topotypic, Nrs. 329, 330, 332, 333 (USNM); 1 ♂, Kluchevskoje village, June 10, 1909, Dershavin, No. 357 (ZIN); 1 ♂, Ust-Kamchatsk, 17.vii.1909, Dershavin, No. 348 (ZIN); 1 ♂, alpine zone of Solocha River, Volcano Kluchevskoje, 13.vi.1909, Dershavin, No. 403 (ZIN), antenna, wing and genitalia slide mounted (USNM); 1 ♀, Shiveluch Volcano, 26.vi.1909, Schmidt, No. 331 (ZIN); 3 ♂, topotypic, Nrs. 395, 397, 398, 1 ♀ No. 396 (ZIN); antenna, wing, leg and genitalia of paratype No. 398 on 2 slides (USNM); 1 ♀, Krutenkaja River, 22.vi.1909, Kozlovsky, No. 422, BMNH(E)#246025, Recd. in Exchange from C.P. Alexander. B.M. 1934–384 (BMNH).

Additional material examined. MONGOLIA. Arkhangay Aimag: 1 ♀, Khotont Soum, trib. of Tsagaan Sumiin/Jarantain Gol, ~43 km SW Khotont, N47.07888, E102.16608, 1699 m, 9–10.vii.2004, SRPT, SRP04070902; 26 ♂, 1 ♀, Chuluut Soum, ponds at Egiin Davaa ~47 km SW Chuluut/Jargalant, N47.21198, E99.91114, 2582 m, 16.vii.2004, A.E.Z. Short, J.K. Gelhaus, Enkhnasan, SRP04071601; 17 ♂, Chuluut Soum, Chuluutin Gol ~45 km SW Chuluut/Jargalant, N47.21768, E99.92824, 2471 m, 16.vii.2004, SRPT, SRP04071602. **Bayan Olgii Aimag:** 8 ♂, Tsengel Soum, Tsagaan Gol, 20 km W Zagast Nuur Bag, Entrance to Altai-Tavan Bogd NP, N49.09161, E88.10436, 2410 m, 9–12.vii.2008, S. Podenas, MAIS08070902; 2 ♂, Tsengel Soum, spring brook on mountain N Tsagaan Gol above Altai-Tavan Bogd NP entrance, N49.09721, E88.10415, 2515 m, 12.vii.2008, R.W. Bouchard, Jr. MAIS08071101; 1 ♂, Deluun Soum, Gantsmodi Gol 27 km S Deluun, N 47.66395, E90.71841, 2196 m, 5–6.vii.2009, S. Podenas, MAIS2009070502. **Bayankhongor Aimag:** 2 ♀, Erdenesogt Soum, headwaters of Shargaljuut Gol, near base of Taatsyn Davaa to Taatsyn Gol, N46.46332, E101.51730, 2519 m, 6.vii.2011, S. Podenas, MAIS2011070601. **Bulgan Aimag:** 1 ♀, Bulgan Soum, unnamed hillside trib. of Khairkhan Davaani Gol, N46.94286, E100.85532, 2311 m, 13.vii.2004, J.K. Gelhaus, J.C. Morse, A.E.Z. Short, SRP04071303; 1 ♀, Bulgan Soum, Urd Tamir Gol braid upstream of bridge ~63 km SW Tsetserleg, N47.11192, E101.01048, 2066 m, 13–15.vii.2004, SRPT, SRP04071302; 4 ♂, 1 ♀, Bulgan Soum, Bulgan Gol ~25 km SE Bulgan at confluence Tsonkol Gol, N46.77005, E91.32336, 1792 m, 9–10.vii.2009, MAIS2009070902. **Hovsgol Aimag:** 1 ♂, Lake Tunamal nuur, 26 km SW Somon Scharga, 1950 m, Exp. Dr. Z. Kaszab, Nr. 995, 21.vi.1968 (HNHM); 40 ♂, 13 ♀, Ulaan-Uul Soum, unnamed trib. (stream) of Beltes Gol, 34.0 km NE Bayanzurh, 2113 m, N50.42980, E99.21690, 28.vi.2006, J.K. Gelhaus #1054-A, SRP06062803; 1 ♂, Bayanzurh Soum, Beltes Gol (river), 10 km E Bayanzurh, 1688 m, N50.20129, E99.08625, 5.vii.2006, J.K. Gelhaus #1072. **Ovorkhangai Aimag:** 18 ♂, Uyanga Soum, Khangai Mountains, Khuysiyn Naiman Nuur Strictly Protected Area, streams entering east side of Shireet Nuur (Lake), down from davaa (pass), N46.51908, E101.84940, 2446 m, 7.vii.2011, C.R. Nelson & T.A. McKnight & MAIST, MAIS2011070701. **Tov Aimag:** 2 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on West side, 1.6 km upstream from Daichin crossing, N48.21780, E107.90392, 1594 m, 9.vii.2003, SRPT, SRP03070902; 5 ♂, 2 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on West side, c. 5 km upstream from Daichin crossing, N48.24734, E107.90589, 1610 m, 10.vii.2003, SRPT, SRP03071001; 1 ♂, 7 ♀, Erdene Soum, Gorkhi Terelj NP, mouth of Khag River at confluence with Tuul River, N48.25861, E107.90251, 1608 m, 10.vii.2003, SRPT, SRP03071002; 1 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on E side, 8.5 km downstream of Galtain Gol, N48.09720, E107.84928, 1542 m, 11.vii.2003, SRPT, SRP03071101; 1 ♂, 6 ♀, Erdene Soum, Unnamed river NE Khagiin Har Nuur, Gorkhi Terelj NP, N48.42080, E107.91406, 1818 m, 28.vii.2003, SRPT, SRP03072802; 1 ♂, Erdene Soum, Unnamed river SEA Khagiin Har Nuur, Gorkhi Terelj NP, N48.39916, E107.91693, 1818 m, 29.vii.2003, SRPT, SRP03072901. **Uvs Aimag:** 1 ♀, 4 km ESE Pass Ulaan davaa, between Lake Örög nuur and Ulaangom, 1700 m, Exp. Dr. Z. Kaszab, Nr. 1074, 6.vii.1968 (HNHM); 13 ♂, 1 ♀, Tarialan Soum, Dund Gol, 73 km SW Tarialan, N49.51831, E91.58729, 2464 m, 3.vii.2010, MAIST, MAIS2010070303.

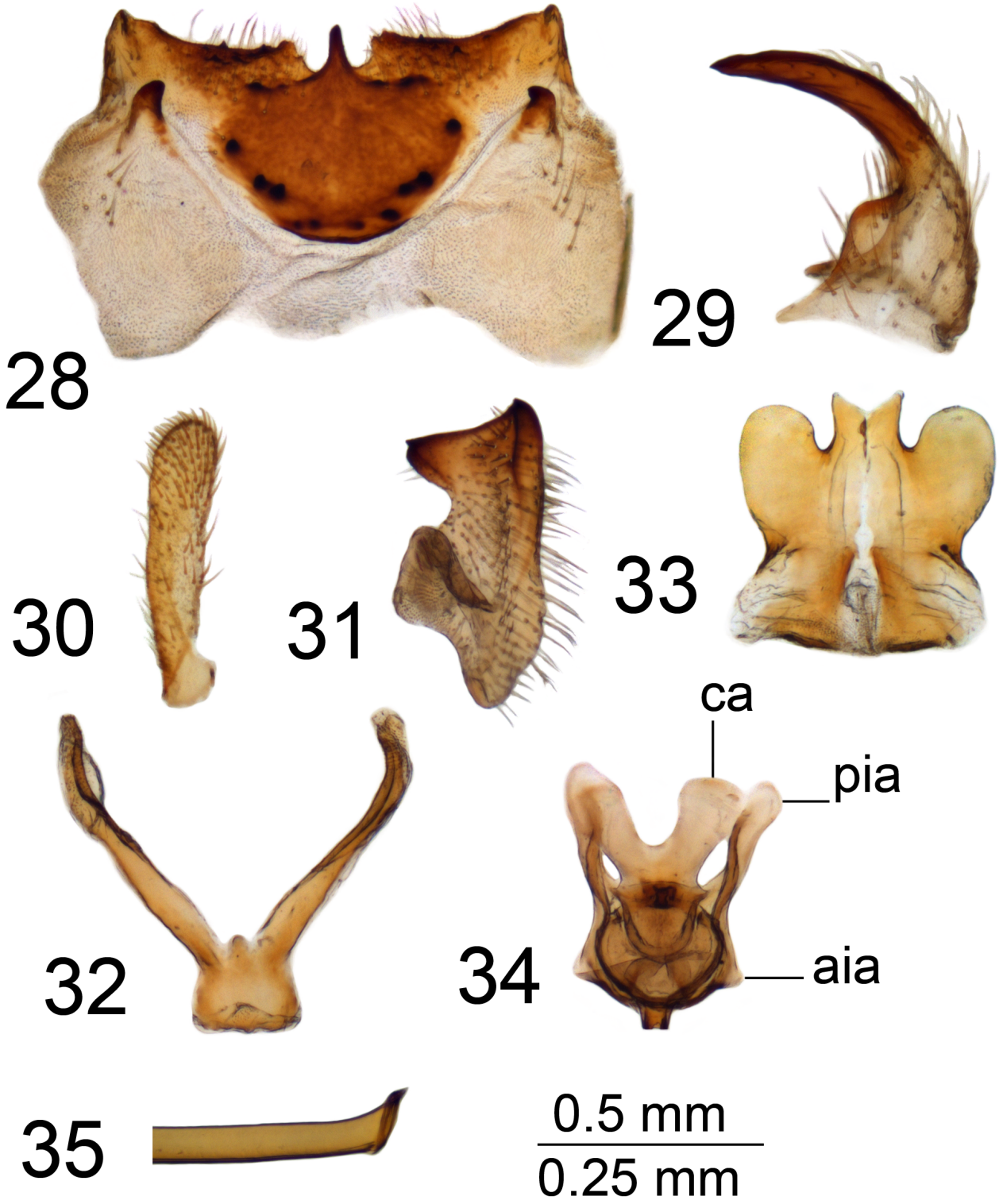
Elevation range in Mongolia. Adults were collected at altitudes ranging from less than 1600 m to 2500 m.

Period of activity. Adults are active from the middle of June through to the end of July.

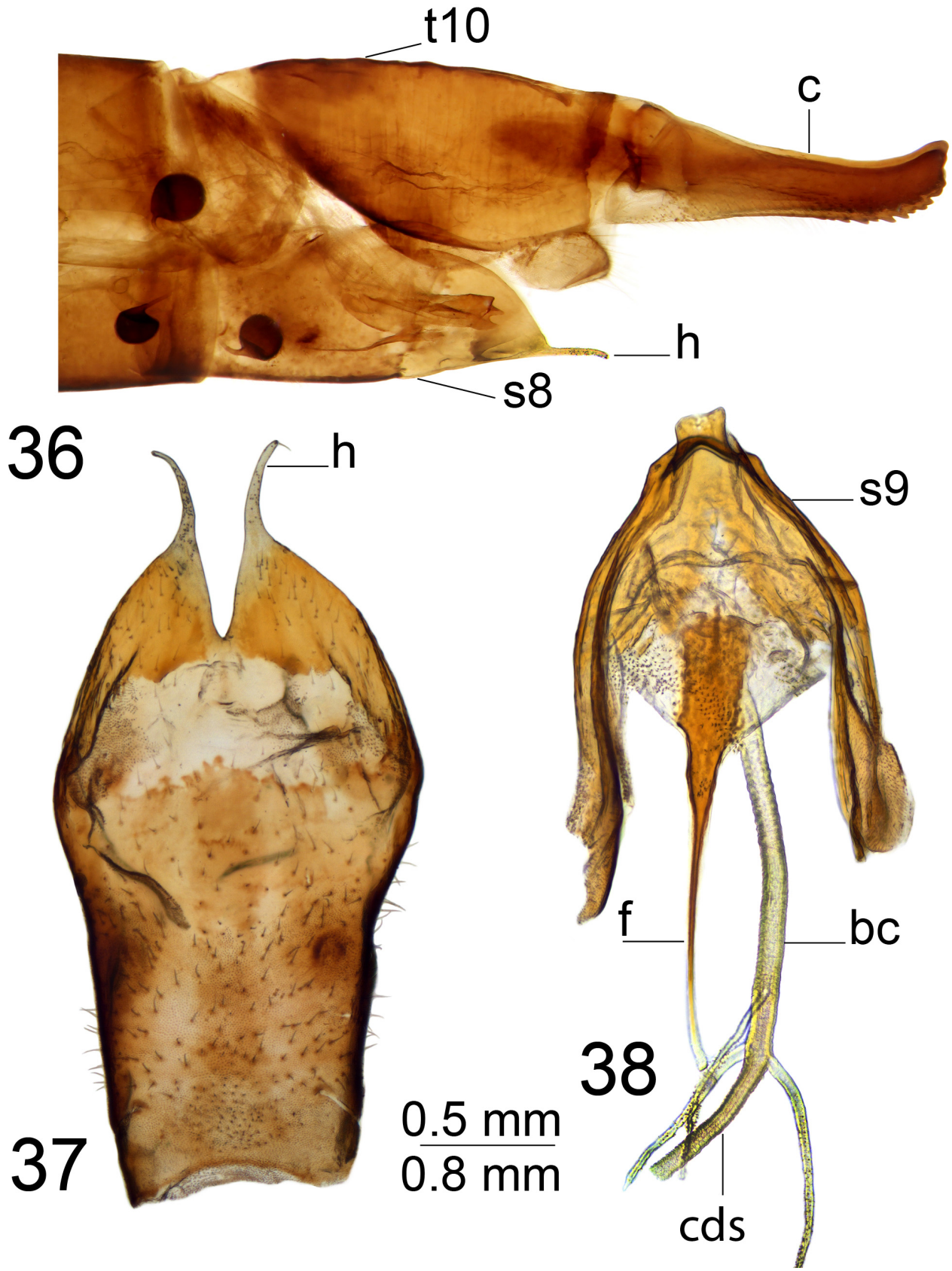
Known distribution. Kyrgystan, Mongolia (Map 1) and Russia (western part of Siberia, Far East).

Redescription. Male. Body length 14.5–15.5 mm, wing length 15.3–17.2 mm. General body coloration blackish, heavily gray pruinose.

Head. Black gray pruinose. Vertex and occiput heavily gray pruinose with dark median line. Rostrum black with distinct nasus. Antenna 13-segmented, if bent backward extending beyond base of wing. Scape, pedicel and flagellum black. Each flagellomere except first with weak basal enlargement and deeply incised. Apical flagellomere very small, reduced, distinctly shorter than preceding flagellomere. Verticils shorter than corresponding segments. Palpus black.



FIGURES 28–35. Hypopygium of male *T.* (*Vestiplex*) *mediovittata*. **28.** Tergite 9, dorsal view; **29.** Gonocoxite, lateral view; **30.** Left outer gonostylus, lateral view; **31.** Left inner gonostylus, lateral view; **32.** Gonocoxal fragment, dorsal view; **33.** Aedeagal guide, ventral view; **34.** Sperm pump, dorsal view; **35.** Distal part of aedeagus, lateral view. Abbreviations: aia, anterior immovable apodeme; ca, compressor apodeme; pia, posterior immovable apodeme. Scales of 28–34 = 0.5 mm, 35 = 0.25 mm.



FIGURES 36–38. Ovipositor of female *T.* (*Vestiplex*) *mediovittata*. **36.** Ovipositor, left lateral view; **37.** Sternite 8 with hypovalvae, ventral view; **38.** Sternite 9, furca and bursa copulatrix, dorsal view. Abbreviations: bc, bursa copulatrix; c, cercus; cds, cul-de-sac of bursa copulatrix; f, furca; h, hypovalva; s8, sternite 8; s9, sternite 9; t10, tergite 10. Scales of 36 = 0.8 mm, 37–38 = 0.5 mm.

Thorax. Blackish, gray pruinose. Pronotum gray with median line. Prescutum and presutural scutum with 4 poorly defined longitudinal stripes narrowly bordered by brown. Intermediate pair fused into broad brown median stripe. Postsutural scutum gray, scutal lobe with 2 darkened spots. Scutellum and postnotum gray with median line. Pleura heavily gray pruinose. Coxae heavily gray pruinose. Trochanters and femora reddish brown, distal part of femora very broadly blackened. Tibiae and tarsal segments brown. Tarsal claws without tooth. Wing indistinctly patterned with brown. Halter with brown stem and knob.

Abdomen. Blackish, dusted with gray. Tergite 1 heavily gray pruinose, succeeding tergites brownish black. Lateral and caudal margins of tergites pale. Sternites blackish, sparsely dusted with gray.

Hypopygium. Black. Tergite 9 forming black polished plate (Fig. 28). Posterior margin of tergal plate broadly truncated, provided with microscopic denticles, with broad median U-shaped incision with acute spine on bottom. Lateral angle of tergite acute. Median area of tergal saucer rounded, anterior portion with raised black denticles. Lateral portion of tergite 9 with additional stout horn-shaped projection directed posteriorly. Gonocoxite ends with curved blackened horn (Figs 5, 29). Outer gonostylus straight, finger-shaped (Fig. 30). Inner gonostylus in shape of nearly straight plate, dorsally with black point, beak extended into obtuse rostrum with distal margin blackened, tipped with small tooth (Fig. 31). Gonocoxal fragment with medial sclerites slender, fused anteriorly into broad base, forming V-shaped structure (Figs 5, 32). Lateral sclerite very small and inconspicuous. Aedeagal guide in shape of depressed flattened plate, posteriorly produced into round shoulders (Fig. 33). Sperm pump with central vesicle slightly swollen (Fig. 34). Compressor apodeme with median incision. Posterior immovable apodeme about as long as compressor apodeme. Anterior immovable apodeme indistinct. Aedeagus shaped as moderately long tube, about 3X as long as sperm pump, basally dark brown, remainder yellow (Fig. 11). Distal part of aedeagus funnel shaped (Fig. 35).

Female. Body length 19.7–26.2 mm, wing length 15.9–18.7 mm (Fig. 2). Generally similar to male. Antenna dark brown, short, flagellomeres cylindrical. Prescutum and presutural scutum with 4 distinct longitudinal stripes narrowly bordered by brown. Postsutural scutal lobes each with 2 spots bordered by brown. Abdomen usually blackish grey pruinose, sometimes tergites dark brown.

Ovipositor (Figs 36–38). Tergite 10 shiny, dark brown. Cercus brownish yellow, shorter than tergite 10, relatively broad and flattened, with tip obtusely rounded, outer margin with rough serration (Fig. 36). Hypovalva pale yellow, filamentous with short trichia at tip (Fig. 37). Median incision between hypovalvae deeper than posterior margin of sternite 8. Sternite 9 posteriorly obtuse (Fig. 38). Furca anteriorly long and narrow, posteriorly broad, membranous except median sclerotisation. Bursa copulatrix and spermathecal ducts without sclerotisation. Spermatheca nearly oval, broadened at base (Fig. 22).

Remarks. *Tipula* (*V.*) *mediovittata* was described by Mik (1889) from a single female collected from Kyrgyztan and preserved in the Diptera collection of the NHMV. The synonymy *T.* (*V.*) *mediovittata* = *T.* (*V.*) *kamchatkana* **syn. nov.** was established after comparison of type specimens of both taxa and additional non-type material collected in Mongolia. Females of *T.* (*V.*) *mediovittata* can be easily recognized by the blackish gray pruinose body coloration, dark antenna, brownish yellow cercus with tip obtusely rounded and outer margin with rough serration.

Savchenko (1964) assumed that *T.* (*V.*) *hummeli* Alexander, 1936a was possibly a synonym of *T.* (*V.*) *mediovittata*. *Tipula* (*V.*) *hummeli* is known only from a single female collected from China, Gansu Province (Alexander 1936a). Since the ovipositor of *T.* (*V.*) *hummeli* is broken, the synonymy with *T.* (*V.*) *mediovittata* remains unconfirmed.

Tipula (*V.*) *leucoprocta* species group

The *leucoprocta* species group was proposed by Savchenko (1960, 1964) and includes the following Palaearctic and Oriental species: *T.* (*V.*) *aldrichiana* Alexander, 1929, *T.* (*V.*) *balioptera* Loew, 1863, *T.* (*V.*) *coronifera* Savchenko, 1960, *T.* (*V.*) *kashkarovi* Stackelberg, 1944, *T.* (*V.*) *kiritshenkoi* Savchenko, 1960, *T.* (*V.*) *laccata* Lundström & Frey, 1916, *T.* (*V.*) *leucoprocta* Mik, 1889, *T.* (*V.*) *mitchelli* Edwards, 1927, *T.* (*V.*) *sintenisi* Lackschewitz, 1933, *T.* (*V.*) *subcentralis* Alexander, 1918, *T.* (*V.*) *tanycera* Alexander, 1961, *T.* (*V.*) *tchukchi* Alexander, 1934 and *T.* (*V.*) *wrangeliana* Stackelberg, 1944. *Tipula* (*V.*) *aldrichiana* and *T.* (*V.*) *balioptera* are also recorded from the Nearctic Region. Males of the *leucoprocta* species group are characterized by the following features: gonocoxite simple, unarmed; tergite 9 forming a large concave sclerotised plate with extensive saucer embracing the entire mid-dorsal area, its

anterior and lateral portions raised into sclerotised border; the border laterally produced into slender acute teeth so that tergite 9 shows two points in lateral view. Additional features for the *leucoprocta* group are listed here for the first time: male gonocoxal fragment with lateral sclerite well-developed, bilobed; medial sclerites fused into conspicuous anterior apodeme with posterior (distal) parts forming arched structure; some species have additional posterior apodeme; female with bursa copulatrix and associated structures specific: basal parts of spermathecal ducts sclerotised, in some cases wall of bursa copulatrix at connection sites with spermathecal ducts also sclerotised.

Mongolian species of the *leucoprocta* species group may be separated into two subgroups based on the shape of tergite 9 and the gonocoxal fragment. *Tipula* (*V.*) *coronifera*, *T.* (*V.*) *kiritshenkoi*, *T.* (*V.*) *leucoprocta* and *T.* (*V.*) *subcentralis* have tergite 9 with saucer crescent-shaped and the gonocoxal fragment is without posterior apodeme. *Tipula* (*V.*) *sintenisi* has an unusually narrowed tergal plate, but the shape of the gonocoxal fragment is the same as for the previously mentioned species. *Tipula* (*V.*) *balioptera*, *T.* (*V.*) *laccata* and *T.* (*V.*) *tchukchi* have nearly rectangular or polygonal tergal saucer and gonocoxal fragment with additional posterior apodeme.

Tipula (*Vestiplex*) *balioptera* Loew

(Figs 8, 22, 39–49; Map 2)

Tipula balioptera Loew, 1863: 284; Alexander, 1915.
Tipula (*Vestiplex*) *balioptera*: Alexander, 1943; 1965; Starkevich & Paramonov, 2016: 82.

Type material examined. LECTOTYPE ♂: **CANADA,** English River [date unknown], Kennicot (MCZ).

Additional material examined. CANADA. Alberta: 1 ♂, Banff, 9.vii.1922, C.B.D. Garrett (USNM). **Ontario:** 1 ♂, Iroquis Falls, 22.vi.1987 (CNC); **Quebec:** 1 ♂, Bradore Bay, 23.vii.1929, W.J. Brown (CNC); 1 ♂, Ft. Chimo, 24.vii.1948, H.H. Macleod, (CNC); 2 ♂, 2 ♀, Great Whale R., 8.vii.1949, J.R. Vockeroth (CNC). **USA. Alaska:** 2 ♂, Anchorage, 20.vii.1978, P.H. Arnaud, Jr., at light, R.W. Doane Collection (CAS); 1 ♂, No. 31 Glenn Hwy, Matanuska val. 60 mi. NE Anchorage, 4.vii.1957, G.W. Byers (SEMC); 1 ♂, No. 18, 15 mi. SE Anchorage, 28.vi.1957, G.W. Byers (SEMC); 3 ♂, Alcan Hwy, Keystone Canyon, 5 mi. W Valdez, 9.vii.1949, E.K. Miller, No. 21 (UMMZ); 2 ♂, Anchorage, 1–15.vii.1930, B. Locker (UMMZ); 1 ♀, Mt. McKinley NP, 3900 ft, 24.vi.1957, G.W. Byers & party (USNM).

MONGOLIA. Bayan-Olgiy Aimag: 6 ♂, Deluun Soum, Gantsmodi Gol 27 km S Deluun, N47.66395, E90.71841, 2196 m, 5–6.vii.2009, S. Podenas, MAIS2009070502. **Khovd Aimag:** 4 ♂, 1 ♀, Monkhkhayrkhan Soum, Bortin Gol ~14 km SSE Monkhkhayrkhan, N46.92136, E91.91077, 2311 m, 15.vii.2009, *Salix* shrubs, S. Podenas, MAIS2009071501.

Elevation range in Mongolia. Adults were collected at altitudes ranging from 2190 m to 2300 m.

Period of activity. Adults are active from early to the middle of July.

Known distribution. Canada, Russia (Yakutiya) and USA (Oosterbroek 2019). Recorded here for the first time from Mongolia (Map 2).

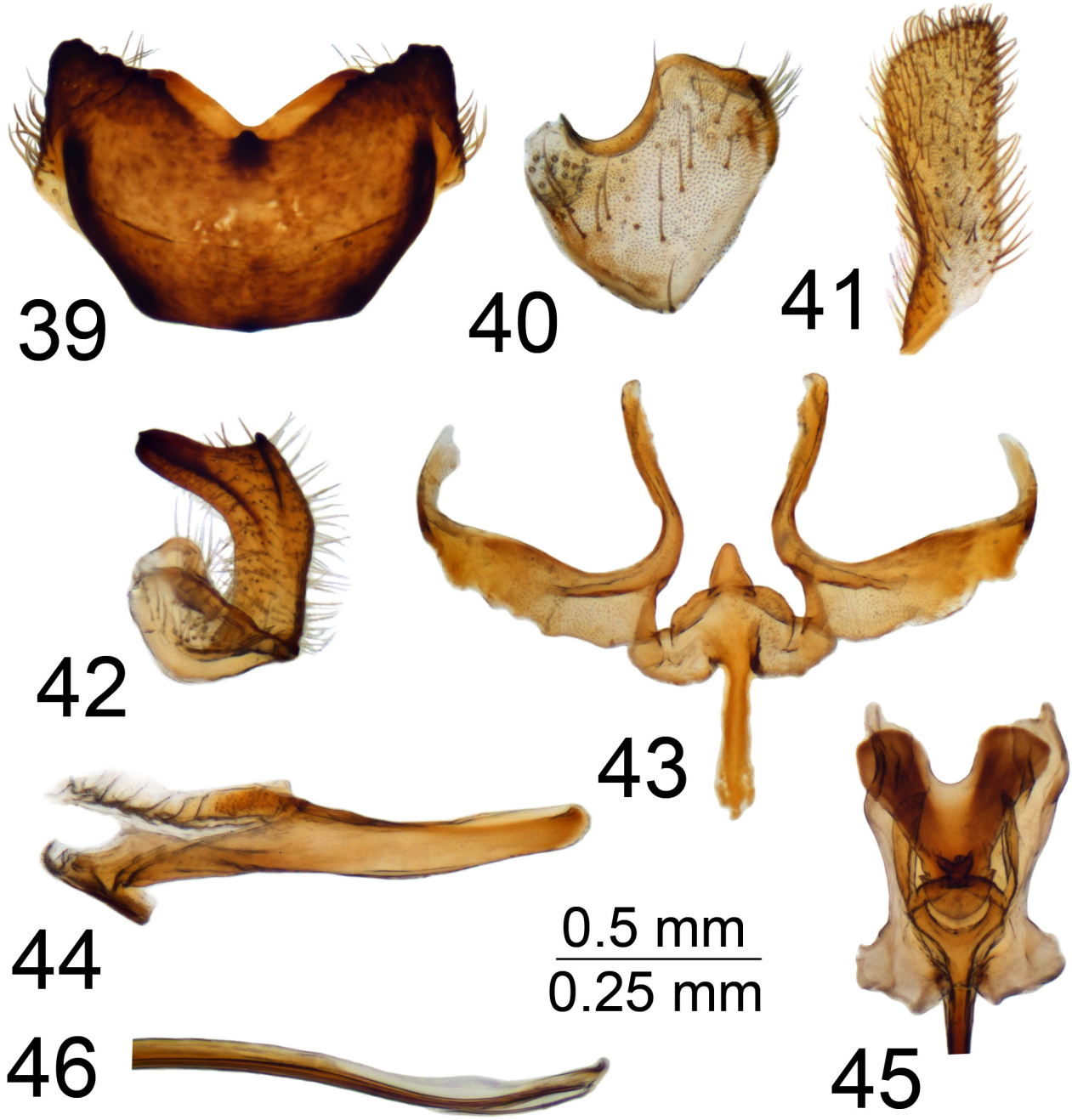
Redescription. Male. Body length 13.5–16.1 mm, wing length 13.9–15.4 mm. General body coloration brownish yellow.

Head. Brownish gray, vertex and occiput gray pruinose with dark brown median line. Rostrum brownish, sparsely dusted with gray, nasus short. Antenna 13-segmented, if bent backward reaching base of wing. Scape and pedicel yellow, first flagellomere yellowish, succeeding flagellomeres dark brown. Each flagellomere, except first, with small basal enlargement, slightly incised and darkened. Apical flagellomere small, distinctly shorter than preceding flagellomere. Verticils as long as respective segments. Palpus brown.

Thorax. Brownish gray. Pronotum yellowish, gray pruinose with brown median line. Prescutum and presutural scutum brown, gray pruinose with 4 indistinct darker longitudinal stripes bordered by brown. Intermediate pair separated by yellowish line. Interspace between median and lateral stripes gray with light setae. Postsutural scutum dark brown, gray pruinose. Scutal lobe with 2 darkened spots. Scutellum and postnotum brownish with median line. Pleura brown, sparsely dusted with gray. Coxa yellowish, sparsely dusted with gray. Trochanters, femora and tibiae yellowish. Tarsal segments passing into brown. Distal part of femora and tibiae darkened. Tarsal claws without tooth. Wing indistinctly patterened with brown. Halter with pale stem and darkened knob.

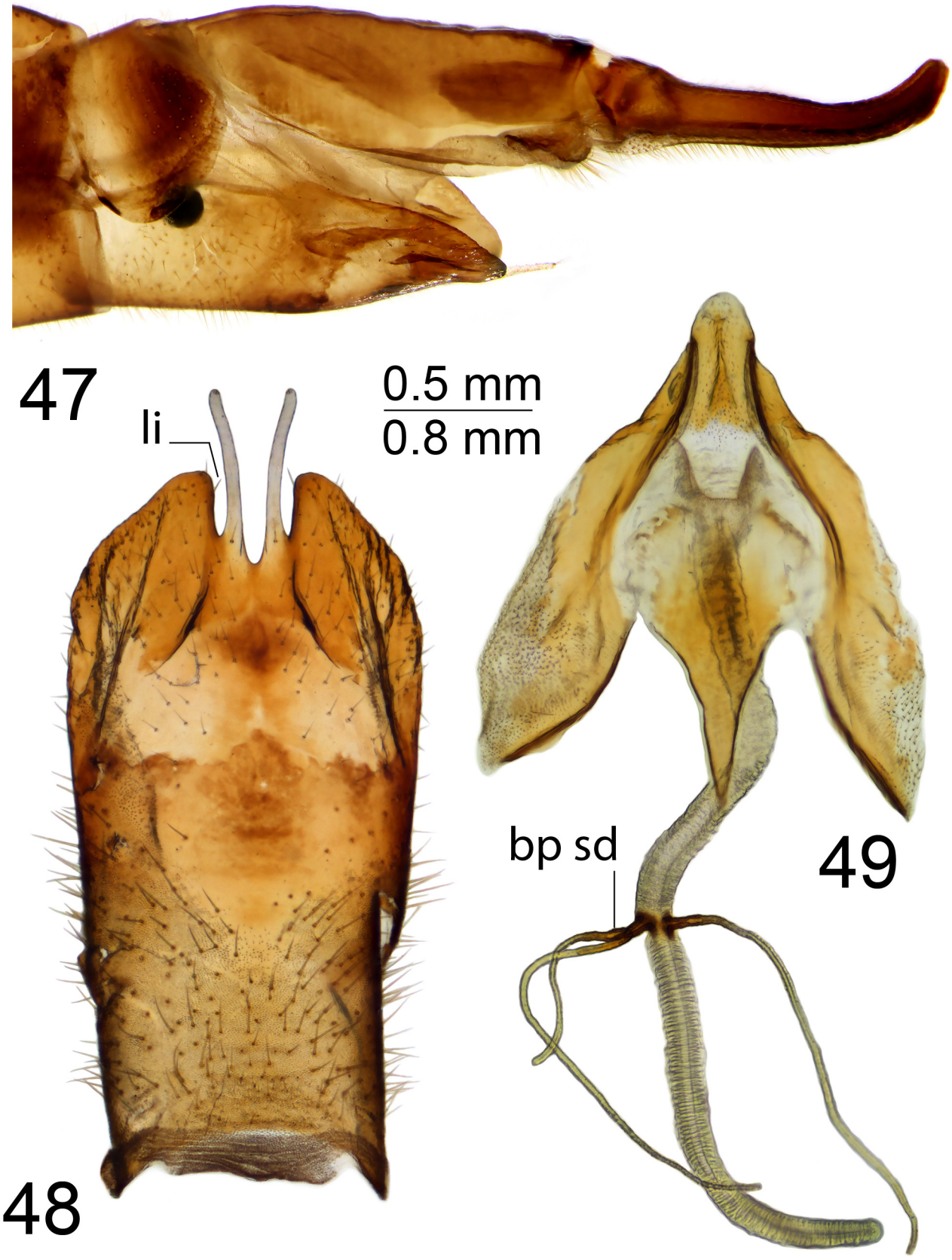
Abdomen. Yellow, trivittate, with median line narrow broadly interrupted, reaching tergite 6. Lateral margin of tergites pale. Tergite 1 yellow, sparsely dusted laterally, tergites 2–4 yellow, tergites 5–6 laterally dark brown, ter-

gites 7–9 dorsolaterally dark brown. Sternite 1 slightly dusted with gray, sternites 2–4 yellow, sternites 5–6 brownish, sternites 7–8 dark brown.

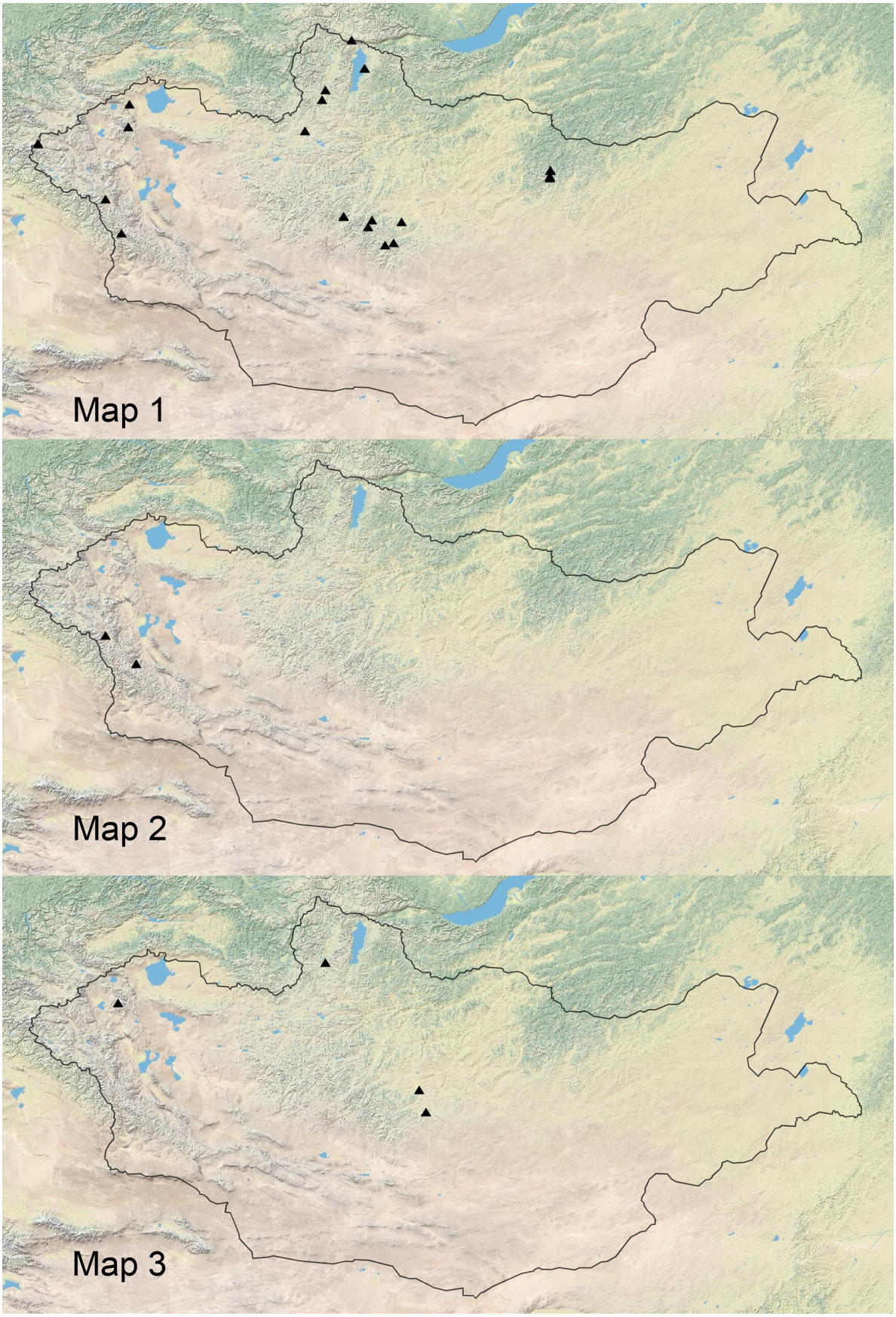


FIGURES 39–46. Hypopygium of male *T.* (*Vestiplex*) *balioptera*. **39.** Tergite 9, dorsal view; **40.** Gonocoxite, lateral view; **41.** Left outer gonostylus, lateral view; **42.** Left inner gonostylus, lateral view; **43.** Gonocoxal fragment, dorsal view; **44.** Aedeagal guide, lateral view; **45.** Sperm pump, dorsal view; **46.** Distal part of aedeagus, lateral view. Scales of 39–45 = 0.5 mm, 46 = 0.25 mm.

Hypopygium. Brownish yellow, at base slightly broader than abdomen. Tergite 9 forming large concave polygonal sclerotised saucer (Fig. 39). Main body of tergal saucer brownish yellow with blackened rim. Posterior margin of tergal saucer broadly emarginated, with broad median V-shaped notch, with 2 yellow oblong projections and black median spinous tooth, with small denticles on either side. Lateral angle of tergal saucer extended as short horn. Anterior and lateral portions of tergal saucer raised into sclerotised border, anterior angle of which armed with black teeth, lateral angle obtuse. Border laterally produced into obtuse point directed caudad and situated under lateral angle; saucer with 2 distal teeth one below other in lateral view. Gonocoxite unarmed (Fig. 40). Outer gonostylus



FIGURES 47–49. Ovipositor of female *T.* (*Vestiplex*) *balioptera*. **47.** Ovipositor, left lateral view; **48.** Sternite 8 with hypovalvae, ventral view; **49.** Sternite 9, furca and bursa copulatrix, dorsal view. Abbreviations: bp sd, basal part of spermathecal duct; li, lateral incision. Scales of 47 = 0.8 mm, 48–49 = 0.5 mm.



MAPS 1–3. Distribution maps of *T.* (*Vestiplex*) crane flies in Mongolia. **1.** *T.* (*Vestiplex*) *mediovittata*; **2.** *T.* (*Vestiplex*) *balioptera*; **3.** *T.* (*Vestiplex*) *coronifera*.

flattened, nearly parallel sided with apex oblique (Fig. 41). Inner gonostylus in shape of curved plate, dorsally with small acute spine, beak extended into rostrum with distal margin blackened, tipped with small tooth (Fig. 42). Gonocoxal fragment large with lateral and medial sclerites well-developed (Fig. 43). Medial sclerites fused, anterior apodeme narrow, posterior part in shape of short and arched arm, posterior apodeme rounded with triangular apex. Lateral sclerite large and bilobed, outer lobe flattened. Aedeagal guide relatively narrow tube-shaped structure (Fig. 44). Sperm pump with central vesicle small and flattened (Fig. 45). Compressor apodeme with median incision. Posterior immovable apodeme slightly longer than compressor apodeme and slightly broadened. Anterior immovable apodeme irregularly shaped. Adeagus shaped as elongate tube, 6.1X as long as sperm pump, basally dark brown, medially brown, passing into yellow towards apex. Distal part ventrally membranous, shovel-shaped (Fig. 46).

Female. Body length 21.4 mm, wing length 15.0 mm. Generally similar to male. Antenna short, if bent backward not reaching the base of wing.

Ovipositor (Figs 47–49). Tergite 10 shiny, brownish-yellow. Cercus yellowish, slightly shorter than tergite 10, with tip curved dorsally, outer margin with rough and obtuse serration (Fig. 47). Hypovalva in shape of pale elongated filament (Fig. 48). Median incision between hypovalvae deeper than posterior margin of sternite 8. Lateral incision deep and narrow (about 6X deeper than wider). Lateral angle of sternite 8 appearing as short obtuse lobe. Sternite 9 with anterior part broad, posterior part round, slightly extended (Fig. 49). Furca anteriorly narrowed, posteriorly broad. Bursa copulatrix with spermathecal ducts sclerotised at base, shaped as short, narrow, dark brown process. Wall of bursa copulatrix on connection site with spermathecal ducts with sclerotisation. Cul-de-sac of bursa copulatrix slightly curved. Spermatheca spherical, lightly broadened at base (Fig. 18).

Remark. This is a new record for the Mongolian fauna and the second record for the Palaearctic Region, previously recorded from Yakutiya, Russia (Starkevich & Paramonov 2016). The Mongolian specimens differ from Nearctic specimens by antennal features. Mongolian specimens have a dark brown flagellum (f3–f13), while the Nearctic specimens have a bicolored flagellum. The male genitalia of Mongolian specimens are identical to Nearctic specimens. Mongolian females have a rounded tipped cercus, while Nearctic specimens have a narrowed tip with shallow preapical incision.

Tipula (*Vestiplex*) *coronifera* Savchenko

(Figs 25, 50–62; Map 3)

Tipula (*Vestiplex*) *coronifera* Savchenko, 1960: 210; 1964: 201; Oosterbroek & Theowald, 1992: 154.

Type material examined. HOLOTYPE ♂: **MONGOLIA,** Khangai Mts. (south-east), Lamyn-Gegen, 16 VII 1926 (Kirichenko), Nr 750 (ZIN). **PARATYPE:** ♀, Nr 770, topotypic (ZIN).

Additional material examined. MONGOLIA. Uvs Aimag: 1 ♀, Khovd Soum, Shiver/Ireg Gol, 25 km NE Khovd, N49.43119, E91.19093, 1964 m, 5–6.vii.2010, MAIST, MAIS2010070504. **Hovsgol Aimag:** 1 ♂, Ulaan-Uul Soum, unnamed trib. of Beltes Gol 34 km NE Bayanzurh, 2113 m, N50.42980, E99.21690, 28.vi.2006, J. Gelhaus #1054-A, SRP06062803. **Ovorhangay Aimag:** 1 ♀, Zuunbayan-Ulaan Soum, Millenium Road A0301 marker 380.6 km ~50 km NE Arvayheer, N46.60919, E103.10400, 1820 m, 5.vii.2004, SRPT, SRP04070502.

Elevation range in Mongolia. Adults were collected at altitudes ranging from 1960 m to 2100 m.

Period of activity. Adults are active from the end of June through to early July.

Known distribution. Mongolia (Map 3).

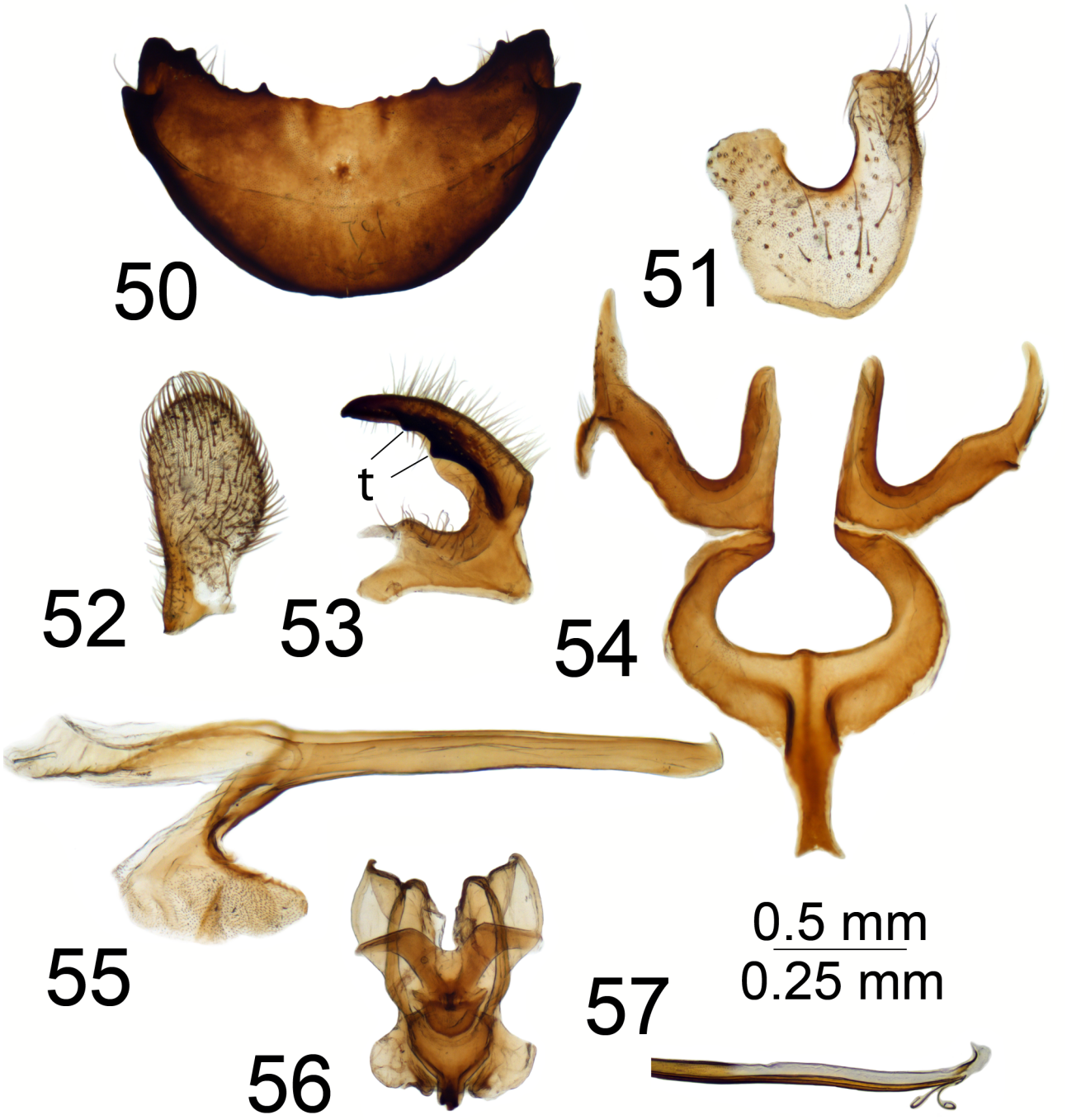
Redescription. Male. Body length 20.4 mm, wing length 20.8 mm. General body color brownish yellow.

Head. Brownish yellow, vertex and occiput brown gray pruinose with brown median line. Rostrum brownish yellow, nasus distinct. Antenna 13-segmented, if bent backward reaching base of wing. Scape and pedicel yellow, first flagellomere yellow, darkened brown mesally. Flagellomeres 2–6 brownish, succeeding flagellomeres yellowish, apical flagellomere brownish, small, reduced, distinctly shorter than preceding flagellomere. Each flagellomere, except first, with darkened basal enlargement and moderately incised. Verticils shorter than respective segments. Palpus brown.

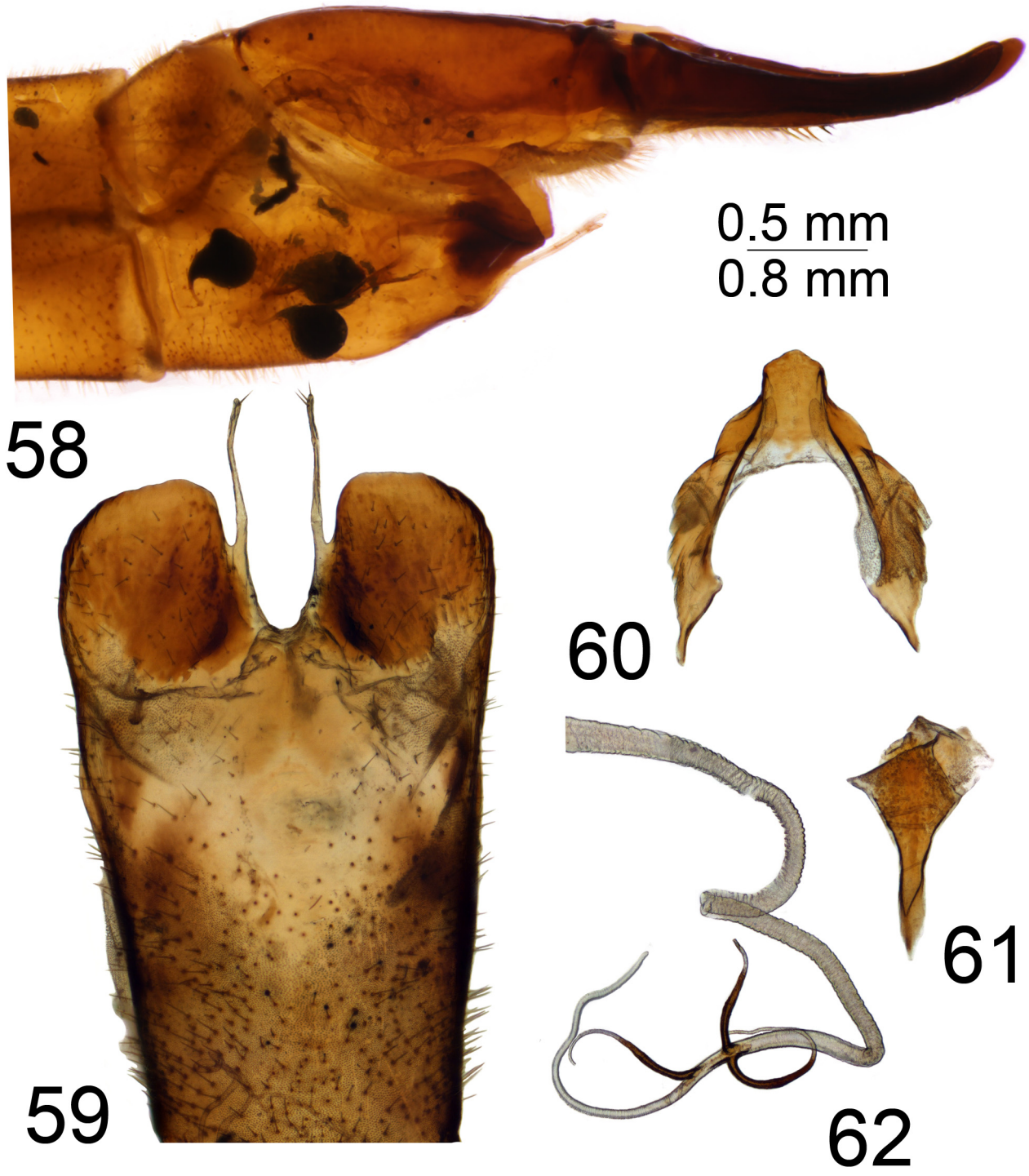
Thorax. Brownish gray. Pronotum brownish yellow with brown median line. Prescutum and presutural scutum brown with 4 darker longitudinal stripes bordered by brown, intermediate stripes completely separated from each other. Interspace between median and lateral stripes yellowish with pale setae arising from dark sockets. Postsutural

scutum brown. Scutal lobe with 2 indistinct spots bordered by brown. Scutellum brownish, postnotum brownish-yellow, with brown median line. Pleura brown, sparsely dusted with gray. Coxae yellow, sparsely dusted with grey. Trochanters, femora and tibiae yellow. Tarsal segments indistinctly passing into brownish. Distal part of femora and tibiae narrowly darkened. Tarsal claws without tooth. Wing indistinctly patterned. Halter with pale stem and brown knob.

Abdomen. Yellow; tergite 1 laterally darkened and sparsely pruinose. Dorsal median stripe indistinct, interrupted at caudal margins of segments. Lateral stripe brownish and distinct. Lateral margins of tergites pale. Sternite 1 sparsely dusted with gray.



FIGURES 50–57. Hypopygium of male *T.* (*Vestiplex*) *coronifera*. **50.** Tergite 9, dorsal view; **51.** Gonocoxite, lateral view; **52.** Left outer gonostylus, lateral view; **53.** Left inner gonostylus, lateral view; **54.** Gonocoxal fragment, dorsal view; **55.** Aedeagal guide, lateral view; **56.** Sperm pump, dorsal view; **57.** Distal part of aedeagus, lateral view. Abbreviation: t, mid-dorsal teeth of inner gonostylus. Scales of 50–56 = 0.5 mm, 57 = 0.25 mm.



FIGURES 58–62. Ovipositor of female *T.* (*Vestiplex*) *coronifera*. **58.** Ovipositor, left lateral view; **59.** Sternite 8 with hypovalvae, ventral view; **60.** Sternite 9, dorsal view; **61.** Furca, dorsal view; **62.** Bursa copulatrix, dorsal view. Scales of 58 = 0.8 mm, 59–62 = 0.5 mm.

Hypopygium. Brown, at base slightly broader than abdomen. Tergite 9 in shape of large concave crescent sclerotised saucer (Fig. 50). Main body of tergal saucer brownish yellow with blackened rim. Posterior margin of tergal saucer broadly emarginated, with small denticles or teeth. Median V-shaped notch inconspicuous. Lateral angle of tergal saucer with broad obtuse tooth. Anterior and lateral portions of tergal saucer raised into sclerotised border. Border anteriorly inconspicuously toothed, laterally produced into acute tooth directed caudad and situated under lateral angle of tergal saucer so tergite 9 with 2 teeth in lateral view. Gonocoxite unarmed (Fig. 51). Outer gonostylus flattened, nearly oval (Fig. 52). Inner gonostylus in shape of claw-shaped plate, with 2 mid-dorsal teeth,

anterior tooth twice as large as posterior. Beak extended into blackened, obtuse rostrum (Fig. 53). Gonocoxal fragment large with lateral and medial sclerites well-developed (Fig. 54). Medial sclerites fused, anterior apodeme long and broad, posterior part flat and arched. Lateral sclerite large and bilobed. Aedeagal guide in shape of long, slender tube (Fig. 55). Sperm pump with central vesicle small and flattened (Fig. 56). Compressor apodeme with median incision. Posterior immovable apodeme much longer than compressor apodeme, large and extended laterally into broad plate. Anterior immovable apodeme in shape of rounded plate. Aedeagus shaped as very long tube similar to *T.* (*V.*) *subcentralis*. Distal part ventrally membranous, shovel-shaped (Fig. 57).

Female. Body length 26.8–27.0 mm, wing length 22.0–26.6 mm. Antenna short, flagellomeres except first with very small incisions. Mesopleura brown, gray pruinose. Distal part of femora darkened.

Ovipositor (Figs 58–62). Tergite 10 shiny, brown. Cercus brownish yellow, slender, about as long as tergite 10, with tip narrowed, outer margin almost smooth with small serration (Fig. 58). Hypovalva in shape of pale, elongated slender filament, with short trichia at tip (Fig. 59). Median incision between hypovalvae deeper than posterior margin of sternite 8. Lateral incision relatively deep and narrow (about twice as deep as maximal width). Lateral angle of sternite 8 rounded. Sternite 9 with anterior part slightly broadened, posterior part rounded (Fig. 60). Furca anteriorly narrowed, posteriorly broad (Fig. 61). Bursa copulatrix with spermathecal ducts sclerotised at base, in shape of lightly curved, slender dark brown process. Wall of bursa copulatrix on connection site with spermathecal ducts partially sclerotised, sclerotisation extended short distance along wall (Fig. 62). Cul-de-sac of bursa copulatrix curved. Spermatheca spherical, greatly broadened at base (Fig. 25).

Remarks. An endemic species for Mongolia.

Tipula (*Vestiplex*) *kiritshenkoi* Savchenko

(Figs 13, 26, 63–74; Map 4)

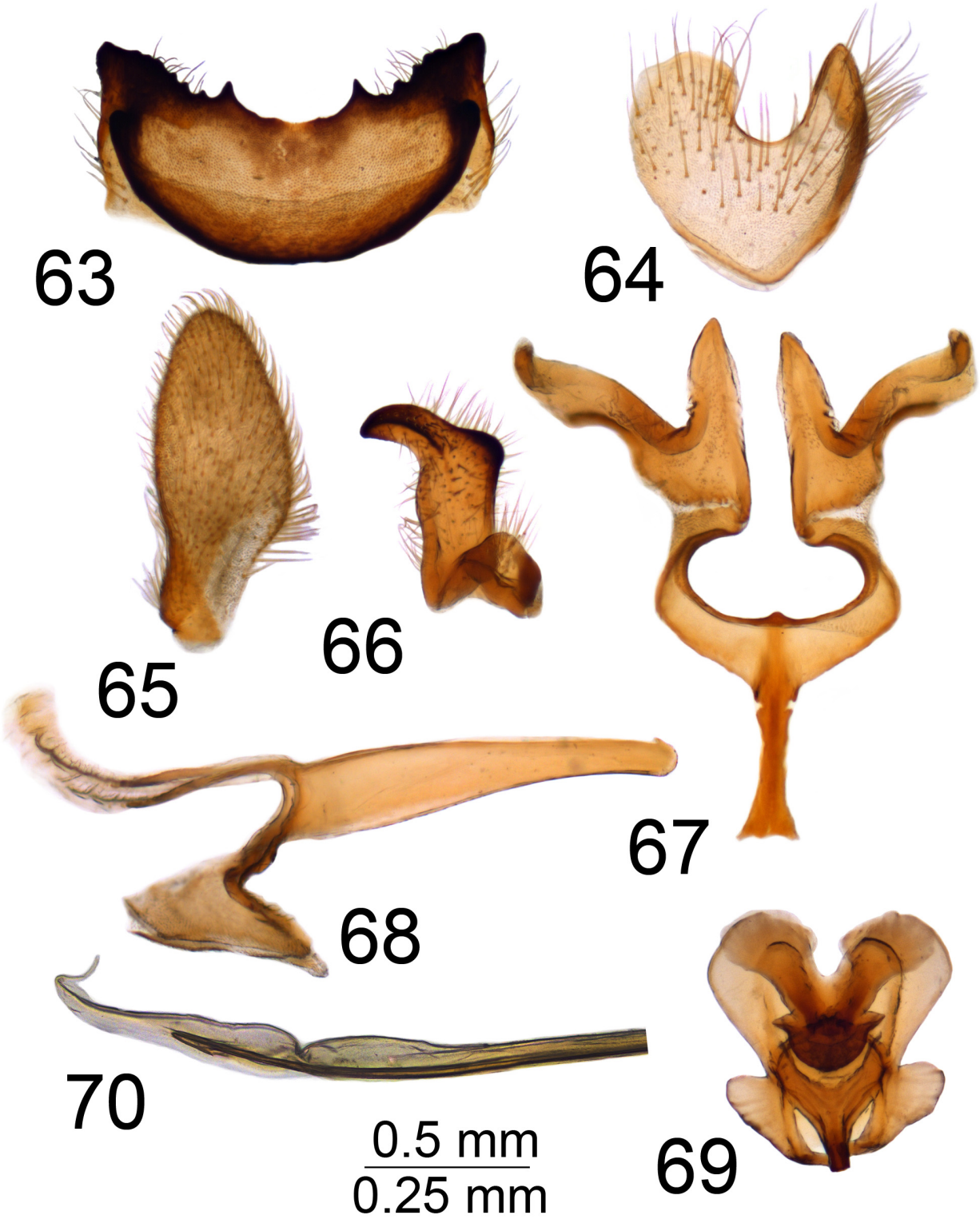
Tipula (*Vestiplex*) *kiritshenkoi* Savchenko, 1960: 213; 1964: 203; Oosterbroek & Theowald, 1992: 156.

Type material examined. HOLOTYPE ♂: **MONGOLIA,** Khangai Mts. (south-east), Lamyn-Gegen, 16 VII 1926, Kirichenko (ZIN). **PARATYPES:** 6 ♂, 2 ♀, topotypic (ZIN).

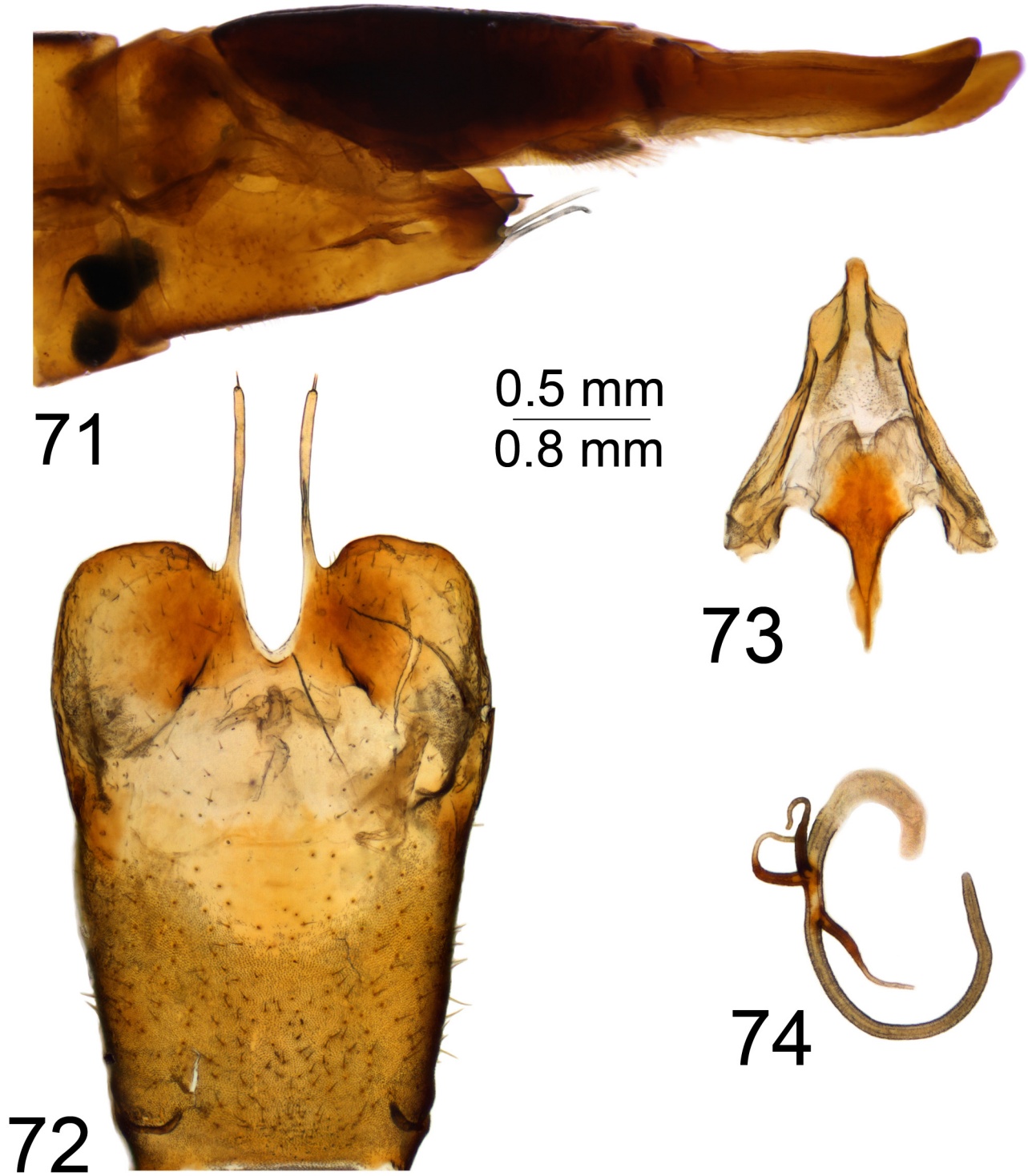
Additional material examined. MONGOLIA. Arkhangay Aimag: 1 ♀, Changaj Mountains, between Somon Ichtamir and Somon Culuut, 20 km from Ichtamir, 2150 m, Exp. Dr. Z. Kaszab, Nr. 716, 19.vii.1966 (HNHM); 65 ♂, 13 ♀, Khotont Soum, trib. of Tsagaan Sumiin/Jarantain Gol, ~43 km SW Khotont, N47.07888, E102.16608, 1699 m, 9–10.vii.2004, SRPT, SRP04070902; 7 ♂, 1 ♀, Tsenkher Soum, Nuuriin Khooloi lake ~9km SW Tavanbulag, N47.33933, E101.82093, 1693 m, 10.vii.2004, SRPT, SRP04071001; 2 ♂, Tsenkher Soum, Tsetserleg Gol ~50 km SSW Tavanbulag, N47.04409, E101.76352, 1902 m, 11.vii.2004, SRPT, SRP04071102; 5 ♂, Tsenkher soum, Uliin Gol in Budent valley ~60 km SSW Tavanbulag, N46.97927, E101.69877, 2075 m, 11.vii.2004, SRPT, SRP04071101; 13 ♂, Tsenkher Soum, Tsetseleg Gol ~17 km SW Tavanbulag, N47.26999, E101.80227, 1684 m, 10–12.vii.2004, SRPT, SRP04071002; 3 ♂, 1 ♀, Ikhtamir Soum, NW braid of Khoit Tamir Gol ~25 km SW Ikhtamir, N47.50523, E100.93208, 1728 m, 14–15.vii.2004, SRPT, SRP04071402; 9 ♂, 5 ♀, Chuluut Soum, Khanui Gol ~60 km SW Ikhtamir, N47.50949, E100.57510, 1981 m, 15.vii.2004, SRPT, SRP04071502; 19 ♂, 7 ♀, Chuluut Soum, Khurmen/Davaat Gol 15 km SSE Chuluut/Jargalant, N47.42580, E100.30130, 2104 m, 15–16.vii.2004, SRPT, SRP04071503; 1 ♂, Chuluut Soum, ponds at Egiin Davaa ~47 km SW Chuluut/Jargalant, N47.21198, E99.91114, 2582 m, 16.vii.2004, A.E.Z. Short, J.K. Gelhaus, Enkhnasan, SRP04071601; 10 ♂, 4 ♀, Chuluut Soum, Chuluutin Gol ~45 km SW Chuluut/Jargalant, N47.21768, E99.92824, 2471 m, 16.vii.2004, SRPT, SRP04071602; 3 ♂, Chuluut Soum, Chuluutin Gol ~33 km SW Chuluut/Jargalant, N47.29702, E100.03136, 2287 m, 16–17.vii.2004, SRPT, SRP04071603; 2 ♂, Tariat Soum, Nariin Gichgenii Gol/Urd Terkh Gol ~5 km SE Khorgo/Tariat, N48.12661, E99.94128, 2019 m, 17–18.vii.2004, SRPT, SRP04071702; 2 ♂, Tariat Soum, Terkhiin Tsagan Nuur ~8 km W Khorgo/Tariat, N48.14404, E99.78300, 2057 m, 18.vii.2004, SRPT, SRP04071801; 8 ♂, 2 ♀, Tariat Soum, Khunt Nuur ~3 km SW Tsagaan nuur Brigade, N48.07248, E99.52216, 2062 m, 18.vii.2004, SRPT, SRP04071802; 27 ♂, Khangay Soum, Khoit Ekhnii Gol ~13 km SW Khunt, N47.75747, E99.35827, 2215 m, 18–19.vii.2004, SRPT, SRP04071803. **Bayan Olgii Aimag:** 6 ♂, Tsengel Soum, Sul Uuliin Gol, trib. Tsagaan Gol, Altai-Tavan Bogd NP, N49.10448, E88.04845, 2796 m, 10.vii.2008, S. Podenas, MAIS08071001; 11 ♂, 1 ♀, Tsengel Soum, unnamed trib. Sul Uuliin Gol, Altai-Tavan Bogd NP, N49.11960, E88.0182, 2927 m, 10.vii.1008, R.W. Bouchard, Jr., MAIS08071002; 17 ♂, Tsengel Soum, unnamed trib. of Potitinii Noson Gol, Altai-Tavan Bogd NP, basecamp,

N49.15020, E87.94160, 3087 m, 10.vii.2008, R.W. Bouchard, Jr., MAIS08071003. **Bayankhongor Aimag:** 1 ♂, 1 ♀, Bayankhongor Aimag, Erdenesogt Soum, Shargaljuut Gol near Salkhit Uul and forested hillside, N46.47630, E101.43793, 2414 m, 5.vii.2011, S. Podenas, MAIS2011070504. **Bulgan Aimag:** 1 ♀, Bugat Soum, unnamed trib. of Boorolgiin Gol, N48.99091, E103.26042, 1310 m, 8.vii.2006, SRP06070803; 2 ♂, Bulgan Soum, unnamed hillside trib. of Khairkhan Davaani Gol, N46.94286, E100.85532, 2311 m, 13.vii.2004, J.K. Gelhaus, J.C. Morse, A. E.Z. Short, SRP04071303; 3 ♂, Bulgan Soum, Urd Tamir Gol braid upstream of bridge ~63 km SW Tsetserleg, N47.11192, E101.01048, 2066 m, 13–15.vii.2004, SRPT, SRP04071302. **Hovsgol Aimag:** 2 ♂, See Tunamal nuur, 26 km SW Somon Scharga, 1950 m, Exp. Dr. Z. Kaszab, Nr. 995, 21.vi.1968 (HNHM); 1 ♂, 1 ♀, Alag Mort, 42 km NE Pass Chaldzan Sogotyn davaa, RiverTesijn gol, 1900 m, Exp. Dr. Z. Kaszab, Nr. 1107, 14.vii.1968 (HNHM); 1 ♂, N Somon Chatgal SW shore of Chövsgöl nuur, 1650 m, Exp. Dr. Z. Kaszab, Nr. 1124, 18.vii.1968 (HNHM); 1 ♂, Khovsgol Nuur (lake) area, Khatgal, house yard, 1575 m, 50°25′58″N, 100°09′50″E, 10.vii.1996, E. Hunter #K9610; 1 ♂, 1 ♀, Khovsgol Nuur (lake) at Khatgal (dock), 1657 m, 50°27′45″N, 100°10′20″E, 18.vii.1996, E. Hunter #K9618; 18 ♂, 1 ♀, Chandmani-Ondor Soum, unnamed trib. of Hohoo Gol, N50.66022, E100.73886, 1566 m, 18.vii.2005, SRPT, SRP05071802; 2 ♀, Chandmani-Ondor Soum, west branch (unnamed) of Khalkhan Gol, upstream of Bolnain Rashaan, 58 km NE Hatgal, N50.78323, E100.79572, 1676 m, 18–19.vii.2005, SRPT, SRP05071803; 2 ♀, east trib. of upper Hohoo Gol (Bugat Gol), 44.5 km NE Hatgal, N50.69174, E10.66691, 1595 m, 19.vii.2005, SRPT, SRP05071902; 10 ♂, 5 ♀, Bayanzurkh Soum, Altargana Gol, 4.2 km N Bayanzurkh, N50.21297, E98.96367, 1662 m, 21–22.vii.2005, SRPT, SRP05072103; 5 ♂, 1 ♀, cold spring on southern trib. of Beltesiin Gol, 10.1 km SW Sumber, N50.09674, E99.42659, 1882 m, 22.vii.2005, SRPT, SRP05072202; 8 ♂, 6 ♀, Tumurbulag Soum, Bugcei (Bugceiin) Gol, 45.5 km SW Moron, N49.26168, E99.88242, 1618 m, 23.vii.2005, SRPT, SRP05072301; 10 ♂, 10 ♀, Bayan-Ondor Soum, N49.23175, E99.90027, 1790 m, 23.vii.2005, SRPT, SRP05072302; 5 ♂, 1 ♀, Ulaan-Uul Soum, unnamed trib. (stream) of Beltes Gol, 34.0 km NE Bayanzurh, 2113 m, N50.42980, E99.21690, 28.vi.2006, J.K. Gelhaus #1054-A, SRP06062803; 2 ♂, Ulaan-Uul Soum, Guna (Gunain) Gol (river), 11 km NNW Ulaan-Uul, N50.77518, E99.18892, 1615 m, 4.vii.2006, SRP06070403; 2 ♂, Bayanzurh Soum, Beltes Gol (river), 6 km ENE Bayanzurh, 1682 m, N50.19880, E99.03148, 6.vii.2006, SRP06070601; 3 ♂, Renchinlhumbe Soum, Hog Gol (river), 25 km W Renchinlhumbe, 1569 m, N51.09576, E99.31911, 1.vii.2006, J.K. Gelhaus #1060, SRP06070101; 3 ♂, 1 ♀, Hatgal (N), "Natures door" hotel, approximate coordinates N50.5930000, E100.1826389, 11–12.vii.2012, J.C. Morse, J.K. Gelhaus. **Ovorhangay Aimag:** 1 ♂, Kharkhorin Soum, Sant Uul pass, 23 km SE Shinebrigade, N46.87219, E103.14081, 2007 m, 5.vii.2004, SRPT, SRP04070501; 2 ♂, Zuunbayan-Ulaan Soum, Millenium Road A0301 marker 380.6 km ~50 km NE Arvayheer, N46.60919, E103.10400, 1820 m, 5.vii.2004, SRPT, SRP04070502; 1 ♂, Hujirt Soum, Khavtsaliin Gol valley, N46.76292, E103.02561, 1750 m, 5–6.vii.2004, SRPT, SRP04070504; 1 ♂, Bat-Olziy Soum, braid of Orkhon Gol ~40 km W Khujirt, N46.88586, E102.34386, 1646 m, 6–7.vii. 2004, SRPT, SRP04070603; 1 ♂, Bat-Olziy Soum, Orkhon's Waterfall on Ulaan Gol ~300 m S Orkhon Gol, ~84 km W Khujirt, N46.78742, E101.96021, 1809 m, 7.vii.2004, SRPT, SRP04070701; 9 ♂, 3 ♀, Bat-Olziy Soum, Ulaan Gol ~93 km W Khujirt, N46.73093, E101.88583, 1894 m, 7–8.vii.2004, SRPT, SRP04070702; 3 ♂, Uyanga Soum, Khangai Mountains, Khuysiyn Naiman Nuur Strictly Protected Area, streams entering east side of Shireet Nuur (Lake), down from davaa (pass), N46.51908, E101.84940, 2446 m, 7.vii.2011, C.R. Nelson & T.A. McKnight & MAIST, MAIS2011070701; 3 ♂, Uyanga Soum, Khangai Mountains, Shuranga Gol, just outside entrance to Khuysiyn Naiman Nuur Strictly Protected Area, N46.47528, E101.88175, 2451 m, 7.vii.2011, S. Podenas, MAIS2011070703; 3 ♂, Uyanga Soum, Ovtiyn Gol, 20 km SE Bat-Olziy, N46.64265, E102.30885, 2069 m, 8.vii.2011, S. Podenas, MAIS2011070801. **Selenge Aimag:** 1 ♀, Baruunharaa Soum, Haraa Gol, 2.3 km S Bayangol, N48.87738, E106.12375, 807 m, 4–5.vii.2005, SRPT, SRP05070402; 2 ♂, Selenge Soum, West Branch of Khartsain Gol, 33.8 km WNW Hyalgant, N49.6509, E103.88078, 1480 m, 8–9.vii.2005, SRPT, SRP05070802. **Uvs Aimag:** 1 ♂, Tarialan Soum, Khartarvagatay Gol, 30 km SW Tarialan, N49.55006, E91.70007, 2309 m, 3.vii. 2010, MAIST, MAIS2010070301; 29 ♂, 4 ♀, Tarialan Soum, Nutsgen Gol, 70 km SW Tarialan, N49.53507, E91.60309, 2552 m, 3.vii.2010, MAIST, MAIS2010070302; 19 ♂, 2 ♀, Tarialan Soum, Dund Gol, 73 km SW Tarialan, N49.51831, E91.58729, 2464 m, 3.vii.2010, MAIST, MAIS2010070303; 2 ♂, Turgen Soum, Javartain Gol & Turgen Gol, 33 km SW Turgen, N49.89234, E91.35239, 1849 m, 16–17.vii.2010, MAIST, MAIS2010071602; 1 ♂, Ondorkhangai Soum, Baruunturuuni Gol & Morguugiin Gol, 20 km NNW Ondorkhangai, N49.44592, E94.79595, 1688 m, 19–20.vii.2010, MAIST, MAIS2010071902. **Zavkhan Aimag:** 1 ♀, 24 km E Somon Songino, 2000 m, Exp. Dr. Z. Kaszab, Nr. 1097, 12.vii.1968 (HNHM); 1 ♂, 2 ♀, Choit chunch, 26 km ENE Lake Telmen nuur, 2150 m, Exp. Dr. Z. Kaszab, Nrs. 1102, 1103, 13.vii.1968 (HNHM); 1 ♀, Tosontsengel Soum, unnamed reed lake and marsh by Tegshiin Gol, ~70 km SW Tosontsengel, N48°19′52.6″, E97°51′52.2″, 22.vii.2004,

A.E.Z. Short, J.K. Gelhaus, Enkhnasan, SRP04072202; 7 ♂, 5 ♀, Ider Soum Ideriin Gol ~4 km NE Zuunmod/Ider, N48.24995, E97.40627, 1929 m, 22–23.vii.2004, SRPT, SRP04072203; 2 ♀, Ider Soum, ponds by Ideriin Gol at Darkhjan Uul Brigade ~12 km SE Zuunmod/Ider, N48.13246, E97.48425, 2025 m, 23.vii.2004, SRPT, SRP04072301; 4 ♂, Ider Soum, Zagastain Gol ~11 km NNE Zagastain Davaa, N48.15779, E97.21441, 2108 m, 24.vii.2004, SRPT, SRP04072401.



FIGURES 63–70. Hypopygium of male *T.* (*Vestiplex*) *kiritshenkoi*. **63.** Tergite 9, dorsal view; **64.** Gonocoxite, lateral view; **65.** Left outer gonostylus, lateral view; **66.** Left inner gonostylus, lateral view; **67.** Gonocoxal fragment, dorsal view; **68.** Aedeagal guide, lateral view; **69.** Sperm pump, dorsal view; **70.** Distal part of aedeagus, lateral view. Scales of 63–69 = 0.5 mm, 70 = 0.25 mm.



FIGURES 71–74. Ovipositor of female *T.* (*Vestiplex*) *kiritshenkoi*. **71.** Ovipositor, left lateral view; **72.** Sternite 8 with hypovalvae, ventral view; **73.** Sternite 9 and furca, dorsal view; **74.** Bursa copulatrix, dorsal view. Scales of 71 = 0.8 mm, 72–74 = 0.5 mm.

Elevation range in Mongolia. Adults were collected at altitudes ranging from 800 m to 3100 m.

Period of activity. Adults are active from the middle of June through to late July.

Known distribution. Mongolia (Map 4) and Russia (Tuva).

Redescription. Male. Body length 14.9–18.0 mm, wing length 15.1–17.5 mm. General body coloration brownish yellow.

Head. Bluish gray, vertex and occiput gray with brown median line. Rostrum yellowish brown sparsely dusted

with gray, nasus short and stout. Antenna 13-segmented, if bent backward reaching base of abdomen. Scape and pedicel brownish yellow, flagellum black. Each flagellomere except first one with large basal enlargement, deeply incised. Apical flagellomere very small, reduced, distinctly shorter than preceding flagellomeres. Verticils about 2/3 times as long as corresponding flagellomere. Palpus brown.

Thorax. Brownish gray. Pronotum brownish, gray pruinose with weak brown median line. Prescutum and presutural scutum bluish gray, with 4 indistinct darker longitudinal stripes not bordered by brown. Intermediate pair separated. Interspace between median and lateral stripes light gray with light setae arising from small pores. Postsutural scutum bluish gray, scutal lobe with 2 indistinct darkened spots. Scutellum brownish yellow with narrow brown line. Mediotertgite gray pruinose with broad brown median line. Pleura brownish, covered with bluish-gray puinosity. Coxae gray pruinose. Trochanters, femora and tibiae yellowish brown. Tarsal segments passing into brown. Distal part of femora and tibiae slightly darkened. Tarsal claws without tooth. Wing indistinctly patterened with brown. Halter with brownish-yellow stem and dark brown knob.

Abdomen. Brownish yellow, with distinct brown median line reaching tergite 7 with lateral stripe. Lateral margins of tergites pale. Abdominal tergite 1 laterally dusted with gray, succeeding tergites yellowish. Sternite 1 dusted with gray, succeeding sternites brownish yellow.

Hypopygium. Brownish yellow, slightly broader at base than abdomen. Tergite 9 shaped as large concave crescent sclerotised saucer (Fig. 63). Main body of tergal saucer brownish yellow with blackened rim. Posterior margin of tergal saucer broadly emarginated provided with small denticles. Median U-shaped notch broad, with 2 blackened acute teeth on either side. Lateral angle of tergal saucer in shape of broad obtuse projection. Anterior and lateral portions of tergal saucer raised into sclerotised slightly wavy border which laterally produced into short obtuse tooth directed caudad and situated under lateral angle of tergal saucer. Gonocoxite unarmed (Fig. 64). Outer gonostylus flattened, widest at middle with apex rounded (Fig. 65). Inner gonostylus in shape of large, claw-shaped humpbacked plate with massive mid-dorsal blackened and rounded projection. Beak extended into rostrum resembling bird's beak (Fig. 66). Gonocoxal fragment large with lateral and medial sclerites well-developed (Fig. 67). Medial sclerites fused, anterior apodeme long and broad, posterior part flat and arched. Lateral sclerite large and bilobed. Aedeagal guide in shape of slender tube (Fig. 68). Sperm pump with central vesicle small and flattened (Figs 13, 69). Compressor apodeme with median incision. Posterior immovable apodeme about as long as compressor apodeme, large and extended laterally into broad plate. Anterior immovable apodeme nearly triangle. Aedeagus shaped as very long tube, 12.4 times as long as sperm pump (Fig. 13), basally dark brown, medially light brown, apically passing into yellow. Distal part ventrally membranous, shovel-shaped (Fig. 70).

Female. Body length 21.5–27.3 mm, wing length 2.9–3.9 mm. Female differs from male by reduced wings and elongate abdomen. Antenna short, if bent backward not reaching base of wing. Scape, pedicel and flagellum brownish. Prescutum and presutural scutum generally similar to male.

Ovipositor (Figs 71–74). Tergite 10 shiny, light brown. Cercus brownish yellow, relatively broad, slightly longer than tergite 10, tip obtuse and slightly curved dorsally, outer margin with indistinct serration (Fig. 71). Hypovalva in shape of yellow, elongated filament, with short trichia at tip (Fig. 72). Median incision between hypovalvae deeper than posterior margin of sternite 8. Lateral incision small. Lateral angle of sternite 8 rounded. Sternite 9 with anterior part slightly broadened, posterior part slightly extended (Fig. 73). Furca anteriorly narrowing, posteriorly broad. Bursa copulatrix with spermathecal ducts sclerotised at base, in shape of nearly straight, dark brown process (Fig. 74). Wall of bursa copulatrix on connection site with spermathecal ducts pale without sclerotisation. Cul-de-sac of bursa copulatrix curved with darkened wall. Spermatheca nearly oval, broadened at base (Fig. 21).

Tipula (*Vestiplex*) *laccata* Lundström & Frey

(Figs 21, 75–85; Map 5)

Tipula laccata Lundström & Frey, 1916: 22.
Tipula (*Vestiplex*) *laccata*: Mannheims, 1953: 132; Savchenko & Kandybina, 1987: 26 (as var. of *laccata*); Oosterbroek & Theowald, 1992: 156.
Tipula (*Vestiplex*) *dulkeiti* Savchenko, 1954: 195; Savchenko, 1964: 205; Mannheims, 1971: 344 (synonymy).
Tipula (*Vestiplex*) *cinerascens* Savchenko, 1954: 197; Savchenko, 1964: 206 (as var. of *dulkeiti*).

Type material examined. *Tipula* (*Vestiplex*) *laccata* Lundström & Frey: **PARALECTOTYPE** ♂: **FINLAND,**

Ponoj, [date unknown], R. Frey; 4231, Mus. Zool. Hifors, Spec. Typ. No 4144, *Tipula laccata* Lund. & Frey (MZH).

Tipula (*Vestiplex*) *dulkeiti* Savchenko: **LECTOTYPE** ♂: **RUSSIA,** Zabaykalsky Kray, Borzinsky district, Tooroi Lake, 23.VI.1925, Vinogradov (ZIN). **PARALECTOTYPE** ♂: topotypic, 19.vi.1925, Vinogradov (ZIN).

Tipula (*Vestiplex*) *cinerascens* Savchenko (var. of *laccata*): **LECTOTYPE** ♂: **RUSSIA,** Altai Kray, 23.vi.1951, Dulkeit (ZIN). **PARALECTOTYPES:** ♂, topotypic (ZIN); ♂: Krasnoyarsk Kray, Lake Oyskoje, 1902, Pedashenko (ZIN); ♂: Republic of Khakassia, 14.vi.1912, Sushkin & Redikorcev (ZIN).

Additional material examined. MONGOLIA. Arkhangay Aimag: 1 ♀, Tsenkher Soum, Tsetseleg Gol ~17 km SW Tavanbulag, N47.26999, E101.80227, 1684 m, 10–12.vii.2004, SRPT, SRP04071002. **Bayan Olgii Aimag:** 2 ♂, Tsengel Soum, Tsagaan Gol, 20 km W Zagast Nuur Bag, Entrance to Altai-Tavan Bogd NP, N49.09161, E88.10436, 2410 m, 9–12.vii.2008, S. Podenas, MAIS08070902; 1 ♀, Bayan Olgiy Aimag, Tsengel Soum, Khar Ovoo Gol, draining Khelkhee Lake, N48.62918, E88.28554, 2147 m, 15–16.vii.2008, MAIS2008071601; 1 ♀, Tsengel Soum, Sumdairag Gol, 12 km S Syrgai, 2129 m, N48.50679, E88.50977, VII.16.2008, J.C. Morse, Suvdaa, S. Podenas, MAIS08071604; 10 ♂, 2 ♀, Bayan Olgiy Aimag, Sagsay Soum, Yamaatiin Gol, 17 km SW Dayan Military Base, N48.16728, E88.85435, 2073 m, 17.vii.2008, MAIS2008071703; 10 ♂, Bayan-Olgiy Aimag, Deluun Soum, Gantsmodi Gol 27 km S Deluun, N47.66395, E90.71841, 2196 m, 5–6.vii.2009, S. Podenas, MAIS2009070502. **Bulgan Aimag:** 1 ♀, Teshig Soum, West Branch Tariakhtain Gol, N49.70189, E103.80034, 1432 m, 9.vii.2005, SRPT, SRP05070901. **Hovsgol Aimag:** 1 ♀, Borsog (camp 3,5 E lake Hovsgol) [N50.57, E100.47], 17.vii.2002, S. Chuluunbat, Sanaa; 2 ♂, Renchinlhumbe Soum, Jaray (Jarin) Gol (river), 33 km N Renchinlhumbe, 1580 m, N51.39865, E99.75060, 2–3.vii.2006, J.K. Gelhaus #1064, SRP06070203; 26 ♂, 4 ♀, Ulaan-Uul Soum, unnamed trib. (stream) of Beltes Gol, 34.0 km NE Bayanzurh, 2113 m, N50.42980, E99.21690, 28.vi.2006, J.K. Gelhaus #1054-A, SRP06062803; 4 ♂, Ulaan Uul Soum, Bagtag Gol (river) and wetland ponds/marshy meadow, 15 km NNE Ulaan Uul, 1598 m, N50.80484, E99.32228, 29.vi.2006, J.K. Gelhaus #1057, SRP06062904 & 06063001; 3 ♂, 2 ♀, Renchinlhumbe Soum, Springs and spring fed brooks at Ikh Turuugiin Gol (stream), 35 km NNE Ulaan Uul, 1578 m, N50.99269, E99.35406, 30.vi.–1.vii.2006, J.K. Gelhaus #1058, SRP06063002; 16 ♂, 5 ♀, Tsagaannuur Soum, Unnamed trib. of Shishged Gol ~16 km NW Tsagaannuur (town), 1606 m, N51.45833, E99.20051, 3–4.vii.2006, J.K. Gelhaus #1066, SRP06070302; 1 ♂, Renchinlhumbe Soum, Arsayn Gol (river), 16 km N Renchinlhumbe, 1575 m, N51.25339, E99.66685, 2.vii.2006, J.K. Gelhaus #1062, SRP06070201; 22 ♂, 2 ♀, Renchinlhumbe Soum, Har Us springs and Jargalant Gol, 4.2 km SE Renchinlhumbe, 1597 m, N51.07917, E99.70985, 1–2.vii.2006, J.K. Gelhaus #1061, SRP06070102. **Khovd Aimag:** 1 ♀, Erdeneburen Soum, Hongor Olon Gol at Hongo, N48.42161, E90.97356, 1804 m, 3.vii.2008, R.W. Bouchard, Jr., MAIS08070302. **Ovorhangay Aimag:** 1 ♂, 1 ♀, Uyanga Soum, Khangai Mountains, Khuysiyn Naiman Nuur Strictly Protected Area, streams entering east side of Shireet Nuur (Lake), down from davaa (pass), N46.51908, E101.84940, 2446 m, 7.vii.2011, C.R. Nelson, T.A. McKnight & MAIST, MAIS2011070701; 1 ♂, Bat-Olziy Soum, Ulaan Gol ~93 km W Khujirt, N46.73093, E101.88583, 1894 m, 7–8.vii.2004, SRPT, SRP04070702; 1 ♂, Uyanga Soum, Ovtiyn Gol, 20 km SE Bat-Olziy, N46.64265, E102.30885, 2069 m, 8.vii.2011, S. Podenas, MAIS2011070801; 7 ♂, 2 ♀, Bat-Olziy Soum, Ovtiyn Gol, 10 km SE Bat-Olziy, N46.75972, E102.30905, 1847 m, 8.vii.2011, S. Podenas, MAIS2011070803. **Selenge Aimag:** 2 ♂, 1 ♀, Bugant/Yaroo Soum, pond near Yeroo River, N49.05466, E107.23749, 907 m, 18.vii.2003, SRPT, SRP03071802; 1 ♀, Bugant/Yaroo Soum, Khongiin Gol at Yeroo Gol confluence, N49.08636, E107.30750, 943 m, 18–19.vii.2003, SRPT, SRP03071803. **Tov Aimag:** 1 ♀, SE Somon Bajanzcogt, 1600 m, Exp. Dr. Z. Kaszab, 1966; Nr. 268, 5.vii.1964 (HNHM); 1 ♂, Erdene Soum, Gorkhi Terelj NP, E Bayangin Gol, 12.9 km upstream of Tuul River Bridge, N48.14846, E107.75838, 1596 m, 7.vii.2003, SRPT, SRP03070703; 1 ♂, Erdene Soum, Gorkhi Terelj NP, Galtain Gol at road crossing 19.1 km upstream of Tuul River Bridge, N48.13350, E107.91990, 1551 m, 8.vii.2003, SRPT, SRP03070802; 2 ♂, 3 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed braid of Tuul River, N48.14846, E107.91267, 1564 m, 8–9.vii.2003, SRPT, SRP03070805; 2 ♀, Erdene Soum, Gorkhi Terelj NP, Galtain Spring 4.5 km upstream of road crossing, N48.18393, E107.96222, 1649 m, 9.vii.2003, SRPT, SRP03070901; 3 ♂, 1 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on West side, 1.6 km upstream from Daichin crossing, N48.21780, E107.90392, 1594 m, 9.vii.2003, SRPT, SRP03070902; 9 ♂, 4 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on West side, c. 5 km upstream from Daichin crossing, N48.24734, E107.90589, 1610 m, 10.vii.2003, SRPT, SRP03071001; 1 ♂, Erdene Soum, Gorkhi Terelj NP, mouth of Khag River at confluence with Tuul River, N48.25861, E107.90251, 1608 m, 10.vii.2003, SRPT, SRP03071002; 1 ♂, Erdene Soum, Gorkhi Terelj NP, E side oxbow of Tuul River, N48°06′53.6″, E107°53′35.5″, 1560 m, 11.vii.2003, SRPT, SRP03071102; 1 ♀, Erdene Soum,

Shar Bulag, Yellow Spring, 26 km W Mongonmorit, N48.14814, E108.07956, 1629 m, 13.vii.2011, S. Podenas, MAIS2011071301; 2 ♂, 3 ♀, Erdene Soum, Unnamed river northeast of Khagiin Har Nuur, Gorkhi Terelj NP, N48.42080, E107.91406, 1818 m, 28.vii.2003, SRPT, SRP03072802; 1 ♀, Erdene Soum, Unnamed river southeast of Khagiin Har Nuur, Gorkhi Terelj NP, N48.39916, E107.91693, 1818 m, 29.vii.2003, SRPT, SRP03072901; 1 ♂, Zuunmod Soum, Turgeniy Gol (stream), 8 km NNW Zuunmod, 1581 m, N47.77758, E106.92780, 14.vii.2006, J.K. Gelhaus #1073-B, SRP06071401; 2 ♀, Odlog Udleg canyon, Batsumber Soum, N48.26480, E106.93345, 1359 m, 16.vii.2006, SRP06071602; 1 ♂, Uliastain gol, Environs of Ulaan Baatar, district Bayanzurkh, about 26 km from Ulaan Baatar center, N48.10505, E107.07754, 1589 m, 18.vii.2006, SRP06071801; 1 ♂, Zuun, Burkh Gol (river), N Baganuur, N48°06′36″, E108°21′54″, 1477 m, 27.vi.2009, S. Podenas, MAIS2009062702; 1 ♂, Gorkhi, Terelj NP, S Terelj, N47°55′06″, E107°26′54″, 1565 m, 28–29.vi.2009, S. Podenas, MAIS2009062801; 1 ♀, Erdene Soum, Baruun Bayan gol, N48.07718, E107.63927, 1544 m, 6.vii.2011, O. Yadamsuren, MAIS2011070603; 1 ♀, Erdene Soum, Tuul gol, N48.18108, E107.91869, 1573 m, 7.vii.2011, O. Yadamsuren, sweep, MAIS 2011070704; 1 ♂, 1 ♀, Erdene Soum, Gorkhi Terelj NP, stream 0.5 km N Gorkhi Davaa (Pass), N47.94981, E107.45511, 1593 m, 11.vii.2011, S. Podenas, MAIS2011071101; 2 ♂, Erdene Soum, Bulnayn Gol, jct Galttyn Gol, 33 km W Mongonmorit, N48.12563, E108.02163, 1596 m, 12.vii.2011, S. Podenas, MAIS2011071204; 2 ♂, 1 ♀, Erdene Soum, Zuun Baydlag Gol, 15 km SW Mongonmorit, N48.17390, E108.26500, 1641 m, 14.vii.2011, S. Podenas, MAIS2011071401; 2 ♂, Mongonmorit Soum, Burkhin Gol, 4.5 km NW Mongonmorit, N48.25508, E108.48447, 1475 m, 14.vii.2011, S. Podenas, MAIS2011071403; 1 ♀, Mongonmorit Soum, Kherlen Gol, 16 km SE Mongonmorit, N48.13212, E108.63913, 1376 m, 15.vii.2011, S. Podenas, MAIS2011071501. **Uvs Aimag:** 1 ♂, Sagil Soum, Tsagaan Gol, 10 km W Uureg Nuur Bag, Gulzat Protected Area, N50.17117, E90.72800, 1629 m, 11–13.vii.2010, MAIST, MAIS2010071103.

Elevation range in Mongolia. Adults were collected at altitudes ranging from 900 m to 2500 m.

Period of activity. Adults are active from late June through to mid-July.

Known distribution. Finland, Kazakhstan, Mongolia (Map 5), Norway, Russia (European part, western and eastern parts of Siberia, Far East) and Sweden.

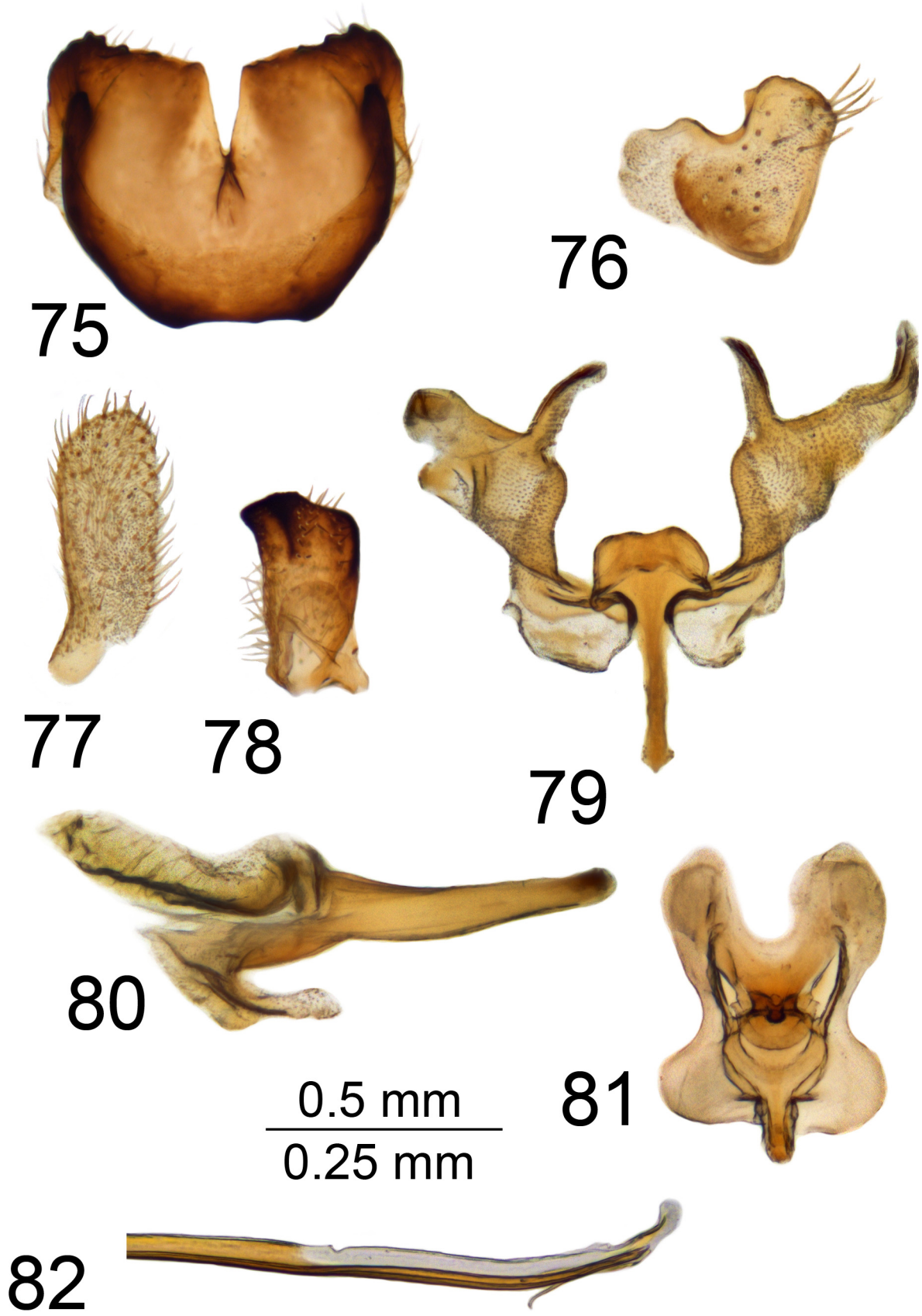
Redescription. Male. Body length 13.5–17.0 mm, wing length 14.7–16.4 mm. General body coloration grayish yellow.

Head. Gray, vertex and occiput gray with brown median line. Rostrum brown, dorsally sparsely dusted with gray, nasus short. Antenna 13-segmented, if bent backward reaching base of abdomen. Scape and pedicel yellowish, first flagellomere brownish yellow, succeeding flagellomeres brown. Each flagellomere, except first one, with small basal enlargement and slightly incised. Apical flagellomere very small, reduced. Verticils shorter than corresponding segments. Palpus with two basal segments brown, terminal palpomere brownish black.

Thorax. Gray. Pronotum brownish with brown median line. Prescutum and presutural scutum dark grey with 4 longitudinal stripes bordered by brown. Intermediate pair fused into brown median line. Interspace between median and lateral stripes gray with setae starting from dark pores. Postsutural scutum dark gray with median line. Scutal lobe with 2 spots bordered by brown. Scutellum brown with median line. Postnotum grey with narrow median line. Pleura grey pruinose. Coxae grey pruinose. Trochanters and femora yellow. Tibiae brownish. Tarsal segments dark brown. Distal part of femora broadly darkened by brown. Tarsal claws without tooth. Wing unpatterned. Halter with yellowish stem and brown knob.

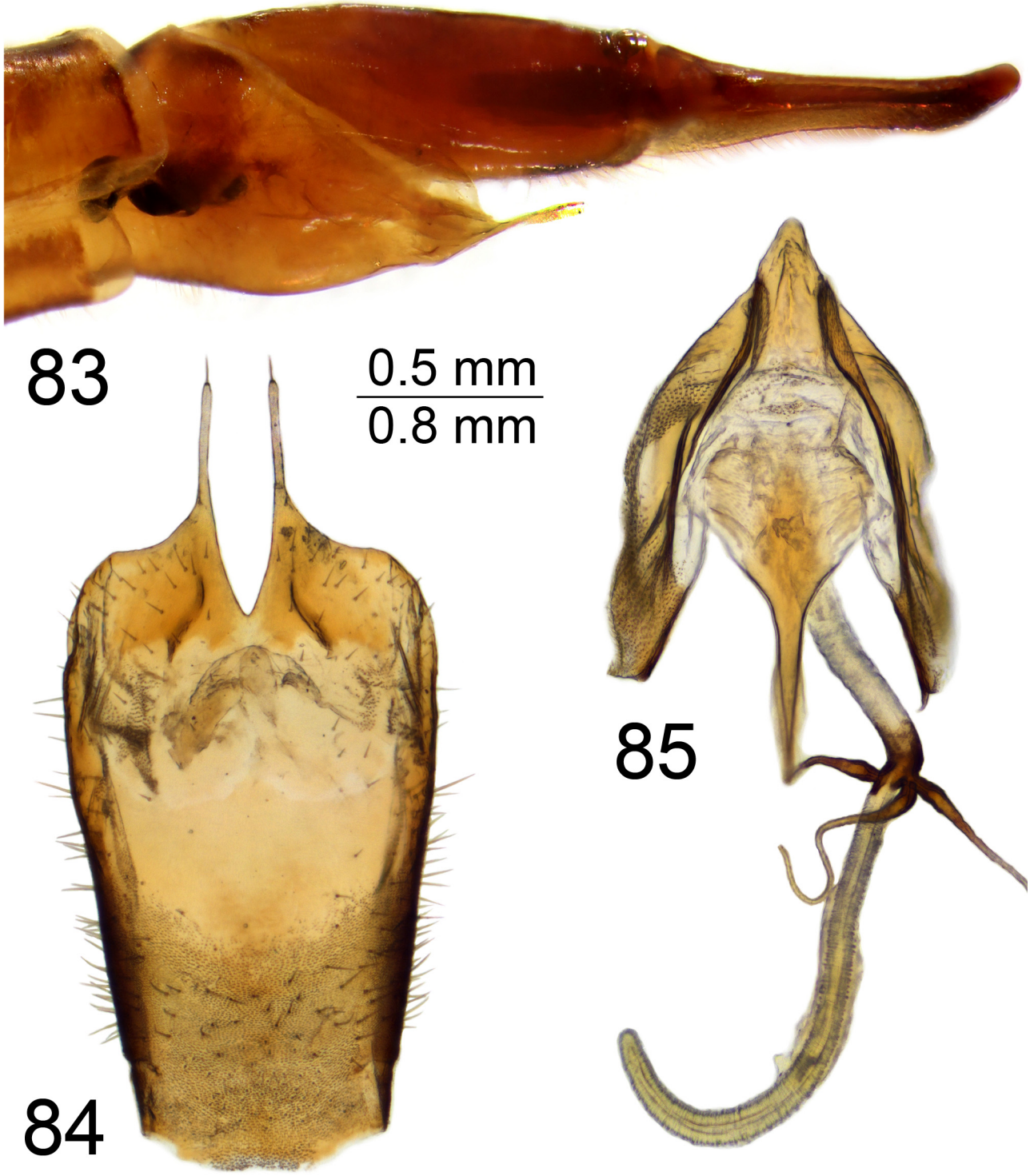
Abdomen. Yellow, with broad brown median stripe reaching tergite 6 and with lateral stripe. Tergites with lateral and caudal margins pale. Tergite 1 brown, dusted with gray. Tergite 6 laterally black. Tergites 7–8 black. Sternite 1 brown, sparsely dusted with gray. Sternite 5 laterally black. Sternites 6–8 black. Black terminal segments sparsely dusted with gray.

Hypopygium. Black. Tergite 9 forming a large concave nearly rectangular in outline sclerotised saucer. Main body of tergal saucer brown with rim blackened (Fig. 75). Posterior margin of tergal saucer toothed with small denticles, broadly emarginated, with deep narrow median V-shaped notch, oblong black median tubercle. Lateral angles of tergal saucer obtuse, broadly truncated. Anterior and lateral portions of tergal saucer raised into sclerotised border with obtuse anterior angles. Border of tergite 9 laterally produced into obtuse point directed caudad and situated under lateral angle of tergal saucer. Gonocoxite unarmed (Fig. 76). Outer gonostylus flattened, nearly parallel-sided with apex oblique (Fig. 77). Inner gonostylus in shape of small transverse plate, dorsally blackened, without acute point, beak extended into very short, black obtuse rostrum (Fig. 78). Gonocoxal fragment large with lateral and medial sclerites well-developed (Fig. 79). Medial sclerites fused, anterior apodeme narrowed, posterior part

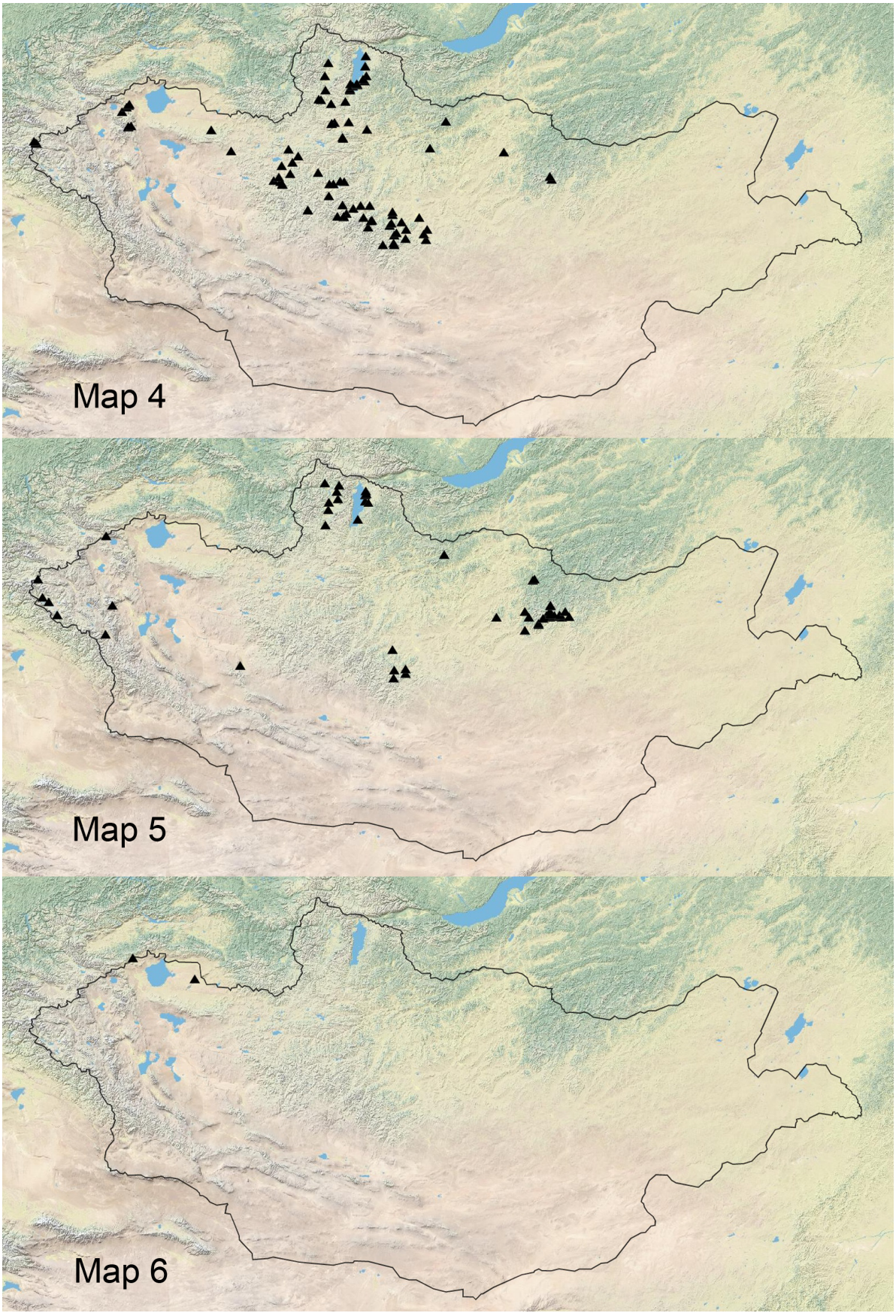


FIGURES 75–82. Hypopygium of male *T.* (*Vestiplex*) *laccata*. **75.** Tergite 9, dorsal view; **76.** Gonocoxite, lateral view; **77.** Left outer gonostylus, lateral view; **78.** Left inner gonostylus, lateral view; **79.** Gonocoxal fragment, dorsal view; **80.** Aedeagal guide, lateral view; **81.** Sperm pump, dorsal view; **82.** Distal part of aedeagus, lateral view. Scalse of 75–81 = 0.5 mm, 82 = 0.25 mm.

broadened and arched, posterior apodeme with apex rounded. Lateral sclerite large and bilobed, expanded at base. Aedeagal guide relatively narrow tube-shaped (Fig. 80). Sperm pump with central vesicle small and flattened (Fig. 81). Compressor apodeme with median incision forming 2 lobes with rounded apex. Posterior immovable apodeme about same length as compressor apodeme, relatively narrow. Anterior immovable apodeme rounded. Aedeagus shaped as moderately long tube, 5.2 times as long as sperm pump, basally dark brown, medially brown, passing into yellow towards apex. Distal part ventrally membranous, shovel-shaped (Fig. 82).



FIGURES 83–85. Ovipositor of female *T.* (*Vestiplex*) *laccata*. **83.** Ovipositor, left lateral view; **84.** Sternite 8 with hypovalvae, ventral view; **85.** Sternite 9, furca and bursa copulatrix, dorsal view. Scales of 83 = 0.8 mm, 84–85 = 0.5 mm.



MAPS 4–6. Distribution maps of *T.* (*Vestiplex*) crane flies in Mongolia. **4.** *T.* (*Vestiplex*) *kiritshenkoi*; **5.** *T.* (*Vestiplex*) *laccata*; **6.** *T.* (*Vestiplex*) *leucoprocta*.

Female. Body length 18.2–21.2 mm, wing length 13.9–16.6 mm. General body coloration brownish. Antenna short, if bent backward extending beyond base of wing. Scape, pedicel, flagellomeres 1–2 yellow, 3–5 yellowish, succeeding passing from brownish to black. Flagellomeres cylindrical. Thorax gray, abdomen brownish.

Ovipositor (Figs 83–85). Tergite 10 shiny, reddish-brown. Cercus reddish-brown, slender, slightly shorter than tergite 10, with tip obtuse and slightly curved dorsally, outer margin with indistinct serration (Fig. 83). Hypovalva in shape of pale yellow filament, with short trichia at tip (Fig. 84). Median incision between hypovalvae deeper than posterior margin of sternite 8. Sternite 9 posteriorly obtuse (Fig. 85). Furca anteriorly narrowing, posteriorly broad. Bursa copulatrix with spermathecal ducts sclerotised at base, shaped as nearly straight dark brown process. Wall of bursa copulatrix on connection site with spermathecal ducts partially sclerotised, extending short distance along bursa copulatrix wall. Sclerotisation of all 3 spermathecal ducts separated by pale region on wall of bursa copulatrix. Cul-de-sac of bursa copulatrix curved. Spermatheca spherical, slightly broadened at base (Fig. 17).

Tipula (*Vestiplex*) *leucoprocta* Mik

(Figs 9, 23, 86–95; Map 6)

Tipula leucoprocta Mik, 1889: 107.
Tipula (*Vestiplex*) *leucoprocta*: Alexander, 1934b: 406; Savchenko, 1960: 205; 1964: 199; Oosterbroek & Theowald, 1992: 156.
Tipula (*Vestiplex*) *hedini* Alexander, 1936a: 4; Savchenko, 1960: 205 (synonymy).

Type material examined. *Tipula* (*Vestiplex*) *leucoprocta* Mik: **HOLOTYPE** ♂: **KYRGYZSTAN,** Asia Kirgis. St. (Schrenk) Mik, *T. leucoprocta* Mik; Type male *Tipula leucoprocta* Mik det. M.P. Riedel; I 126; *Tip*. (*Vestiplex*) *leucoprocta* Mik Mannheims vid. 1949; Holotypus (NHMV).

Additional material examined. CHINA. 1 ♂, Xinjiang, Tienshan, Ürümqi, Tiencie, 3–5.vi.1992, W. Mey (ZMHB). **MONGOLIA. Uvs Aimag:** 1 ♀, Sagil Soum, Borshoo Gol, 29 km NNE Sagil, N50.57615, E91.77029, 1281 m, 15–16.vii.2010, S. Podenas, MAIS2010071502; 1 ♂, Zuungovi Soum, Nariin Gol, 30 km NE Zuungovi, N50.05245, E94.15410, 923 m, 18–19.vii.2010, S. Podenas, MAIS2010071802.

Elevation range in Mongolia. Adults were collected at altitudes ranging from 900 m to 1300 m.

Period of activity. Adults are active in mid-July.

Known distribution. China (Xinjiang), Kazakhstan, Kyrgyzstan, Russia (Altay), Tajikistan. Recorded here for the first time from Mongolia (Map. 6).

Redescription. Male. Body length 20.6 mm, wing length 21.3 mm. General body coloration brownish yellow.

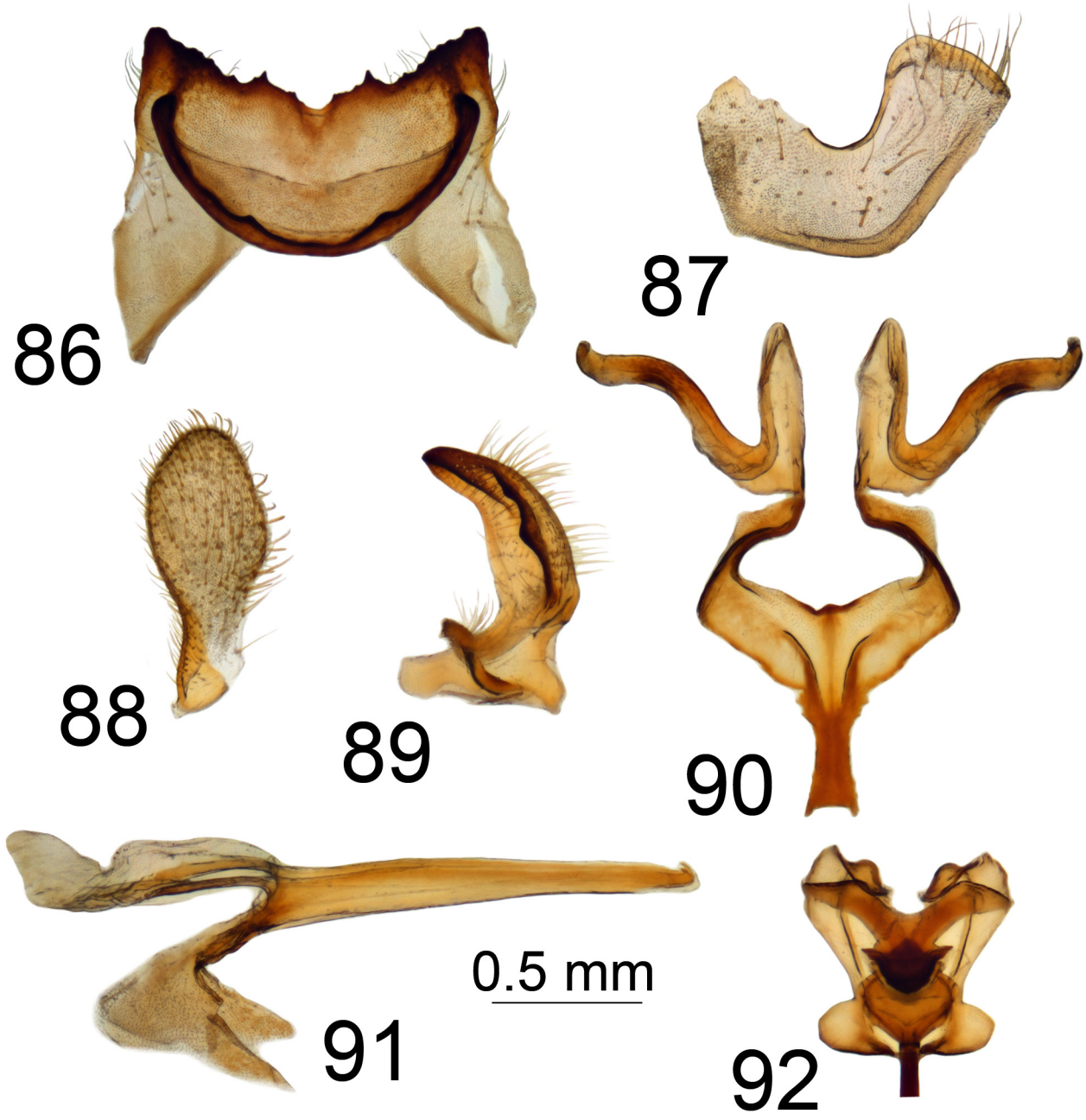
Head. Brownish, vertex and occiput light gray with brown narrow median line. Rostrum brownish yellow and gray pruinose with nasus short and stout. Antenna 13-segmented, if bent backward reaching base of abdomen. Scape, pedicel and first flagellomere yellow, succeeding flagellomeres bicolorous. Each flagellomere, except first one, with weak basal enlargement and moderately incised. Verticils as long as or slightly longer than corresponding flagellomeres. Palpus brownish yellow.

Thorax. Brownish dusted with gray. Pronotum brownish yellow, light gray pruinose with brown median line. Prescutum and presutural scutum light brown with 4 longitudinal stripes bordered by brown. Intermediate pair light brown separated anteriorly and fused posteriorly. Lateral stripe grayish. Interspace between median and lateral stripes yellowish with light setae starting from numerous dark pores. Postsutural scutum grayish, scutal lobe with 2 spots bordered by brown. Scutellum brown, postnotum dusted with grey, with brown median line. Pleura brown, sparsely dusted with gray. Coxae gray pruinose. Trochanters, femora and tibiae brownish yellow. Tarsal segments passing into dark brown. Distal part of femora and tibiae darkened. Tarsal claws without tooth. Wing distinctly patterned with brown. Halter with pale stem and dark brown knob.

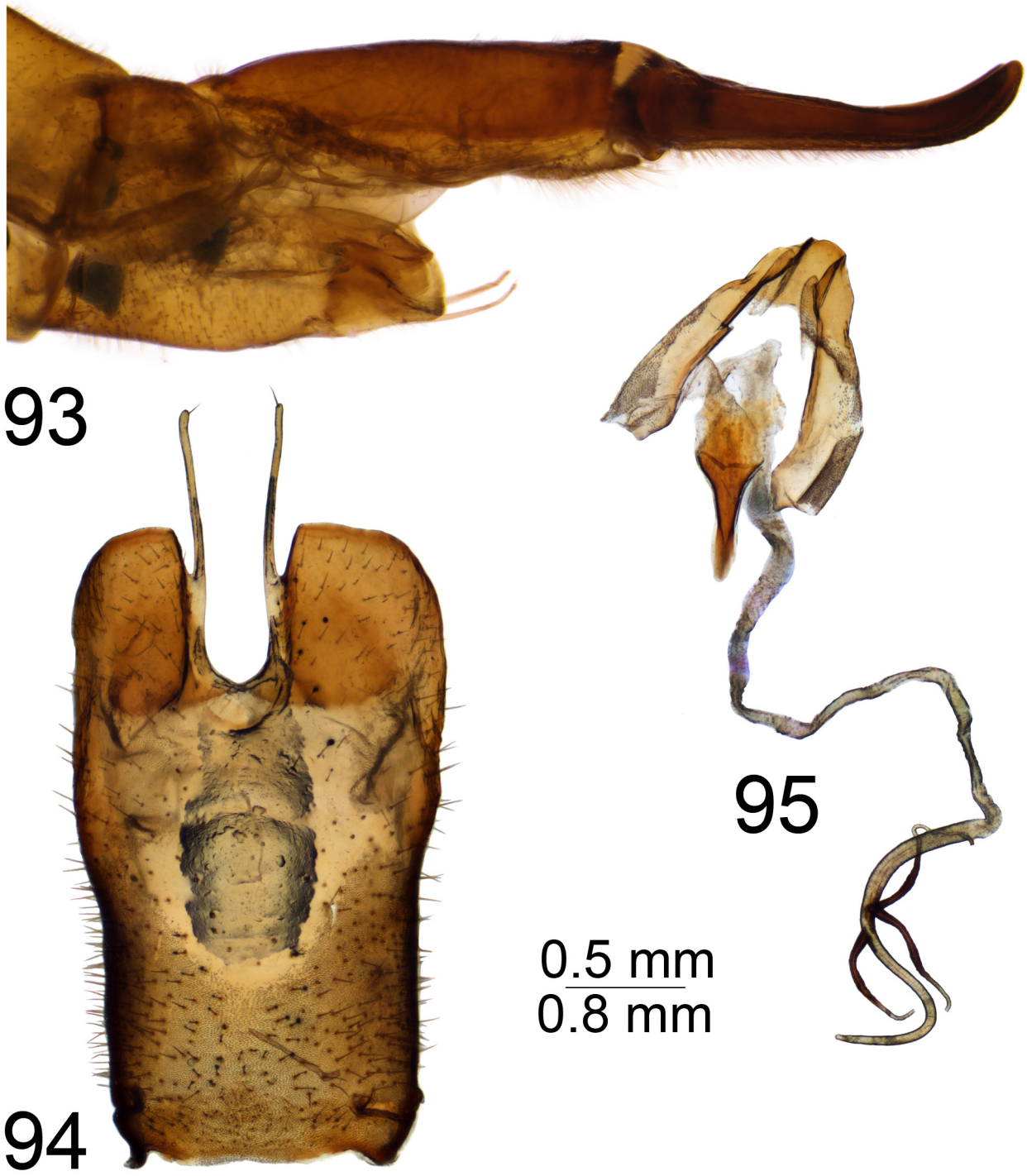
Abdomen. Brownish yellow, with brown dorsal stripe interrupted at caudal borders of tergites with lateral stripe. Lateral margins of tergites pale. Tergite and sternite 1 sparsely dusted with gray. Succeeding sclerites brownish yellow.

Hypopygium. Brownish yellow, at base slightly broader than abdomen. Tergite 9 forming large concave crescent sclerotised saucer (Fig. 86). Main body of tergal saucer brownish yellow with blackened rim. Posterior margin of tergal saucer broadly emarginate with median U-shaped notch broad and shallow, with 2 blackened teeth and

small denticles on either side. Lateral angle of tergal saucer shaped as short obtuse projection. Anterior and lateral portions of tergal saucer raised into sclerotised lightly wavy border. Border anteriorly inconspicuously toothed, laterally produced into short obtuse tooth directed caudad and situated under lateral angle of tergal saucer. Gonocoxite unarmed (Fig. 87). Outer gonostylus flattened, distal part nearly oval (Fig. 88). Inner gonostylus large, claw-shaped curved plate with 2 mid-dorsal teeth, posteriorly with indistinct extension, beak extended into elongate, obtuse rostrum (Fig. 89). Gonocoxal fragment large with lateral and medial sclerites well-developed (Fig. 90). Medial sclerites fused, anterior apodeme long and broad, posterior part flat and arched. Lateral sclerite large and bilobed. Aedeagal guide shaped as long slender tube (Fig. 91). Sperm pump with central vesicle small and flattened (Fig. 92). Compressor apodeme with median incision. Posterior immovable apodeme much longer than compressor apodeme, large and extended laterally into broad plate. Anterior immovable apodeme in shape of rounded plate. Aedeagus shaped as very long tube, similar to *T.* (*V.*) *coronifera* and *T.* (*V.*) *kiritshenkoi* with distal part ventrally membranous, shovel-shaped.



FIGURES 86–92. Hypopygium of male *T.* (*Vestiplex*) *leucoprocta*. **86.** Tergite 9, dorsal view; **87.** Gonocoxite, lateral view; **88.** Left outer gonostylus, lateral view; **89.** Left inner gonostylus, lateral view; **90.** Gonocoxal fragment, dorsal view; **91.** Aedeagal guide, lateral view; **92.** Sperm pump, dorsal view.



FIGURES 93–95. Ovipositor of female *T.* (*Vestiplex*) *leucoprocta*. **93.** Ovipositor, left lateral view; **94.** Sternite 8 with hypovalvae, ventral view; **95.** Sternite 9, furca and bursa copulatrix, dorsal view. Scales of 93 = 0.8 mm, 94–95 = 0.5 mm.

Female. Body length 27.0 mm, wing length 19.4 mm. Generally similar to male. Antenna short, flagellomeres cylindrical.

Ovipositor (Figs 93–95). Tergite 10 shiny, brownish yellow. Cercus brownish yellow, slender, slightly longer than tergite 10, with tip narrowed and curved dorsally, outer margin with indistinct serration (Fig. 93). Hypovalva in shape of pale yellow, elongated and slender filament, with short trichia at tip (Fig. 94). Median incision between hypovalvae deeper than posterior margin of sternite 8. Lateral incision relatively deep and narrow (about twice as deep as maximal width). Lateral angle of sternite 8 obtusely rounded. Sternite 9 with anterior part lightly broadened, posterior part short (Fig. 95). Furca anteriorly narrowed, posteriorly broad. Bursa copulatrix with spermathecal

ducts sclerotised at base, in shape of lightly curved dark brown process. Wall of bursa copulatrix on connection site with spermathecal ducts partially sclerotised, sclerotisation extended short distance along wall. Cul-de-sac of bursa copulatrix curved. Spermatheca nearly pear-shaped, distinctly broadened at base (Fig. 27).

Remarks. *Tipula* (*V.*) *leucoprocta* is listed here as a new record for the Mongolian fauna. Chinese material, published by Oosterbroek (2009) as *T.* (*V.*) *coronifera*, was examined and re-identified as *T.* (*V.*) *leucoprocta* and listed here, thereby *T.* (*V.*) *coronifera* is exluded from the list of Chinese fauna.

Tipula (*Vestiplex*) *sintenisi* Lackschewitz

(Figs 27, 96–106; Map. 7)

Tipula sintenisi Lackschewitz, 1933: 246; 1936: 265.
Tipula (*Vestiplex*) *sintenisi*: Mannheims, 1953: 133 (lectotype designation).
Tipula (*Vestiplex*) *transbaikalica* Alexander, 1934b: 406; Savchenko, 1964: 186 (synonymy).
Tipula (*Vestiplex*) *jakut* Alexander, 1934a: 316. **syn. nov.**
Tipula (*Vestiplex*) *jakut*: Oosterbroek & Theowald, 1992: 155.
= *Tipula* (*Vestiplex*) *arctica* Savchenko: 1964, nec Curtis, 1835 (partim).

Type material examined. *Tipula* (*Vestiplex*) *sintenisi* Lackschewitz: **PARALECTOTYPES:** 1 ♂: **SWEDEN,** Curon, Kalwen, 5.vi.1932, Dr. P. Lackschewitz, Zool. Mus. Berlin (MNDB); 1 ♂, Curon, Kalwen, 8.vi.1933 (MNDB); 1 ♀, Curon, Kalwen, 2.vi.1932 (MNDB); 1 ♂, Curon, Kalwen, 5.vi.1932 (NHMV); 1 ♀, Curon, Kalwen, 2.vi.1932, BMNH(E)#246029 (BMNH).

Notes on types. The data on type series for *T.* (*V.*) *sintenisi* was omitted in Lackschewitz (1933, 1936) only Mannheims while designating the lectotype mentioned numerous males collected by Lackschewitz (1933). The summary for type specimens provided here is according to the literature and personal communications with European collections: **LECTOTYPE** ♂, **PARALECTOTYPES** 29 ♂, 1 ♀ (ZMHB); **PARALECTOTYPE** ♂: Curon. Kalwen, 2.vi.1932, Dr. P. Lackschewitz (SDEI) (Blech & Rohlfien 1987); **PARALECTOTYPE** ♂: (MZH) (Mannheims 1953); **PARALECTOTYPE** ♂: Curon, Kalwen, 14.vi.1932, Dr. P. Lackschewitz, *T. sintenisi*, nov. sp., Lacksch. Paratypus (MZLU).

Tipula (*Vestiplex*) *transbaikalica* Alexander: **HOLOTYPE** ♂: **RUSSIA,** E. Siberia, Transbaikal (ex Stauding-er-Bang Haas), Borochojeva (USNM), antennae, wing and genitalia slide mounted (USNM).

Tipula (*Vestiplex*) *jakut* Alexander: **HOLOTYPE** ♀: **RUSSIA,** Far East, Khabarovsk Kraj, Ajan and Nelkan valley, 9–15.vi.1903, Popov, Nr. 442 (ZIN), antenna, leg and wing slide mounted (USNM).

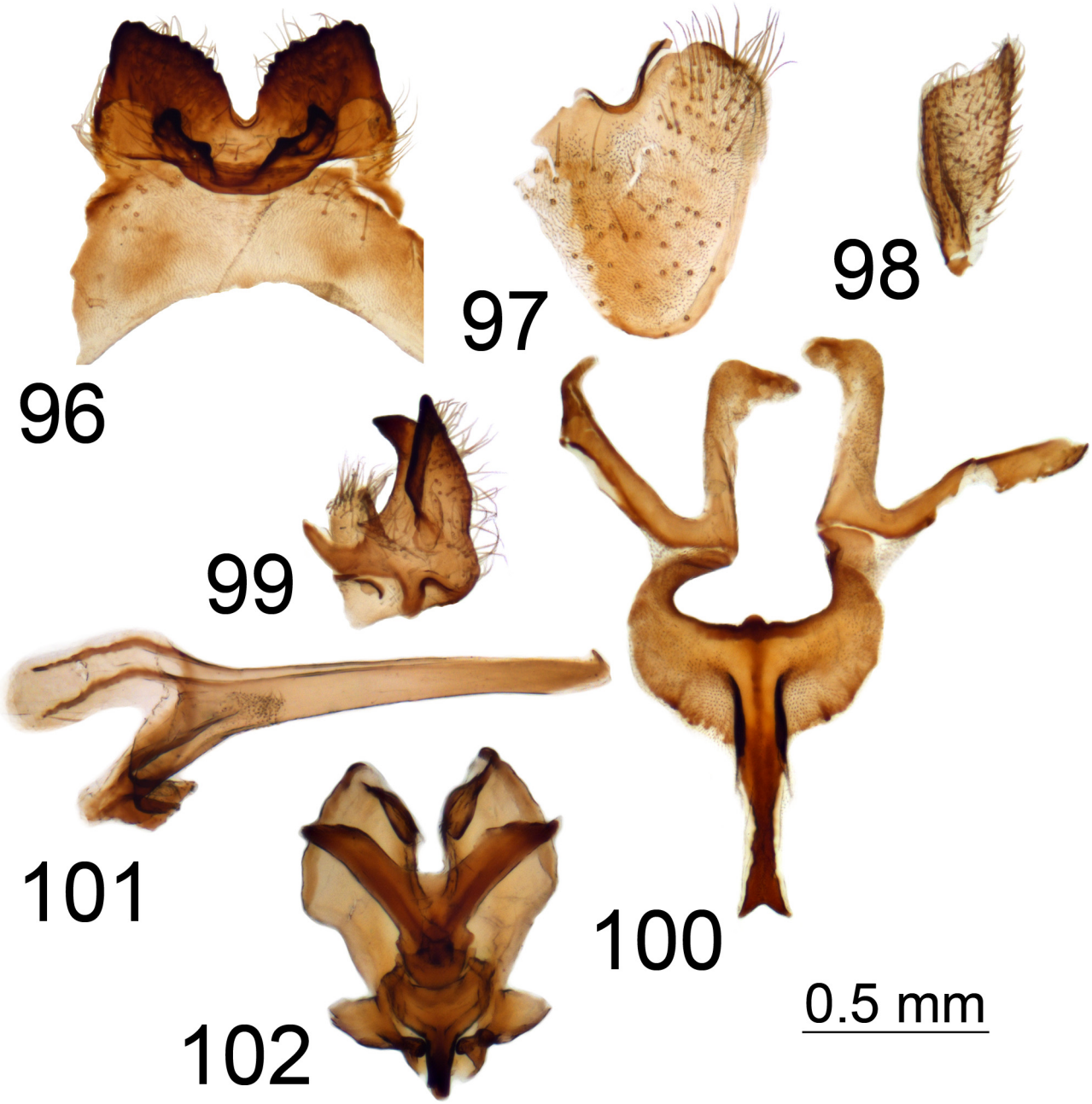
Additional material examined. MONGOLIA. Hovsgol Aimag: 1 ♂, Knovsgol Nuur [= lake] area, E side, small stream, SW Jinkherlegiyn Khyr, N50º56′09″, E100º45′36″ 1679 m, 14.vi.1996, J.K. Gelhaus #717; 1 ♂, Renchinlhumbe Soum, Har Us springs and Jargalant Gol, 4.2 km SE. Renchinlhumbe, 1597 m, N51.07917, E99.70985, 1–2.vii.2006, J.K. Gelhaus #1061, SRP06070102. **Tov Aimag:** 1 ♂, Erdene Soum, Gorkhi Terelj NP, Galtain Spring 4.5 km upstream of road crossing, N48.18393, E107.96222, 1649 m, 9.vii.2003, SRPT, SRP03070901; 2 ♂, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on West side, 1.6 km upstream from Daichin crossing, N48.21780, E107.90392, 1594 m, 9.vii.2003, SRPT, SRP03070902; 1 ♂, Erdene Soum, Unnamed river NE Khagiin Har Nuur, Gorkhi Terelj NP, N48.42080, E107.91406, 1818 m, 28.vii.2003, SRPT, SRP03072802; 2 ♀, Gorkhi Terelj NP, S Terelj, N47.91833, E107.44833, 1565 m, 28–29.vi.2009, S. Podenas & C.W. Young, MAIS2009062801. **RUSSIA.** 1 ♀, Eastern Siberia, Irkutskaya Oblast, Erbohogan village, river Lower Tunguska, 21.vi.1873, Chekanovsky (ZIN); 1 ♀, Russian Far East, Amur Oblast, Tukuringra mountain range, 19.vi.1957, Zinovjev (ZIN); 1 ♀, Kamchatka Peninsula, environs of Schanino, 2.vii.1958, Ivliyev (ZIN); 1 ♀, Siberia, Yakutiya, river Aldan near mouth of Timpton, 15.vi.1926; 1 ♀, 17.vi.1926; 1 ♀, 27–28.vi.1926, Zaykov (ZIN); 1 ♀, Yakutiya, Malaya Cherepaniha River near Olekminsk town, 8.vii.1907, Charitonov (ZIN); 1 ♀, Yakutiya, mouth of Vilyuy River—outfall of Bahanay River, 27.vi.1875, Chekanovsky (ZIN); 1 ♀, Krasnoyarsk Krai, river Lower Tunguska, 27.vi.1873, Chekanovsky (ZIN); 2 ♀, Krasnoyarsk Krai, Lower Tunguska River, 1.vii.1873, Chekanovsky (ZIN). **SWEDEN.** 1 ♂, Curon, Bathen, 19.vi.1927, Dr. P. Lackschewitz, *T. sintenisi* Lack. ex Berlin (ZMA); 1 ♂, Curon, Kalwen, 8.vi.1933, Dr. P. Lackschewitz (NHMV).

Elevation range in Mongolia. Adults were collected at altitudes ranging from 1800 m to 1600 m.

Period of activity. Adults are active from mid-June through to the end of July.

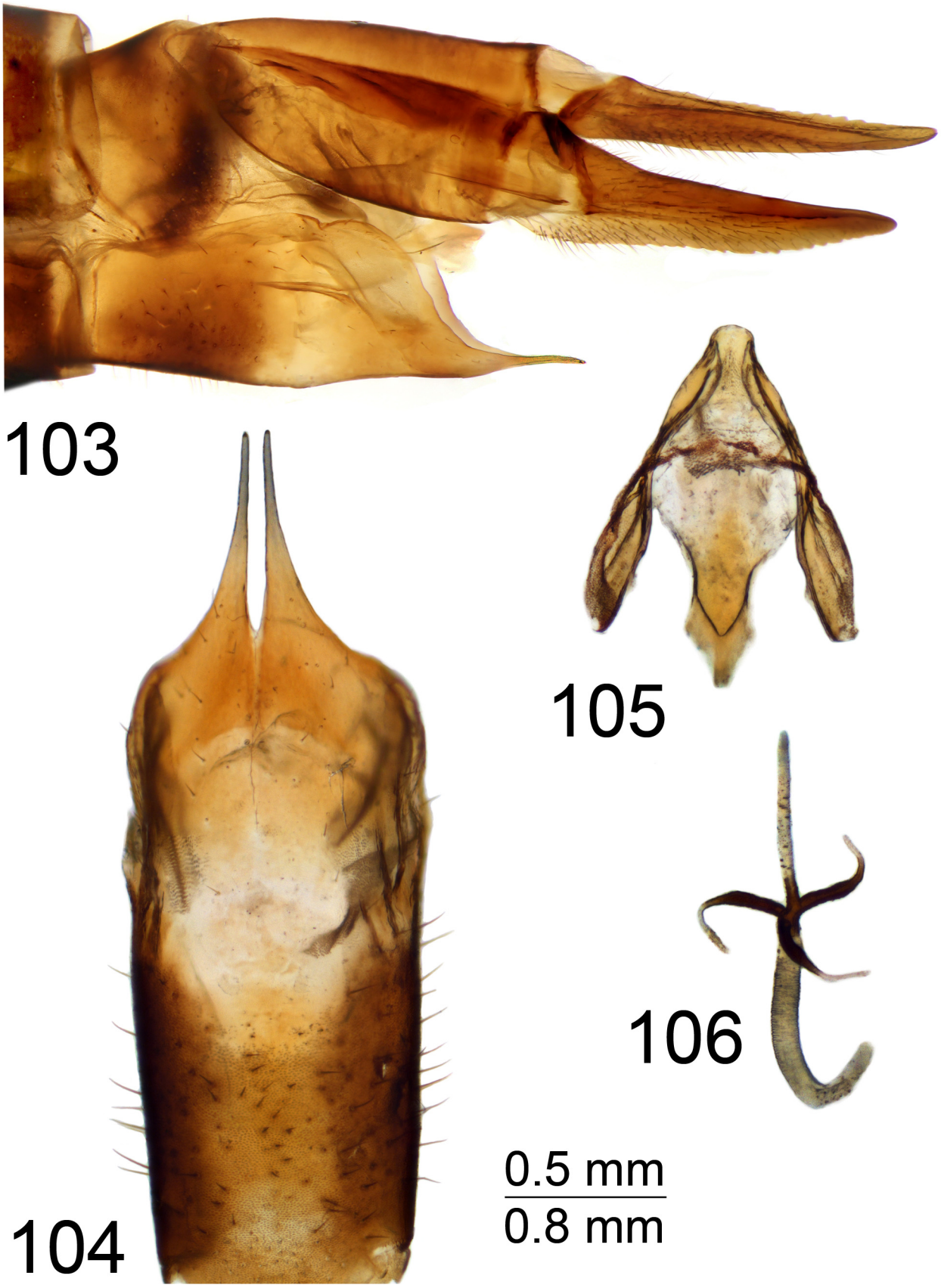
Known distribution. Estonia, Finland, Latvia, Lithuania, Mongolia (Map 7), Russia (European part, eastern part of Siberia, Far East) and Sweden.

Redescription. Male. Body length 15.3–15.8 mm, wing length 17.5–18.0 mm. General body coloration brownish yellow.



FIGURES 96–100. Hypopygium of male *T.* (*Vestiplex*) *sintenisi*. **96.** Tergite 9, dorsal view; **97.** Gonocoxite, lateral view; **98.** Left outer gonostylus, lateral view; **99.** Left inner gonostylus, lateral view; **100.** Gonocoxal fragment, dorsal view; **101.** Aedeagal guide, lateral view; **102.** Sperm pump, dorsal view.

Head. Brownish gray, vertex and occiput gray, with narrow median line. Rostrum brownish yellow, dorsally sparsely dusted with gray, nasus conspicuous. Antenna 13-segmented, if bent backward not reaching base of wing. Scape, pedicel and first flagellomere yellow, succeeding flagellomeres brown. Each flagellomere except first one with small darkened basal enlargement and slightly incised at middle. Apical flagellomere very small, reduced, distinctly shorter than preceding flagellomere. Verticils shorter than corresponding segments. Palpus brown.



FIGURES 103–106. Ovipositor of female *T.* (*Vestiplex*) *sintenisi*. **103.** Ovipositor, left lateral view; **104.** Sternite 8 with hypovalvae, ventral view; **105.** Sternite 9 and furca, dorsal view; **106.** Bursa copulatrix, dorsal view. Scales of 103 = 0.8 mm, 104–106 = 0.5 mm.

Thorax. Gray. Pronotum brown, gray pruinose, with broad brown median line. Prescutum and presutural scutum gray with 4 longitudinal stripes bordered by brown. Intermediate pair narrowly separated. Postsutural scutum gray, scutal lobe with 2 dark gray spots bordered by brown. Scutellum brown, postnotum gray pruinose with indistinct median line. Pleura brown, gray pruinose. Coxae gray pruinose. Trochanters and femora yellowish. Tibiae and tarsal segments brown. Distal part of femora darkened. Tarsal claws without tooth. Wing patterned with brown. Halter entirely yellow.

Abdomen. Brownish yellow, with brown broadly interrupted dorsal stripe and indistinct lateral stripe. Posterior and especially lateral margins of tergites pale. Tergite 1 yellow, sparsely dusted, tergites 2–6 brownish yellow, succeeding tergites dark brown. Lateral margins of tergites pale. Sternite 1 sparsely dusted with gray. Sternites 2–6 brownish yellow, succeeding sternites dark brown.

Hypopygium. Dark brown, at base slightly broader than abdomen. Tergite 9 in shape of relatively small narrower sclerotised plate (Fig. 96). Main body of tergal plate brown. Posterior margin of tergal plate with U-shaped notch, posterior lobe obliquely truncated with several coarse teeth. Anterior portion with tergal saucer elevated into transverse sclerotised plate, at base with median U-shaped notch providing tooth on either side. Gonocoxite unarmed (Fig. 97). Outer gonostylus in shape of flattened blade (Fig. 98). Inner gonostylus small, dorsal edge sclerotized, terminating as acute projection, beak extended into triangle-shaped rostrum (Fig. 99). Gonocoxal fragment large with lateral and medial sclerites well-developed (Fig. 100). Medial sclerites fused, anterior apodeme long and broad, posterior part flattened and arched. Lateral sclerite large and bilobed. Aedeagal guide in shape of slender, narrow tube (Fig. 101). Central vesicle of sperm pump small and flattened (Fig. 102). Compressor apodeme with median incision. Posterior immovable apodeme much longer than compressor apodeme, large and extended laterally into broad plate. Anterior immovable apodeme nearly triangle with apex obtuse. Aedeagus shaped as very long tube, about 18.3 times as long as sperm pump, basally dark brown, medially brown, apically passing into yellow. Distal part ventrally membranous, shovel-shaped.

Female. Body length 18.3–20.9 mm, wing length 15.5–16.3 mm. Differs from male by brownish gray body coloration. Antenna short, scape, pedicel and flagellomeres 2–3 yellow, succeeding flagellomeres brownish yellow indistinctly bicolorous. Wing distinctly patterned by brown.

Ovipositor (Figs 103–106). Tergite 10 shiny brown. Cercus reddish-brown, straight, slightly longer than tergite 10, with acute tip, outer margin with fine and obtuse serration (Fig. 103). Hypovalva in shape of filament with base slightly broadened, narrowed towards pale apex (Fig. 104). Depth of median incision between hypovalvae approximately at same level as posterior margin of sternite 8. Lateral margins of sternite 8 extending dorsally and nearly hiding base of tergite 10. Sternite 9 with anterior part medially slightly narrowed, posterior part rounded (Fig. 105). Furca conspicuously broadened anteriorly. Bursa copulatrix with spermathecal ducts sclerotised at base. Wall of bursa copulatrix at connection site with spermathecal ducts sclerotised. Sclerotisation of all 3 spermathecal ducts connected and forming complete light brown ring on wall of bursa copulatrix (Fig. 106). Cul-de-sac of bursa copulatrix curved. Spermatheca pear-shaped, distinctly broadened at base (Fig. 24).

Remarks. *Tipula* (*V.*) *jakut* was described from a single female by Alexander (1934) collected in the Russian Far East. The synonymy *T.* (*V.*) *sintenisi* = *T.* (*V.*) *jakut* **syn. nov.** was established after comparison of type specimens of both taxa and additional non-type material collected from Mongolia. Females of *T.* (*V.*) *sintenisi* can be recognized from sternite 8 which has the lateral angle highly raised and nearly hiding base of tergite 10.

Several females published by Savchenko (1964) from Russia, were erroneously identified as *T.* (*V.*) *sintenisi*. They were examined and re-identified here as *T.* (*V.*) *arctica* Curtis, 1835: 1 ♀, Siberia, Yakutiya, township Tiksi, 8.vii.1957, Shamurin (ZIN); 1 ♀, Yakutiya, Yakutsk, estuary of Kolyma river, right bank near Cape Tolstiy, 27.vii.1905, Buturlin (ZIN); 1 ♀, Russian Far East, Chukotka Peninsula, township Naukan, 13.viii.1948, Maslov (ZIN).

***Tipula* (*Vestiplex*) *subcentralis* Alexander**

(Figs 1, 24, 107–116; Map 8)

Tipula subcentralis Alexander, 1918: 73; 1925: 92.

Tipula (*Vestiplex*) *subcentralis*: Alexander, 1934b: 408; 1935: 118; Savchenko, 1960: 209; 1964: 200; Oosterbroek & Theowald, 1992: 159.

Type material examined. HOLOTYPE ♂: **RUSSIA,** Kamchatka [date unknown], L. Stejneger. Antenna and wing slide mounted (USNM).

Additional material examined. MONGOLIA. Hovsgol Aimag: 8 ♂, Erdene Bulgan Soum, cold spring on Emt Gol, 33.2 km NW Tarialyn, N49.87742, E101.82073, 1496 m, 13.vii.2005, SRPT, SRP05071302; 1 ♀, Selenge Gol at Teel (beginning of Selenge below confluence of five rivers), N49.26764, E100.82688, 1182 m, 24–25.vii.2005, SRPT, SRP05072401; 2 ♀, Renchinlhumbe Soum, Jaray (Jarin) Gol (river), 33 km N Renchinlhumbe, 1580 m, N51.39865, E99.75060, 2–3.vii.2006, J.K. Gelhaus #1064, SRP06070203. **Khentii Aimag:** 1 ♂, 1 ♀, Batshireet Soum, jet Onon Gol, 8 km NE Batshireet, N48.71888, E110.27771, 1080 m, 16.vii.2011, S. Podenas, MAIS2011071602; 2 ♂, 1 ♀, Dadal Soum, Balj Gol, 4.6 km N Dadal, N49.06556, E111.60281, 916 m, 18.vii.2011, S. Podenas, MAIS2011071801; 1 ♂, Dadal Soum, Balj Gol, 5.8 km NE Dadal, N49.05865, E111.56134, 930 m, 19.vii.2011, S. Podenas, MAIS2011071901. **Selenge Aimag:** 1 ♀, Bugant/Yaroo Soum, Khongiin Gol at Yeroo Gol, confluence, N49.08636, E107.30750, 943 m, 18–19.vii.2003, SRPT, SRP03071803. **Tov Aimag:** 1 ♂, Erdene Soum, Unnamed river NE Khagiin Har Nuur, Gorkhi Terelj NP, N48.42080, E107.91406, 1818 m, 28.vii.2003, SRPT, SRP03072802.

Elevation range in Mongolia. Adults were collected at altitudes ranging from 900 m to 1600 m.

Period of activity. Adults are active throughout July.

Known distribution. Mongolia (Map 8) and Russia (western and eastern parts of Siberia, Far East).

Redescription. Male. Body length 17.5–23.3 mm, wing length 20.9–21.6 mm. General body coloration brownish yellow.

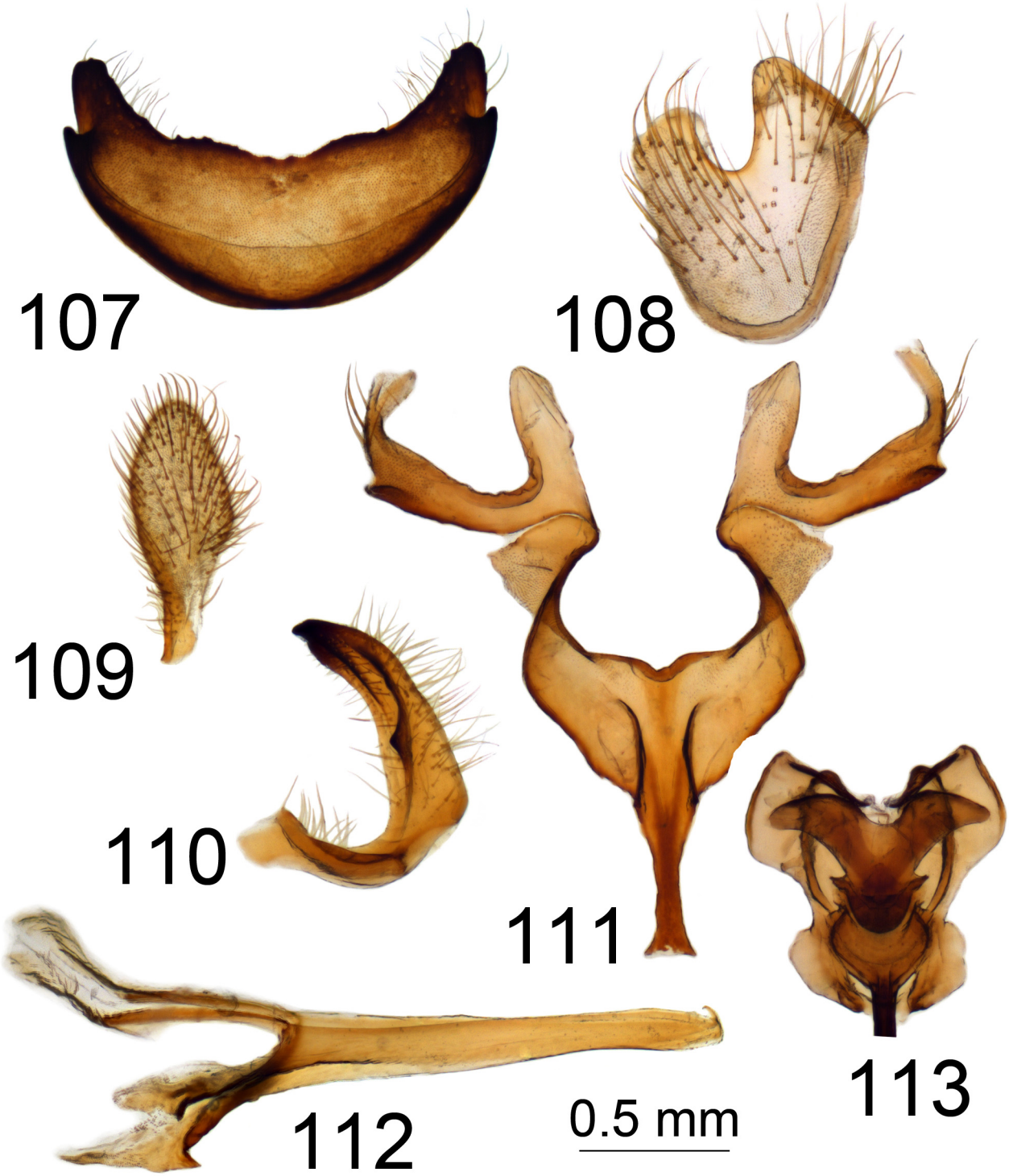
Head. Brownish yellow, vertex and occiput light gray, pruinose, with brown median line. Rostrum brownish yellow with nasus short and stout. Antenna 13-segmented, if bent backward reaching base of wing. Scape, pedicel and first flagellomeres yellow, succeeding flagellomeres dark brown. Flagellomeres 2–5 yellow dorso-apically, most intensely on second and less intense on succeeding flagellomeres. Each flagellomere except first one with weak basal enlargement and rather deep incision. Apical flagellomere very small, reduced, distinctly shorter than preceding segment. Verticils as long as respective segments. Coloration of palpus varies from light brown to dark brown, depending on specimen, lighter basally turning darker towards distal end.

Thorax. Light brown, densely covered with gray pruinosity. Pronotum grayish with broad brown median line. Prescutum and presutural scutum with 4 longitudinal stripes bordered by brown. Intermediate pair light brown, fused into brown median line. Lateral stripe grayish. Interspace between median and lateral stripes yellowish with light setae arising from dark sockets. Postsutural scutum grayish, scutal lobe with 2 spots bordered by brown. Scutellum and postnotum yellowish, grey polinose with brown median line, covered with sparse long yellow setae. Pleura dull yellow, sparsely dusted with gray. Coxae brownish yellow, sparsely dusted with gray. Trochanters, femora and tibiae brownish yellow. Tarsal segments passing into dark brown. Distal part of femora and tibiae darkened. Tarsal claws without tooth. Wing distinctly patterned with brown. Halter with pale stem and brown knob.

Abdomen. Yellow, with brown interrupted dorsal stripe and indistinct lateral stripe. Posterior and especially lateral margins of tergites pale. Tergite 1 yellow, sparsely dusted, tergites 2–5 yellow, tergites 6–8 passing into brown. Sternites 1–5 yellow, sternites 6–9 passing into brown. Sternite 1 slightly dusted with gray.

Hypopygium. Brown, at base slightly broader than abdomen. Tergite 9 forming large concave crescent sclerotised saucer (Fig. 107). Main body of tergal saucer brownish yellow with blackened rim. Posterior margin of tergal saucer broadly emarginated, with small denticles. Lateral angle of tergal saucer extended into broad obtuse tooth. Anterior and lateral portions of tergal saucer raised into sclerotised border. Border laterally produced into slender acute tooth directed caudad and situated under lateral angle of tergal saucer so that tergite 9 with 2 teeth in lateral view. Gonocoxite unarmed (Fig. 108). Outer gonostylus flattened, widest at middle with apex rounded (Fig. 109). Inner gonostylus large, claw-shaped curved plate with single mid-dorsal tooth or small obtuse projection. Beak extended into blackened rostrum, narrowed subapically (Fig. 110). Gonocoxal fragment large with lateral and medial sclerites well-developed (Fig. 111). Medial sclerites fused, anterior apodeme long and broad, posterior part broadly flattened and arched. Lateral sclerite large and bilobed. Aedeagal guide shaped in long slender tube (Fig. 112). Sperm pump with central vesicle small and flattened (Fig. 113). Compressor apodeme with median incision. Posterior immovable apodeme longer than compressor apodeme, large and extended laterally into broad plate. Anterior immovable apodeme widely rounded, narrowed towards anterior margin. Aedeagus shaped as very long tube, about 16 times as long as sperm pump, basal half dark brown, rest of tube yellow. Distal part ventrally membranous, shovel-shaped.

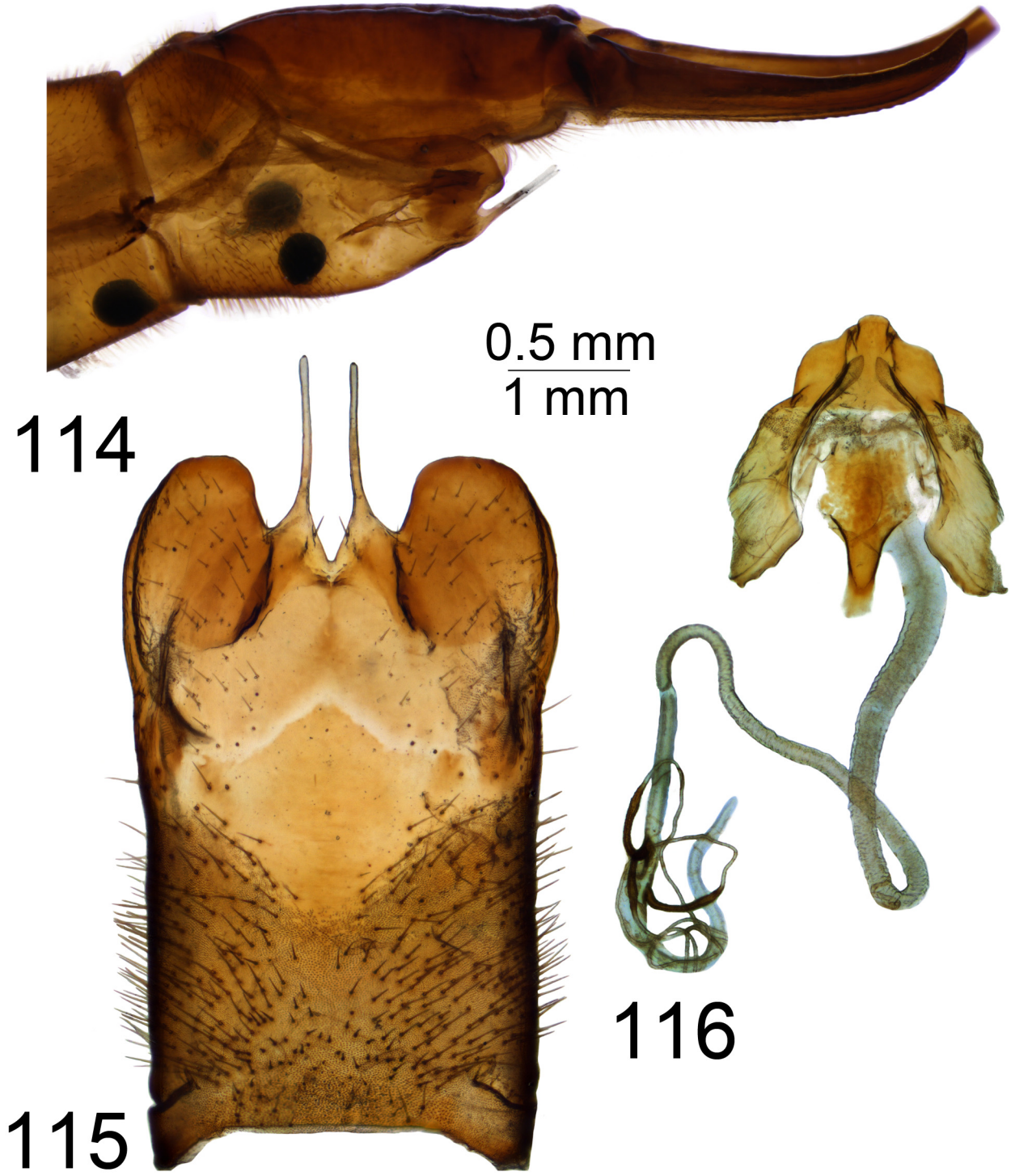
Female. Body length 26.8–31.2 mm, wing length 22.0–25.0 mm (Fig. 1). Generally similar to male. Antenna short, reaching frontal margin of prescutum if bent posteriorly, flagellomeres cylindrical. Both basal antennomeres yellow, sparsely dusted with gray. Flagellum yellow at base, turning dark brown towards apex.



FIGURES 107–113. Hypopygium of male *T.* (*Vestiplex*) *subcentralis*. **107.** Tergite 9, dorsal view; **108.** Gonocoxite, lateral view; **109.** Left outer gonostylus, lateral view; **110.** Left inner gonostylus, lateral view; **111.** Gonocoxal fragment, dorsal view; **112.** Aedeagal guide, lateral view; **113.** Sperm pump, dorsal view.

Ovipositor (Figs 114–116). Tergite 10 shiny brown. Cercus brown, slender, slightly longer than tergite 10, with tip narrowed and curved dorsally, outer margin with indistinct obtuse serration (Fig. 114). Hypovalva in shape of elongated filament, yellow at base, pale apically (Fig. 115). Median incision between hypovalvae slightly deeper

than posterior margin of sternite 8. Lateral incision small and wide (depth of incision slightly longer or about same length as maximal width). Lateral angle of sternite 8 rounded. Sternite 9 with anterior part broadened, posterior part short, rounded (Fig. 116). Furca yellowish brown, anteriorly narrowed, posteriorly broad. Bursa copulatrix, with spermathecal ducts sclerotised at base, in shape of lightly curved, slender dark brown process. Wall of bursa copulatrix at connection site with spermathecal ducts partially sclerotised, sclerotisation extended short distance along wall. Cul-de-sac of bursa copulatrix curved. Spermatheca nearly pear-shaped, broadened at base (Fig. 23).



FIGURES 114–116. Ovipositor of female *T.* (*Vestiplex*) *subcentralis*. **114.** Ovipositor, left lateral view; **115.** Sternite 8 with hypovalvae, ventral view; **116.** Sternite 9, furca and bursa copulatrix, dorsal view. Scale of 114 = 0.5 mm, 115–116 = 0.5 mm.

Tipula (*Vestiplex*) *tchukchi* Alexander

(Figs 20, 117–128; Map 9)

Tipula (*Vestiplex*) *tchukchi* Alexander, 1934b: 408; 1935: 118.
Tipula (*Vestiplex*) *laccata*: Lackschewitz, 1936: 264 (partim); Mannheims, 1953: 132 (partim); Savchenko, 1964: 204 (partim); nec Lundström & Frey, 1916 (after Mannheims 1971).
Tipula (*Vestiplex*) *bo* Mannheims, 1967: 148; Mannheims & Savchenko, 1973: 172 (synonymy).
Tipula (*Vestiplex*) *laccata obtusidens* Savchenko, 1964: 205.
Tipula (*Vestiplex*) *thukchi obtusidens*: Starkevich & Paramonov, 2016: 81; Starkevich & Paramonov, 2016: 81(synonymy).

Type material examined. *Tipula* (*Vestiplex*) *tchukchi* Alexander: **HOLOTYPE** ♂: **RUSSIA**, Chukchi Peninsula, Chukotka Autonomous Okrug, Markovo township near Anadyr town, 6.vii.1896, Gondatti (ZIN). **PARATYPES:** 1 ♀, topotypic (ZIN); 1 ♂, Kamchatka Kray, mouth of Kichiga River, 27.vi.1910, Skorikov (ZIN).

Additional material examined. MONGOLIA. Bulgan Aimag: 1 ♀, between Somon Chischig-Öndör and Somon Orchon, 23 km NNE von Somon Chischig-Öndör, 1390 m, Exp. Dr. Z. Kaszab, 1968, Nr. 965, 15.vi.–23.vii.1968 (HNHM). **Hovsgol Aimag:** 1 ♂, NE shore of Hovsgol Lake, Noyon valley, riparian zone, N5°12′05.5″, E100°48′26.2″, 1709 m, 8.vii.2002, O. Yadamsuren. **Ovorkhangai Aimag:** 5 ♂, Bat-Olziy Soum, Ovtiyn Gol, 10 km SE Bat-Olziy, N46.75972, E102.30905, 1847 m, 8.vii.2011, S. Podenas, MAIS2011070803. **Selenge Aimag:** 1 ♀, Shaamar Soum, Orkhon River at Delgerkhaan Bridge, N50.06476, E106.13388, 609 m, 27.vii.2003, SRPT, SRP03072701. **Tov Aimag:** 1 ♂, Erdene Soum, Baruum Bayan Gol (river), 48°06′N, 107°45′E, 29.vi.1998, Sh. Enkhetsetseg; 1 ♂, 1 ♀, Erdene Soum, Gorkhi Terelj NP, Khokh Chuluutiin Gol, N48.12675, E107.57996, 1680 m, 6.vii.2003, SRPT, SRP03070604; 4 ♂, 5 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on West side, 1.6 km upstream from Daichin crossing, N48.21780, E107.90392, 1594 m, 9.vii.2003, SRPT, SRP03070902; 1 ♀, Erdene Soum, Gorkhi Terelj NP, mouth of Khag River at confluence with Tuul River, N48.25861, E107.90251, 1608 m, 10.vii.2003, SRPT, SRP03071002; 1 ♂, Erdene Soum, Gorkhi Terelj NP, stream 0.5 km N Gorkhi Davaa (Pass), N47.94981, E107.45511, 1593 m, 11.vii.2011, S. Podenas, MAIS2011071101; 1 ♂, Erdene Soum, Shar Bulag, Yellow Spring, 26 km W Mongonmorit, N48.14814, E108.07956, 1629 m, 13.vii.2011, S. Podenas, MAIS2011071301.

Elevation range in Mongolia. Adults were collected at altitudes ranging from 600 m to 1850 m.

Period of activity. Adults are active from the end of June through to the end of July.

Known distribution. Finland, Mongolia (Map 9), Russia (eastern part of Siberia, Far East) and Sweden.

Redescription. Male. Body length 13.5–15.8 mm, wing length 15.0–16.0 mm. General body coloration blackish yellow.

Head. Gray, vertex and occiput gray with brown median line. Coloration of rostrum varies from yellow to brown, dorsally dusted with gray. Nasus short. Antenna 13-segmented, if bent backward extending beyond wing base. Scape, pedicel and flagellomere 1 yellowish, succeeding flagellomeres brown. Each flagellomere except first one with basal enlargement and moderately incised. Apical flagellomere small, reduced. Verticils shorter than corresponding flagellomeres. Palpus dark brown.

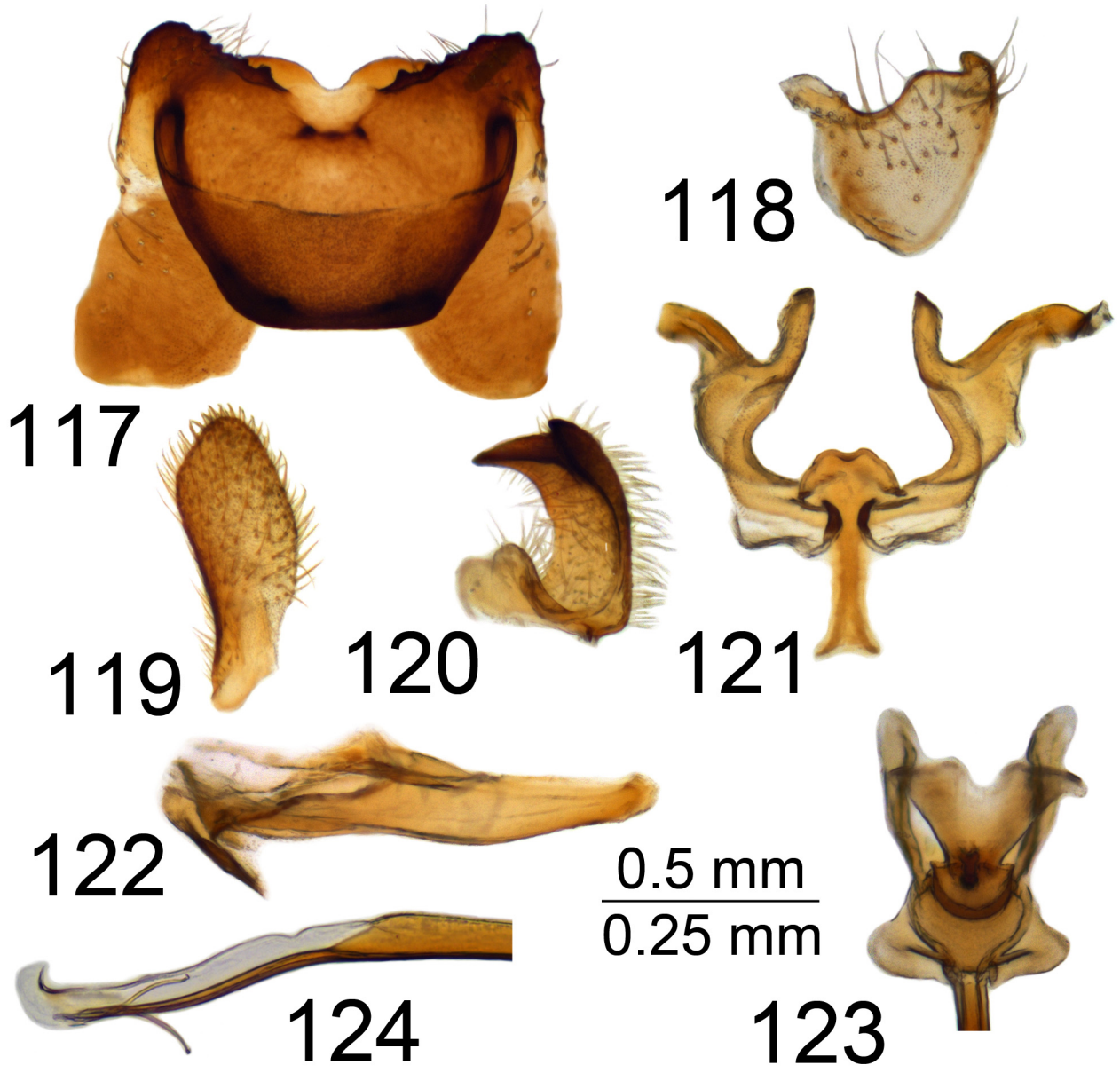
Thorax. Blackish gray pruinose. Pronotum blackish, gray dusted, with brown median line. Prescutum and presutural scutum black, grey pruinose with 4 longitudinal stripes bordered by brown. Intermediate pair fused into brown median line. Interspace between median and lateral stripes light gray with light setae. Postsutural scutum blackish, gray pruinose with median line. Scutal lobe with 2 spots bordered by brown. Scutellum brown with median line. Postnotum grey dusted with midline and long setae. Pleura blackish, grey pruinose. Coxae blackish, grey pruinose. Trochanters, femora and tibiae yellowish. Tarsal segments brown. Distal part of femora and tibiae dark brown. Tarsal claws toothed. Wing slightly patterned with brown. Halter with yellowish stem and brown knob.

Abdomen. Brownish yellow. Tergites with lateral margins narrowly pale. Tergite 1 dark brown, dusted with gray. Dorsal stripe on tergites 3–5 broadly interrupted. Tergite 6 black in posterior half, tergites 7–8 black. Sternite 1 brown, sparsely dusted with gray. Lateral stripe distinct. Sternites 2–5 and sternite 6 basally at about one-third length brownish yellow, succeeding sternites black.

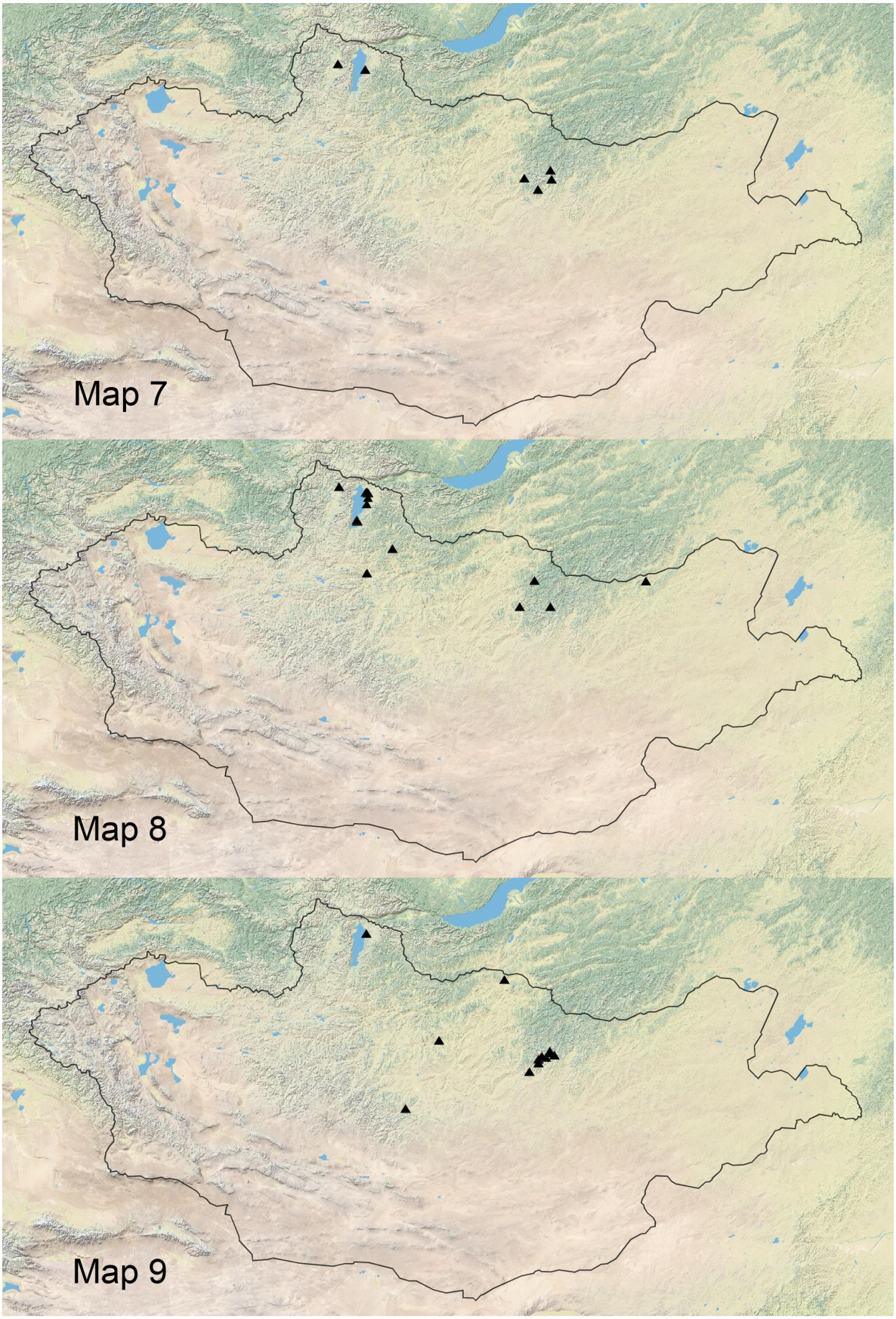
Hypopygium. Black. Tergite 9 forming large concave sclerotised saucer roughly rectangular in outline (Fig. 117). Main body of tergal saucer brown with blackened rim. Posterior margin of tergal saucer broadly emarginated, with median U-shaped notch, 2 yellow rounded projections and black median transverse sclerotisation, small denticles on either side. Lateral angle of tergal saucer obtuse, broadly truncated. Anterior and lateral portions of

tergal saucer raised into sclerotised border with obtuse anterior angles. Border laterally produced into obtuse point directed caudad and situated under lateral angle of tergal saucer. Gonocoxite unarmed (Fig. 118). Outer gonostylus flattened, slightly curved with apex rounded (Fig. 119). Inner gonostylus in shape of curved plate, bidentate at apex, with obtuse tooth dorsally, beak claw-shaped (Fig. 120). Gonocoxal fragment large with lateral and medial sclerites well-developed (Fig. 121). Medial sclerites fused, anterior apodeme narrowed, posterior part broadened and arched, posterior apodeme with apex rounded and medially incised. Lateral sclerite large and bilobed, expanded at base. Aedeagal guide relatively narrow tube-shaped (Fig. 122). Sperm pump with central vesicle small and flattened (Fig. 123). Compressor apodeme with median incision. Posterior immovable apodeme longer than compressor apodeme, relatively narrow. Anterior immovable apodeme rounded. Aedeagus shaped as moderately long tube, about 3.8 times as long as sperm pump, basally dark brown, medially brown passing into yellow towards apex. Distal part ventrally membranous, shovel-shaped (Fig. 124).

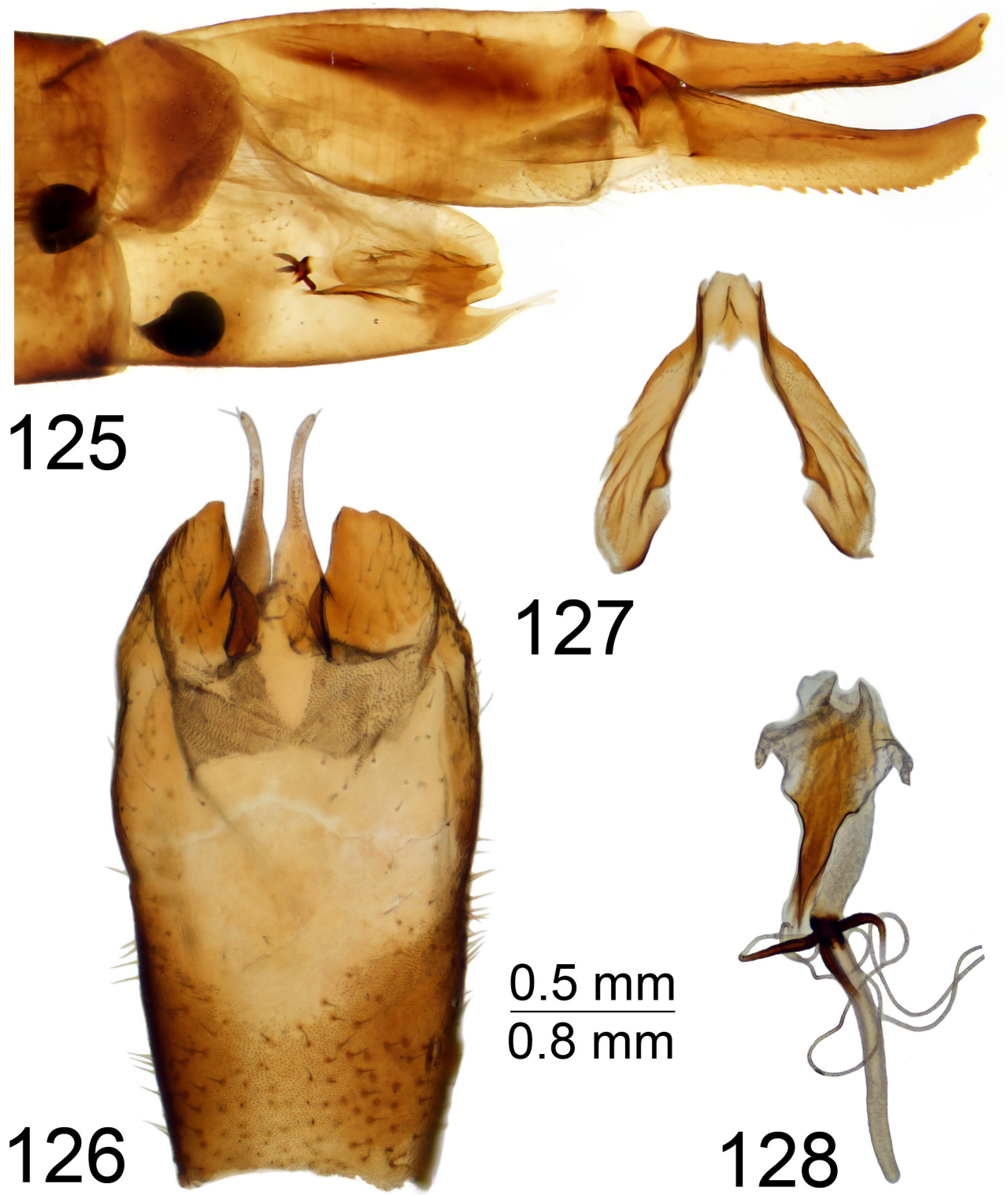
Female. Body length 17.3–24.5 mm, wing length 12.5–14.5 mm. Antenna short, if bent backward extending beyond pronotum. Antenna yellowish, flagellomeres cylindrical. Abdominal stripe broad, distinct.



FIGURES 117–123. Hypopygium of male *T.* (*Vestiplex*) *tchukchi*. **117.** Tergite 9, dorsal view; **118.** Gonocoxite, lateral view; **119.** Left outer gonostylus, lateral view; **120.** Left inner gonostylus, lateral view; **121.** Gonocoxal fragment, dorsal view; **122.** Aedeagal guide, lateral view; **123.** Sperm pump, dorsal view; **124.** Distal part of aedeagus, lateral view. Scale of 117–122 = 0.5 mm, 123 = 0.25 mm.



MAPS 7–9. Distribution maps of *T.* (*Vestiplex*) crane flies in Mongolia. **7.** *T.* (*Vestiplex*) *sintenisi*; **8.** *T.* (*Vestiplex*) *subcentralis*; **9.** *T.* (*Vestiplex*) *tchukchi*.



FIGURES 125–128. Ovipositor of female *T.* (*Vestiplex*) *tchukchi*. **125.** Ovipositor, left lateral view; **126.** Sternite 8 with hypovalvae, ventral view; **127.** Sternite 9, dorsal view; **128.** Furca and bursa copulatrix, dorsal view. Scale of 125 = 0.8 mm, 126–127 = 0.5 mm.

Ovipositor (Figs 125–128). Tergite 10 shiny, brownish-yellow. Cercus brownish-yellow, slightly shorter than tergite 10, curved dorsally with apical incision, outer margin with rough and distinct serration (Fig. 125). Hypovalva in shape of yellow flattened filament with broadened base and short trichia at tip (Fig. 126). Median incision between hypovalvae deeper than posterior margin of sternite 8. Lateral incision relatively deep, about twice as deep

as maximum width. Lateral angle of sternite 8 obtuse. Sternite 9 with anterior part broad, inner edge with submedian triangular extension, posterior part straight (Fig. 127). Furca anteriorly narrowed, posteriorly broad (Fig. 128). Bursa copulatrix with spermathecal ducts sclerotised at base, in shape of nearly straight dark brown process (Fig. 128). Wall of bursa copulatrix on connection site with spermathecal ducts sclerotised. Sclerotisation of all 3 spermathecal ducts connected and forming complete dark brown ring. Cul-de-sac part of bursa copulatrix roughly straight. Spermatheca pear-shaped (Fig. 26).

Tipula (*V.*) *nubeculosa* species group

The *nubeculosa* group was proposed by Mannheims (1953) and the list of species was revised by Savchenko (1964) and includes the following species: *T.* (*V.*) *cisalpina* Riedel, 1913, *T.* (*V.*) *hemapterandra* Bezzi, 1924, *T.* (*V.*) *hortorum* Linnaeus, 1758, *T.* (*V.*) *nubeculosa* Meigen, 1804 and *T.* (*V.*) *saccai* Mannheims, 1950. Males of this group are characterized by the following features: gonocoxite large with extended apex, tergite 9 forming plate reduced in size. The members of the *nubeculosa* species group are mainly distributed in the West Palaearctic, except *T.* (*V.*) *nubeculosa* which also occurs in the Eastern Palaearctic, including Mongolia.

Tipula (*Vestiplex*) *nubeculosa* Meigen

(Figs 18, 129–141; Map 10)

Tipula nubeculosa Meigen, 1804: 70.
Tipula pseudoscripta Pierre, 1921:123; Mannheims, 1953: 123 (synonymy).
Tipula rubripes Schummel, 1833: 49.
Tipula (*Vestiplex*) *rubripes*: Edwards, 1931: 80; Hemmingsen, 1956: 247; Hemmingsen & Lemche, 1965: 53; Savchenko, 1964: 223; Mannheims & Savchenko, 1967: 152; Mannheims, 1953: 123 (synonymy).
Tipula (*Vestiplex*) *nubeculosa*: Mannheims, 1953: 123; Mannheims & Theowald, 1959: 19; Tjeder, 1966: 280; Oosterbroek & Theowald, 1992: 157.

Material examined. MONGOLIA. Bayan Olgii Aimag: 1 ♀, Tsengel Soum, Ikh Khatuugiin Gol upstream of junction with Baga Khatuugiin Nuur stream, N49.04593, E88.50936, 2383 m, 13.vii.2008, S. Podenas, MAIS08071302. **Tov Aimag:** 1 ♀, 12 km SE Ulan-Baator, Bogdo ul, 1500 m, 6.vi.1964, Exp. Dr. Z. Kaszab, Nr. 271 (HNHM); 1 ♂, Suczukte Valley, SW Kentey, 13.vi.1925, Kozlov (ZIN); 1 ♂, Erdene Soum, Gorkhi Terelj NP, mouth of Khag River at confluence with Tuul River, N48.25861, E107.90251, 1608 m, 10.vii.2003, SRPT, SRP03071002; 1 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on E side 8.5 km downstream of Galtain Gol, N48.09720, E107.84928, 1542 m, 11.vii.2003, SRPT, SRP03071101; 1 ♀, Zuunmod Soum, Turgeniy Gol (stream), 8 km NNW Zuunmod, 1581 m, N47.77758, E106.92780, 14.vii.2006, J.K. Gelhaus #1073-B, SRP06071401; 1 ♀, Erdene Soum, Gorkhi Terelj NP, stream 0.5 km N Gorkhi Davaa (Pass), N47.94981, E107.45511, 1593 m, 11.vii.2011, S. Podenas, MAIS2011071101. **RUSSIA.** 1 ♂, Buryatia, Ulan-de, 11.vii.1986, R. Ferenca, MZVUE550 (MZVU).

Elevation range in Mongolia. Adults were collected at altitudes ranging from 1500 m to 2400 m.

Period of activity. Adults are active from early to mid-July.

Known distribution. Europe, Russia (European part) and Mongolia (Map 10). First record for eastern part of Russia.

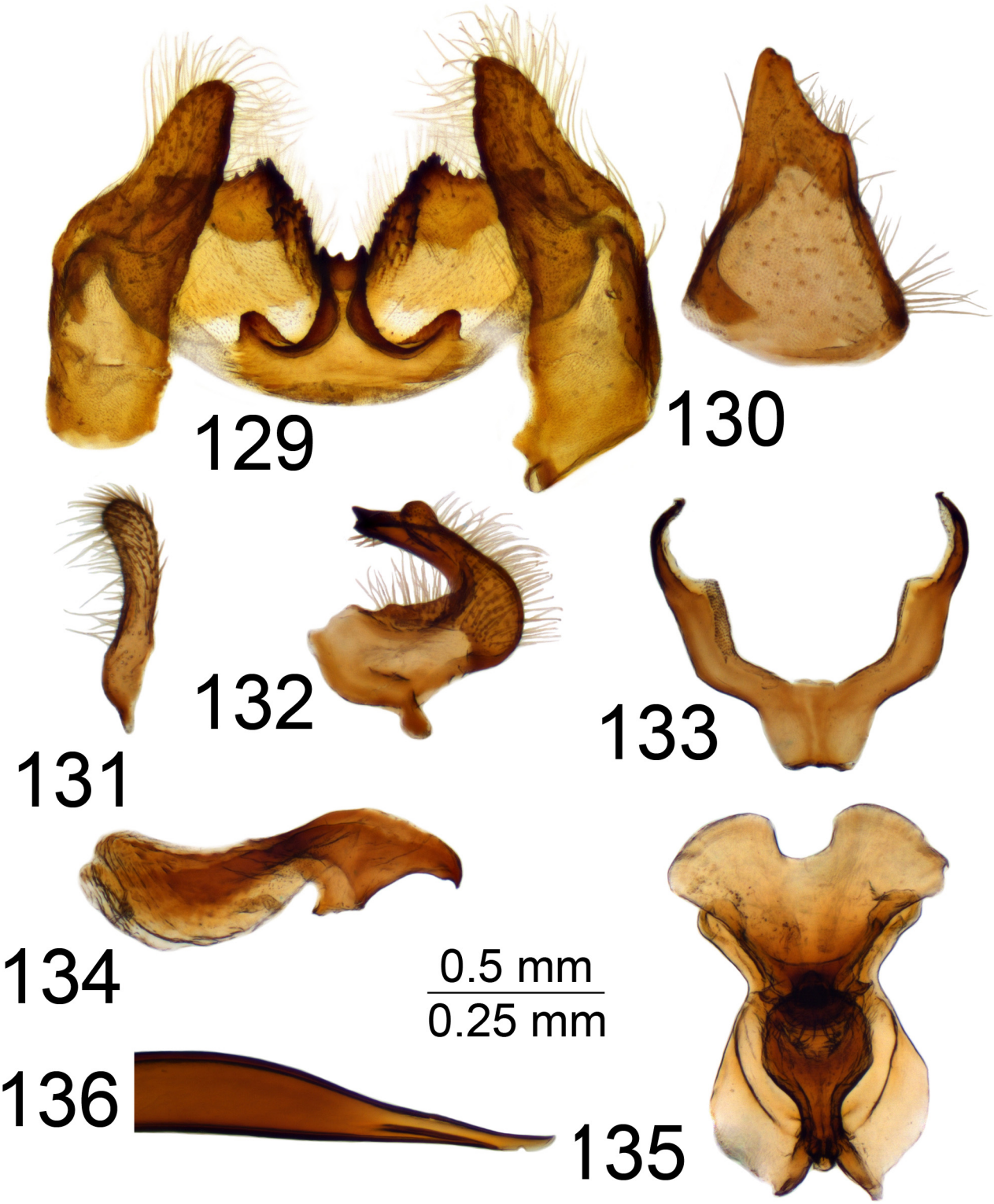
Redescription. Male. Body length 17.6–18.3 mm, wing length 18.0–19.1 mm. General body coloration brownish yellow.

Head. Brownish yellow, vertex and occiput dark gray, with narrow median line. Rostrum brownish yellow, nasus absent. Antenna 13-segmented, if bent backward reaching base of wing. Scape, pedicel and flagellomere 1 yellow, succeeding flagellomeres bicolored. Each flagellomere except first one with indistinct basal enlargement. Apical flagellomere very small, reduced, distinctly shorter than preceding segment. Verticils longer than corresponding segments. Palpus with 2 basal segments brownish yellow, succeeding dark brown.

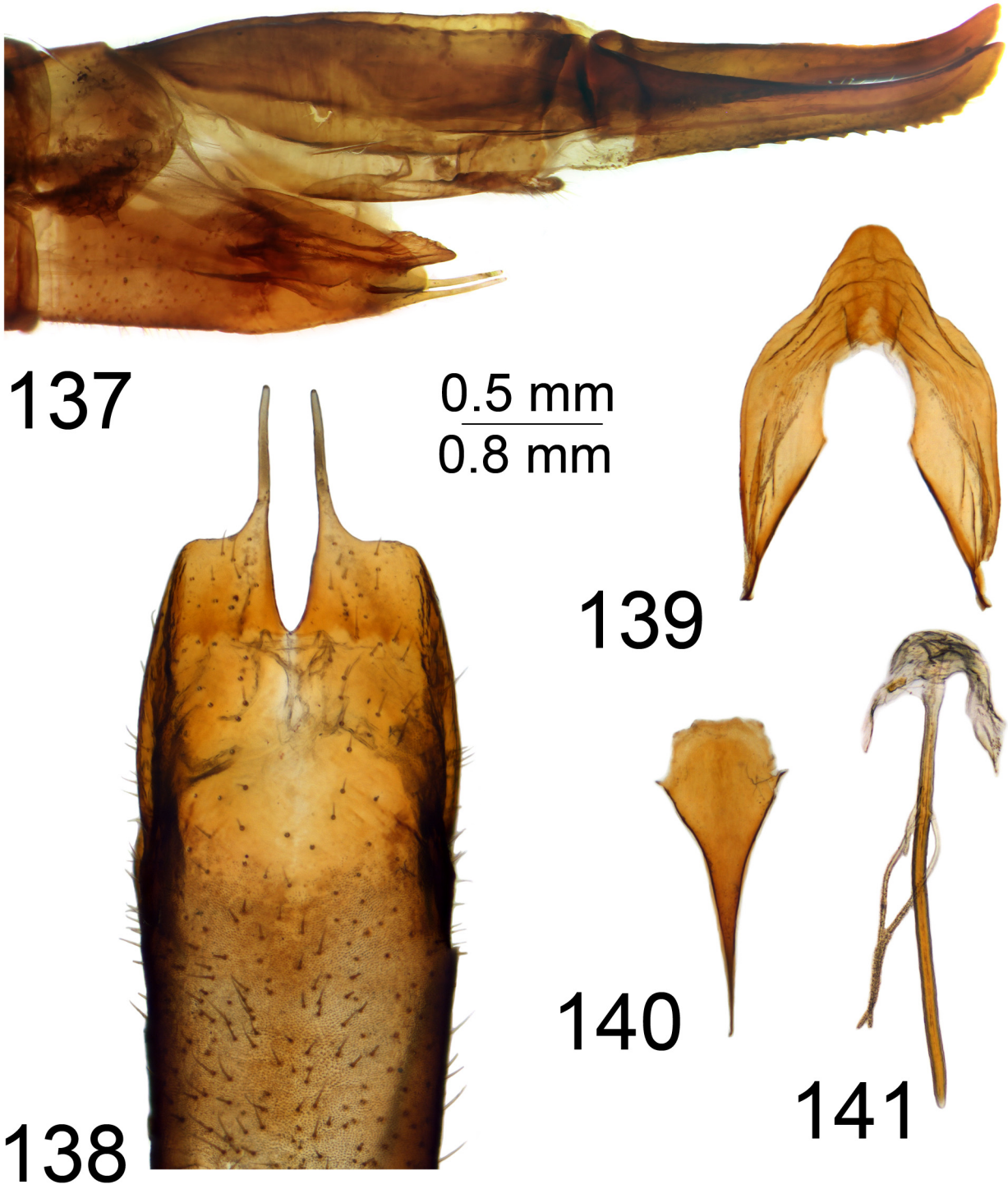
Thorax. Brownish gray. Pronotum brownish yellow with brown median line. Prescutum and presutural scutum with 4 longitudinal stripes bordered by brown. Intermediate pair brownish gray, fused. Lateral stripe grayish. Interspace between median and lateral stripes gray. Postsutural scutum gray, scutal lobe with 2 spots bordered by brown. Scutellum brownish gray, postnotum brownish gray with narrow median line. Pleura brownish yellow, sparsely

dusted with gray. Coxae yellow, sparsely dusted with gray. Trochanters yellow. Femora and tibiae yellowish. Tarsal segments dark brown. Distal part of femora and tibiae darkened. Tarsal claws without tooth. Wing distinctly patterned with brown. Halter with pale stem and brown knob.

Abdomen. Brownish yellow, without median stripe, with narrow lateral stripe. Tergites with pale lateral margin.



FIGURES 129–136. Hypopygium of male *T.* (*Vestiplex*) *nubeculosa*. **129.** Tergite 9, dorsal view; **130.** Gonocoxite, lateral view; **131.** Left outer gonostylus, lateral view; **132.** Left inner gonostylus, lateral view; **133.** Gonocoxal fragment, dorsal view; **134.** Aedeagal guide, lateral view; **135.** Sperm pump, dorsal view; **136.** Distal part of aedeagus, lateral view. Scale of 129–135 = 0.5 mm, 136 = 0.25 mm.



FIGURES 137–141. Ovipositor of female *T.* (*Vestiplex*) *nubeculosa*. **137.** Ovipositor, left lateral view; **138.** Sternite 8 with hypovalvae, ventral view; **139.** Sternite 9, dorsal view; **140.** Furca, dorsal view; **141.** Bursa copulatrix, dorsal view. Scale of 137 = 0.8 mm, 138–141 = 0.5 mm.

Hypopygium. Brown, at base slightly broader than abdomen. Tergite 9 forming plate reduced in size (Fig. 129). Posterior margin of tergal plate blackened, broadly truncated with deep narrow median incision. Lateral lobe relatively narrow, margin with small black denticles, provided with long setae. Median incision with microscopic black points. Anterior portion brown with raised border appearing as transverse elevated plate connected to bottom of median incision and forming black toothed projection. Margin of transverse plate with black denticles, laterally with black tooth. Lateral portion of tergite 9 with apex obtuse, margin blackened, provided with microscopic points.

Gonocoxite large with extended obtuse apex and small lateral denticle (Fig. 130). Outer gonostylus slightly curved, finger-shaped (Fig. 131). Inner gonostylus C-shaped curved plate, dorsally with round yellow plate, beak extended into blackened rostrum, shallowly bifid at apex (Fig. 132). Gonocoxal fragment with medial sclerites flat, posteriorly narrow, anteriorly fused into broad base and together forming V-shaped structure (Fig. 133). Lateral sclerite very small and inconspicuous. Aedeagal guide short with curved and acute apex and broad adminicular rods (Fig. 134). Sperm pump with central vesicle flattened (Fig. 135). Compressor apodeme shaped as large plate with shallow median incision. Posterior immovable apodeme short, finger-shaped. Anterior immovable apodeme in shape of large broad plate. Aedeagus shaped as short and thick brown tube, about same length as sperm pump. Distal part funnel shaped with median incision (Fig. 136).

Female. Body length 22.3–29.0 mm, wing length 16.0–22.8 mm. Generally similar to male. Antenna short, scape and pedicel yellowish, flagellum brownish yellow. Abdomen dark brown.

Ovipositor (Figs 137–141). Tergite 10 shiny, dark-brown. Cercus, dark-brown, slender, with tip obtuse acute and slightly up-turned, outer margin with rough and distinct serration (Fig. 137). Hypovalva in shape of pale yellow, elongated filament (Fig. 138). Median incision between hypovalvae much deeper than posterior margin of sternite 8. Lateral incisions missing. Sternite 9 anteriorly acute with inner edge obliquely truncated, posterior part broadly extended (Fig. 139). Furca anteriorly long and narrow, posteriorly broad (Fig. 140). Bursa copulatrix including cul-de-sac straight with sclerotised wall (Fig. 141). Basal part of spermathecal ducts without sclerotisation. Spermatheca nearly spherical, lightly broadened at base (Fig. 19).

Remarks. *Tipula* (*V.*) *nubeculosa* is distributed in the Palaearctic Region, though very rare in East Palaearctic with single records in Mongolia and first record in eastern part of Siberia, Russia.

Tipula (*V.*) *scripta* species group

The *scripta* species group was proposed by Mannheims (1953), discussed by Savchenko (1960, 1964), with range of species revised by Starkevich & Podenas (2011, 2015). Males of *scripta* group are characterized by the following characters: gonocoxite horn-shaped, tergite 9 forming a pale yellow plate with posterior margin emarginated and anterior portion with transverse, elevated saucer. The members of the *scripta* group are distributed in the Holarctic and Oriental Regions. *Tipula* (*V.*) *caroliniana* Alexander, 1916, *T.* (*V.*) *longiventris* Loew, 1863, and *T.* (*V.*) *tacomicola* Alexander, 1949 are found in the Nearctic Region, *T.* (*V.*) *subscripta* Edwards, 1928 is found in the East Palaearctic and Oriental Regions, and the remainder of species are found in the Palaearctic: *T.* (*V.*) *dhalma* Starkevich and Podenas, 2011, *T.* (*V.*) *intermixta* Riedel, 1913, *T.* (*V.*) *pallidicosta* Pierre, 1924, *T.* (*V.*) *pallitergata* Alexander, 1934, *T.* (*V.*) *scripta* Meigen, 1830 and *T.* (*V.*) *semivittata* Savchenko, 1960.

Tipula (*Vestiplex*) *pallitergata* Alexander
(Figs 7, 17, 142–151; Map 11)

Tipula (*Vestiplex*) *pallitergata* Alexander, 1934b: 401; Alexander, 1935: 118; Savchenko, 1964: 166; Oosterbroek & Theowald, 1992: 158.

Type material examined. HOLOTYPE ♂: **RUSSIA,** Primorsky Krai, Vladivostok, Cape Basargin, 29.v.1927, Stackelberg (ZIN).

Additional material examined. MONGOLIA. Bulgan Aimag: 1 ♂, 1 ♀, 12 km S from Orchon, N48.53974, E103.60954, 26.vi.2006, 1129 m, SRP06062602; 2 ♂, Hutag-Ondor Soum, Teel [Teeliyn] Gol (stream), 19 km NW Hutag-Ondor, 1064 m, N49.49649, E102.49313, 26–27.vi.2006, J.K. Gelhaus #1049, SRP06062601. **Dornod Aimag:** 3 ♂, 1 ♀, Khalkh gol sum Nomrog River, N46.59, E119.22, 17.vi.2004, Altanchimeg, ANSP-ENT-59352; 3 ♂, 1 ♀, Ulz Gol (River) at Bayandun sum [49°22′44.09″N, 113°19′36.90″E], 19.vi.2000, Sh. Enkhtsetseg, ANSP-ENT-59353; 1 ♀, Khokh nuur (lake) [49°32′51.56″N, 115°31′49.36″E], 22.vi.2000, ANSP-ENT-59359. **Suchbaatar Aimag:** 5 ♂, 3 km E frontier guards of Avdront (I), N46°46′, E116°17′, 907 m, 21.vi.2004, J. Puntsagdulam, S. Togserdene. **Tov aimag:** 1 ♂, NE 50 km from Mongon-morit soum, Kherlen River, N48°33′06″, E108°55′21″, 1511 m, J. Puntsagdulam. **Selenge Aimag:** 1 ♂, Kentey, upper reaches of Sugu-Nur River before Hara-gol, 23.v.–2.vi.1924, Kozlov (ZIN). **RUSSIA.** 1 ♀, Primorsky Krai, Vladivostok, Cape Basargin, 29.v.1927, Stackelberg (ZIN); 1 ♂,

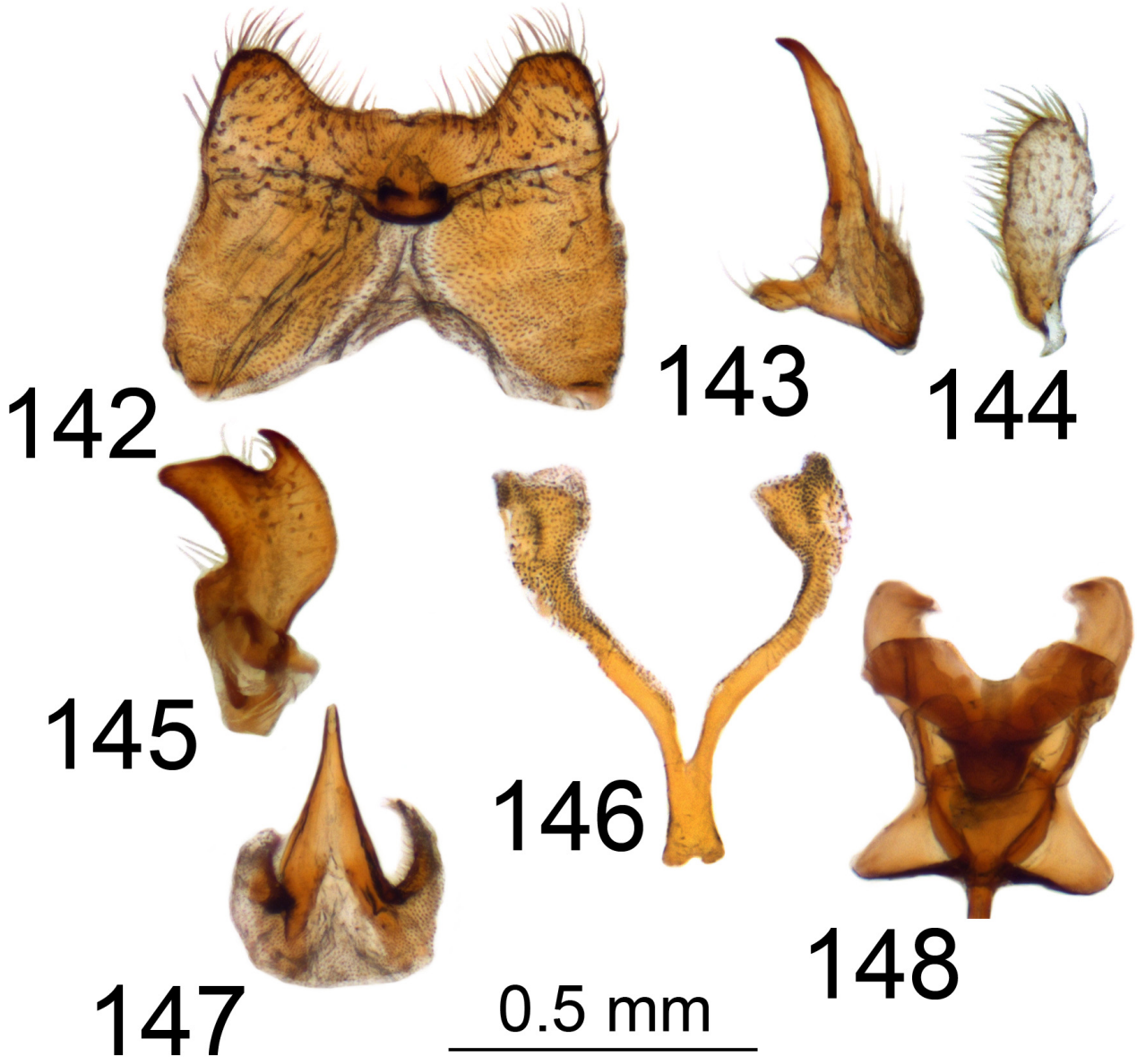
Khabarovsk Kraj, Kotikovo town, 27.v.1927, Stackelberg (USNM); 1 ♀, Khabarovsk Kray, Vinogradovka town, 28.v.1929, Kirichenko (USNM).

Elevation range in Mongolia. Adults were collected at altitudes ranging from 1100 m to 1500 m.

Period of activity. Adults are active from late May through to late June.

Known distribution. China, Mongolia (Map 11) and Russia (Far East).

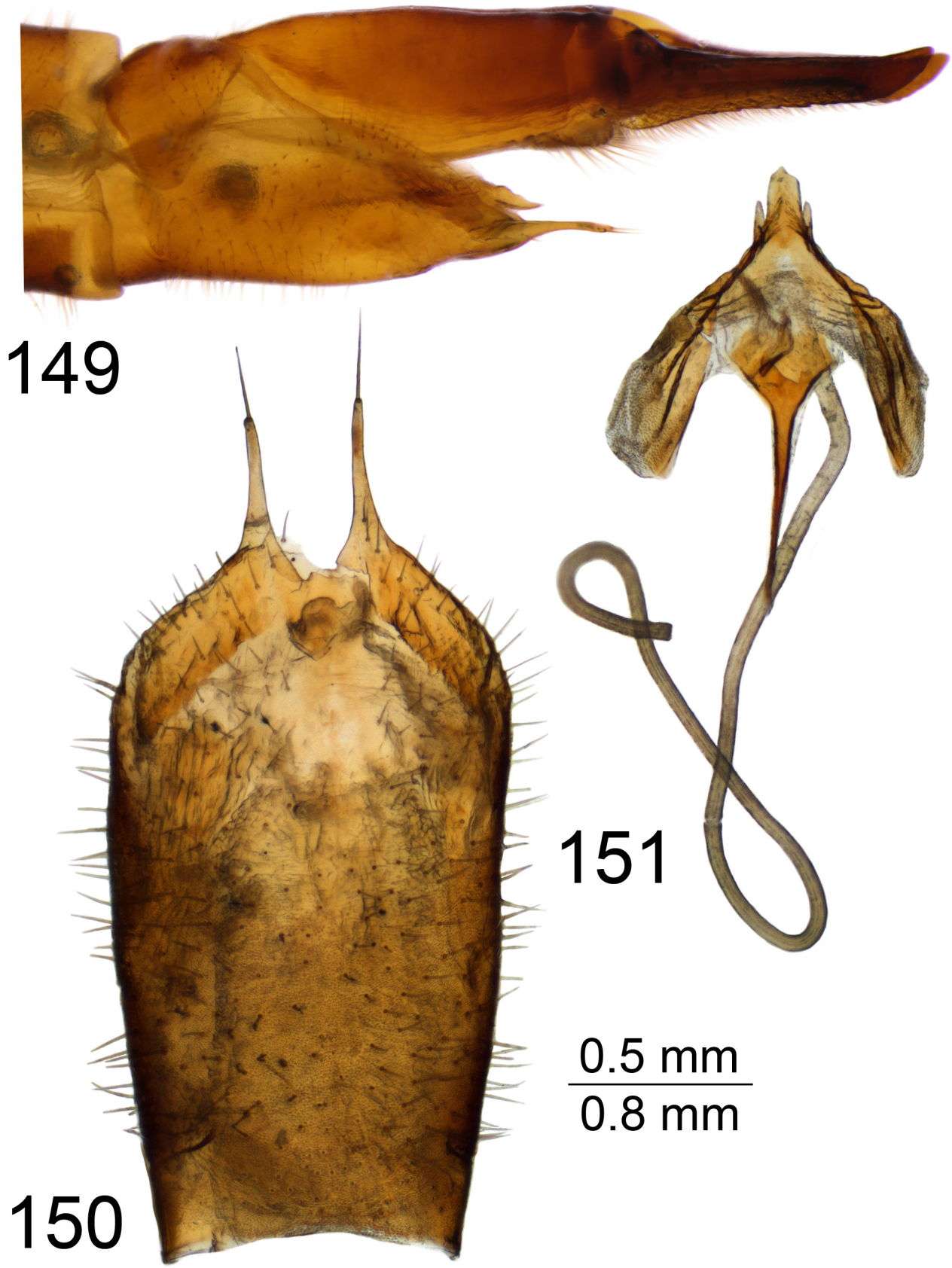
Redescription. Male. Body length 11.3–14.7 mm, wing length 11.6–14.9 mm. General body coloration yellowish gray.



FIGURES 142–148. Hypopygium of male *T.* (*Vestiplex*) *pallitergata*. **142.** Tergite 9, dorsal view; **143.** Gonocoxite, lateral view; **144.** Left outer gonostylus, lateral view; **145.** Left inner gonostylus, lateral view; **146.** Gonocoxal fragment (medial sclerites), dorsal view; **147.** Aedeagal guide, ventral view; **148.** Sperm pump, dorsal view.

Head. Brownish gray, vertex and occiput gray with brown median line. Rostrum brownish yellow with conspicuous nasus. Antenna 13-segmented, if bent backward reaching beyond base of abdomen. Scape, pedicel and flagellomere 1 yellow, flagellum bicolorous. Each flagellomere except first one with darkened basal enlargement and strong incision. Apical flagellomere very small, distinctly shorter than preceding flagellomere. Verticils shorter than corresponding segments. Palpus brownish yellow.

Thorax. Yellowish, dusted with gray. Pronotum light brown with brown median line. Prescutum and presutural scutum yellowish gray pruinose with 4 longitudinal stripes bordered by brown. Intermediate pair light brown,



FIGURES 149–151. Ovipositor of female *T.* (*Vestiplex*) *pallitergata*. **149.** Ovipositor, left lateral view; **150.** Sternite 8 with hypovalvae, ventral view; **151.** Sternite 9, furca and bursa copulatrix, dorsal view. Scale of 149 = 0.8 mm, 150–151 = 0.5 mm.

separated medially and fused posteriorly and anteriorly. Lateral stripe gray. Interspace between median and lateral

stripes light brown. Postsutural scutum light brown, scutal lobe with spot bordered by brown. Scutellum and postnotum yellowish with brown median line. Pleura yellow, sparsely dusted with gray. Coxae yellowish, sparsely dusted with gray. Trochanters yellow. Femora and tibiae yellow. Tarsal segments brown. Distal part of femora darkened, distal part of tibiae broadly darkened. Tarsal claws without tooth. Wing with ground color pale brown. Halter with pale yellow stem, knob dark brown.

Abdomen. Yellow, with brown dorsal stripe and narrowly interrupted lateral stripe. Lateral margins of tergites pale. Tergite 1 laterally sparsely dusted, succeeding tergites yellow. Abdominal sternites sparsely dusted with gray.

Hypopygium. Yellow. Tergite 9 forming pale yellow relatively narrow plate (Fig. 142). Main body of tergal plate pale yellow. Posterior margin of tergal plate broadly emarginated with small median incision, posterior lobes rounded, provided with long setae. Anterior portion brown with raised border appearing as small transverse elevated saucer with margin narrowly blackened. Saucer short, about 4.3 times as wide as long whole tergal plate. Gonocoxite ends with straight spine, apex gently curved and blackened (Fig. 43). Outer gonostylus nearly oval with basal part narrowed (Fig. 144). Inner gonostylus in shape of lightly curved plate, dorsally with sharp spine, beak extended into obtuse rostrum (Fig. 145). Gonocoxal fragment (Fig. 146) with medial sclerites slender, posteriorly slightly dilated, anteriorly fused into base, together forming V-shaped structure. Lateral sclerite generally as in *T.* (*V.*) *scripta* but with conspicuous inner lobe (Fig. 7). Aedeagal guide forming cone-shaped semi open groove with narrow apex (Fig. 147). Sperm pump with central vesicle slightly flattened (Fig. 148). Compressor apodeme with median incision. Posterior immovable apodeme much longer than compressor apodeme, flattened. Anterior immovable apodeme nearly triangle with nearly straight anterior margin. Aedeagus shaped as elongate tube, about 6.2 times as long as sperm pump, basal part brown, rest yellow, distally passing into pale yellow.

Female. Body length 16.9–18.0 mm, wing length 11.2–12.2 mm. Antenna of reaching prescutum if bet backwards, flagellomeres cylindrical and bicolorous.

Ovipositor (Figs 149–151). Tergite 10 shiny yellow. Cercus yellow, shorter than tergite 10, straight, distal part narrowed, outer margin with rough serration (Fig. 149). Hypovalva in shape of relatively short, yellow filament, with long trichia at tip (Fig. 150). Median incision between hypovalvae approximately at same level as posterior margin of sternite 8. Sternite 9 posteriorly with slender and obtuse apex (Fig. 151). Two small posterior extensions on either side beneath apex. Furca anteriorly long and narrow, posteriorly broad. Bursa copulatrix and spermathecal ducts without sclerotisation. Spermatheca spherical (Fig. 16).

Tipula (*Vestiplex*) *scripta* Meigen

(Figs 6, 16, 152–162; Map 12)

Tipula scripta Meigen, 1830: 286; Riedel, 1913: 37; Pierre, 1924: 56; Lackschewitz, 1936: 262.
Tipula (*Vestiplex*) *scripta*: Edwards, 1931: 80; Mannheims, 1953: 118; Hemmingsen, 1956: 251; Savchenko, 1960: 144; Starkevich & Podenas, 2015: 9.
Tipula (*Vestiplex*) *scripta scripta*: Savchenko, 1964: 158.
Tipula (*Vestiplex*) *immunda* Alexander, 1934b: 403.
Tipula (*Vestiplex*) *scripta immunda*: Savchenko, 1964: 162; Oosterbroek & Theowald, 1992: 158; Starkevich & Podenas, 2015: 9 (synonymy).

Material examined. MONGOLIA. Khentii Aimag: 1 ♀, Omnodelger Soum, Khurkhiyn Gol, 39 km NE Tsenkhermandal, N48.04989, E109.32549, 1364 m, 15.vii.2011, S. Podenas, MAIS2011071502. **Selenge Aimag:** 1 ♂, Mandal Soum, Bar Chuluu at upstream bridge c. 6 km above downstream bridge, N48.99356, E106.95023, 1053 m, 20.vii.2003, SRPT, SRP03072001; 4 ♂, Selenge Soum, West Branch of Khartsain Gol, 33.8 km WNW Hyalgant, N49.6509, E103.88078, 1480 m, 8–9.vii.2005, SRPT, SRP05070802. **Tov Aimag:** 1 ♂, 1 ♀, 2.2 km N Ulaanbaatar [N48.022912, E106.903313], 13–16.vii.1996, B. Namhadorj # Ex: taken in border woodlands; 1 ♂, Tov Aimag, Erdene Soum, Gorkhi Terelj NP, stream 0.5 km N Gorkhi Davaa (Pass), N47.94981, E107.45511, 1593 m, 11.vii.2011, S. Podenas, MAIS2011071101.

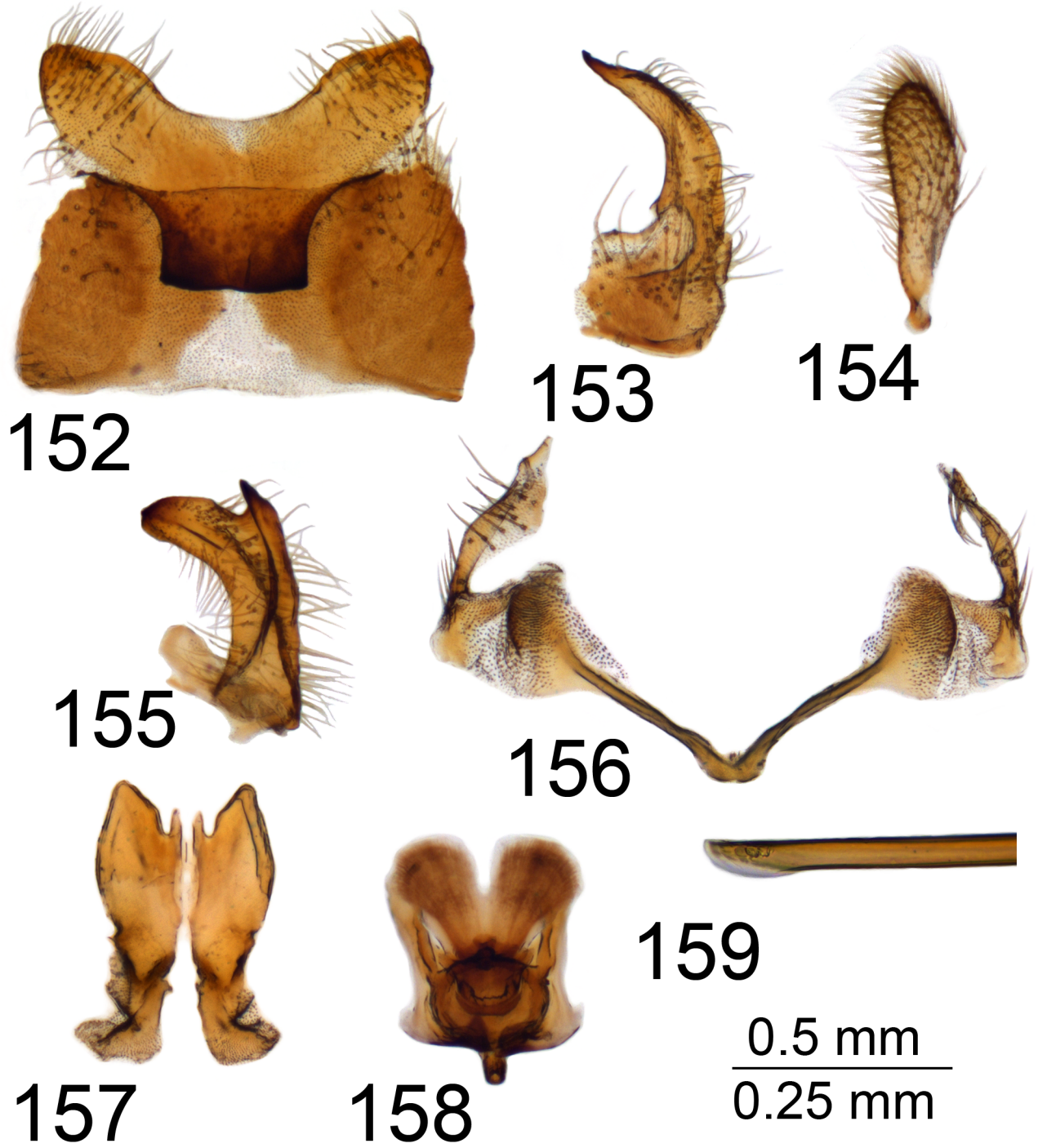
Elevation range in Mongolia. Adults were collected at altitudes ranging from 1000 m to 1600 m.

Period of activity. Adults are active through July.

Known distribution. The species is widely distributed in West and East Palearctic including Mongolia (Map 12).

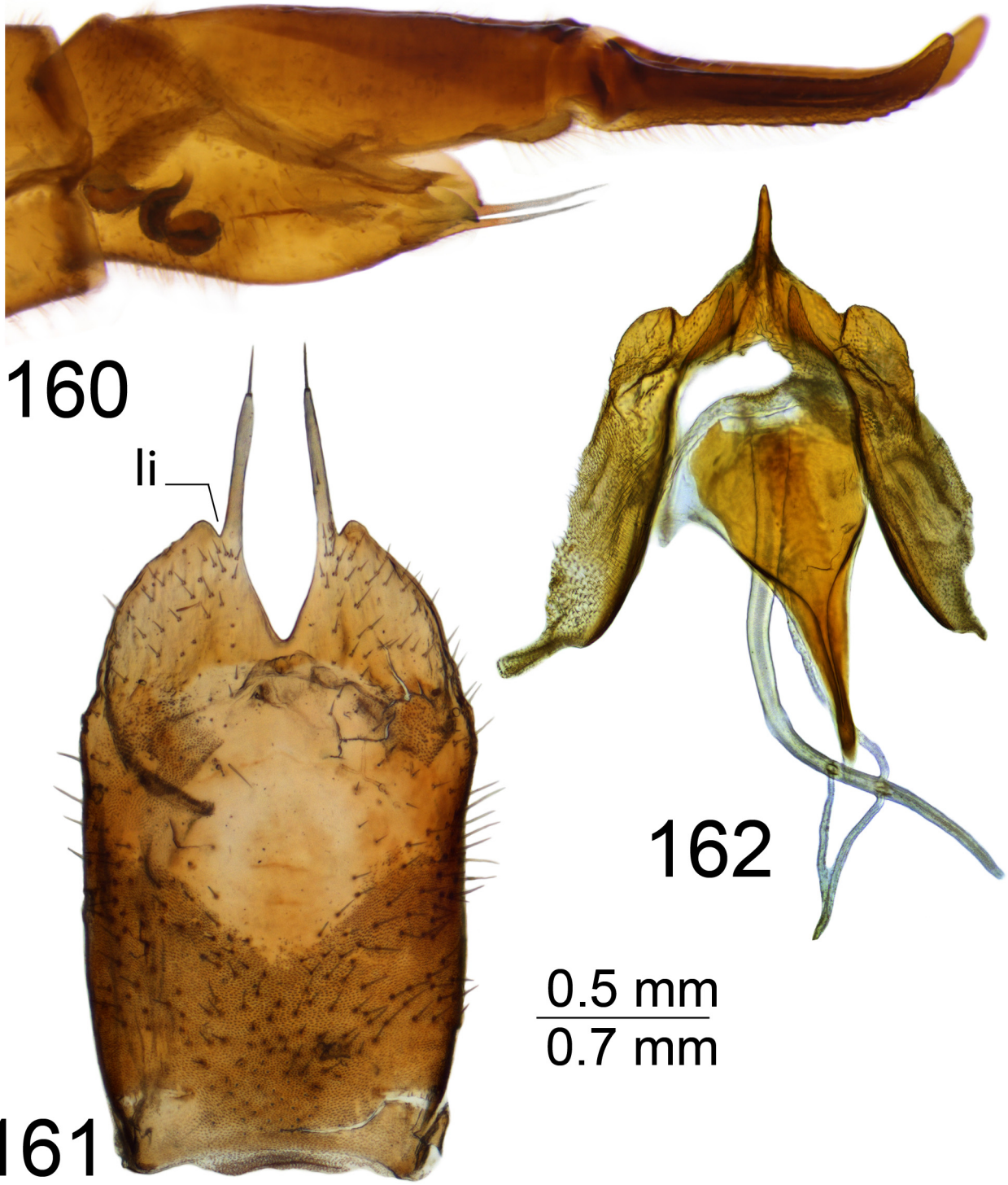
Redescription. Male. Body length 14.8–16.7 mm, wing length 14.5–17.2 mm. General body coloration brownish yellow.

Head. Brownish gray, vertex and occiput light gray, with brown median line. Rostrum brown with nasus conspicuous. Antenna 13-segmented, if bent backward reaching base of wing. Scape, pedicel and first flagellomere yellow, succeeding flagellomere bicolored. Each flagellomere except first one with small basal enlargement and slightly incised. Apical flagellomere very small, reduced, distinctly shorter than preceding segment. Verticils as long as respective segments. Palpus with 2 basal segments brown, succeeding dark brown.

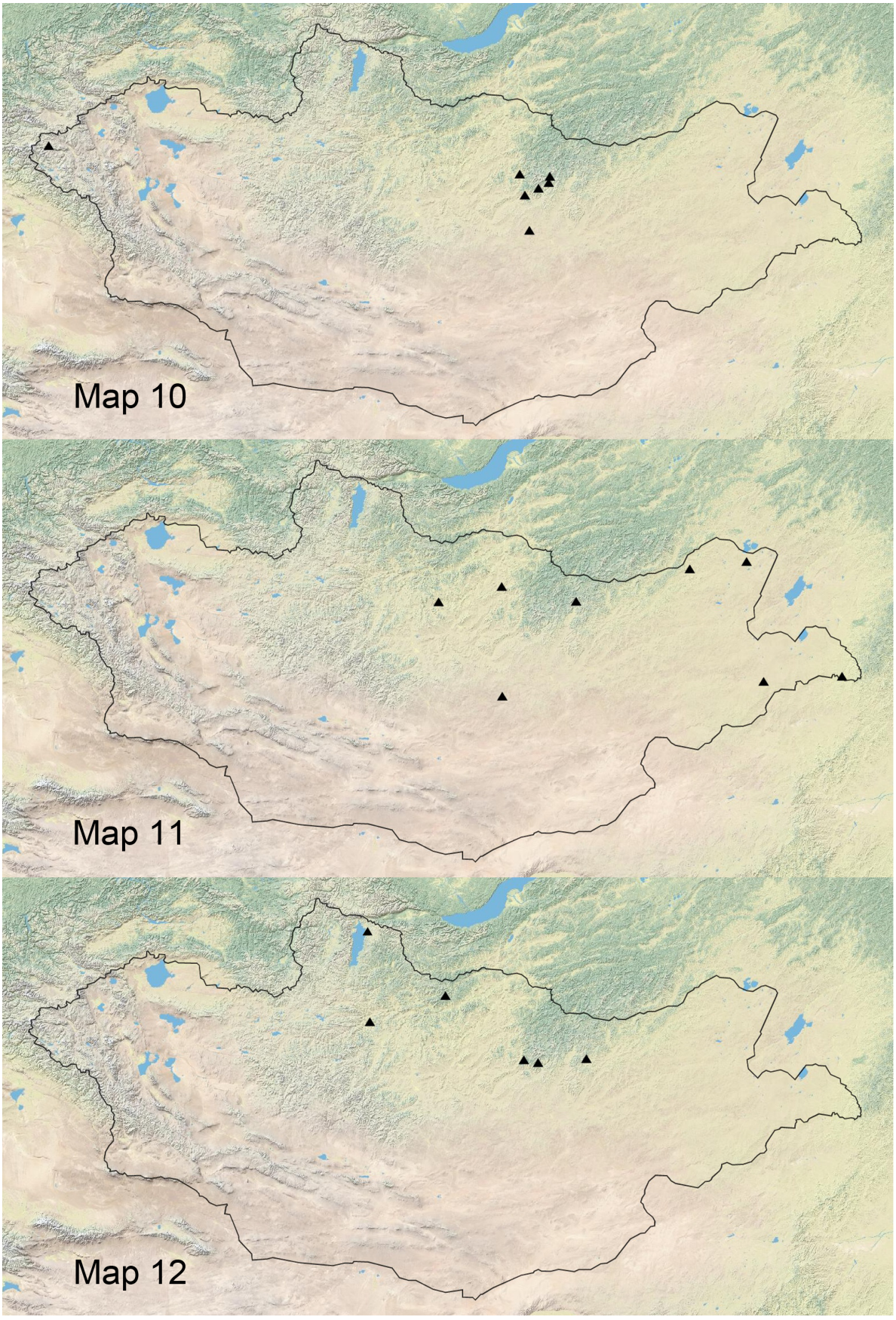


FIGURES 152–159. Hypopygium of male *T.* (*Vestiplex*) *scripta*. **152.** Tergite 9, dorsal view; **153.** Gonocoxite, lateral view; **154.** Left outer gonostylus, lateral view; **155.** Left inner gonostylus, lateral view; **156.** Gonocoxal fragment, dorsal view; **157.** Aedeagal guide, ventral view; **158.** Sperm pump, dorsal view; **159.** Distal part of aedeagus, lateral view. Scale of 152–158 = 0.5 mm, 159 = 0.25 mm.

Thorax. Brownish gray. Pronotum brown with median line. Prescutum and presutural scutum with 4 longitudinal stripes bordered by brown. Intermediate pair brownish, fused anteriorly and posteriorly, separated in middle. Lateral stripe grayish. Interspace between median and lateral stripes light brown. Postsutural scutum brown, scutal lobe with 2 spots bordered by brown. Scutellum brown, sparsely dusted with gray, postnotum gray. Both sclerites with median line. Pleura gray. Coxae gray. Trochanters and femora brownish yellow. Tibiae yellowish with darkened distal part. Tarsal segments brown. Tarsal claws without tooth. Wing distinctly patterned with brown. Halter with pale stem and dark brown knob.



FIGURES 160–162. Ovipositor of female *T.* (*Vestiplex*) *scripta*. **160.** Ovipositor, left lateral view; **161.** Sternite 8 with hypovalvae, ventral view; **162.** Sternite 9, furca and bursa copulatrix, dorsal view. Abbreviation: li, lateral incision. Scale of 160 = 0.7 mm, 161–162 = 0.5 mm.



MAPS 10–12. Distribution maps of *T.* (*Vestiplex*) crane flies in Mongolia. **10.** *T.* (*Vestiplex*) *nubeculosa*; **11.** *T.* (*Vestiplex*) *pallitergata*; **12.** *T.* (*Vestiplex*) *scripta*.

Abdomen. Yellowish brown, with pale interrupted dorsal stripe and indistinct lateral stripe. Tergite 1 yellow, laterally sparsely dusted, tergites 2–6 yellow, tergites 7–8 brown. Lateral margins of tergites pale. Sternite 1 sparsely dusted with gray, sternites 2–4 brownish yellow, succeeding sternites brown.

Hypopygium. Brownish. Tergite 9 forming pale yellow plate (Fig. 152). Posterior margin of tergal plate broadly emarginated, posterior lobes pale, provided with long setae. Anterior portion brown with saucer, raised border appearing as elevated transverse quadrate plate with margin narrowly blackened. Saucer about 1/3 width of tergite 9. Gonocoxite ends with strong curved spine, apex acute and blackened (Fig. 153). Outer gonostylus club-shaped (Fig. 154). Inner gonostylus in shape of moderately curved plate, dorsally with sharp spine, beak extended into rostrum with distal margin blackened (Fig. 155). Gonocoxal fragment with medial sclerites slender, posteriorly broadly flattened, anteriorly fused into small base and together forming V-shaped structure (Figs 6, 156). Lateral sclerite small, outer lobe short, inner lobe inconspicuously differentiated. Aedeagal guide in shape of depressed flattened plate, posteriorly produced into acute shoulders (Fig. 157). Sperm pump with central vesicle lightly swollen (Fig. 158). Compressor apodeme with median incision. Posterior immovable apodeme about same length as compressor apodeme, relatively narrow. Anterior immovable in shape of low plate. Aedeagus shaped as relatively short yellow tube, about twice as long as sperm pump, distal part ventrally truncated, funnel-shaped (Fig. 159).

Female. Body length 20.2–21.1 mm, wing length 16.4–17.1 mm. Generally similar to male. Antenna short, scape, pedicel and two basal flagellomeres yellow, flagellomeres 3–8 bicolored, succeeding brownish. Abdomen with distinct dorsal stripe.

Ovipositor (Figs 160–162). Tergite 10 shiny brown. Cercus brown, slender, with tip narrowed and up-turned, outer margin with rough serration (Fig. 160). Hypovalva in shape of pale yellow elongated filament, with trichia at tip (Fig. 161). Median incision between hypovalvae distinctly deeper than posterior margin of sternite 8. Lateral incision very small. Sternite 9 posteriorly with slender and acute apex (Fig. 162). Two slender posterior extensions on either side beneath apex. Lateral angle of sternite 9 rounded. Furca anteriorly narrowed, posteriorly broad. Bursa copulatrix and spermathecal ducts without sclerotisation. Spermatheca spherical, broadened at base (Fig. 20).

Tipula (*V.*) *virgatula* species group

The *virgatula* species group was proposed by Savchenko (1960, 1964) with additional discussion by Dia & Theowald (1982). Males of the *virgatula* group are characterized by the following features: gonocoxite large, triangular or nearly rectangular flatish plates, tergite 9 forming a weakly modified tergal plate. An additional feature that could characterize males of the *virgatula* group is small gonapophyses. The ovipositor of females has the hypovalvae greatly reduced tooth-shaped. Savchenko suggested that the *virgatula* group separated from the most primitive ancestors. Dia & Theowald (1982) had a similar opinion, assuming that *virgatula* is an old group in the subgenus *T.* (*Vestiplex*). The *virgatula* group includes the following Palaearctic species: *T.* (*V.*) *aestiva* Savchenko, 1960, *T.* (*V.*) *fernandezi* Theowald, 1972, *T.* (*V.*) *fragilicornis* Riedel, 1913, *T.* (*V.*) *kosswigi* Mannheims, 1953, *T.* (*V.*) *longitudinalis* Nielsen, 1929, *T.* (*V.*) *opilionimorpha* Savchenko, 1955, *T.* (*V.*) *relicta* Dia & Theowald, 1982, *T.* (*V.*) *vaillanti* Theowald, 1977 and *T.* (*V.*) *virgatula* Riedel, 1913.

Tipula (*Vestiplex*) *longitudinalis* Nielsen

(Figs 3, 4, 15, 163–173; Map 13)

Tipula longitudinalis Nielsen, 1929: 49.
Tipula (*Vestiplex*) *longitudinalis*: Savchenko, 1960: 196; 1964: 213; Oosterbroek & Theowald, 1992: 156.

Material examined. MONGOLIA. Arkhangay Aimag: 3 ♂, Khotont Soum, trib. of Tsagaan Sumiin/Jarantain Gol, ~43 km SW Khotont, N47.07888, E102.16608, 1699 m, 9–10.vii.2004, SRPT, SRP04070902; 28 ♂, Tsenkher Soum, Tsetseleg Gol ~17 km SW Tavanbulag, N47.26999, E101.80227, 1684 m, 10–12.vii.2004, SRPT, SRP04071002; 1 ♂, Tsenkher soum, Uliin Gol in Budent valley ~60 km SSW Tavanbulag, N46.97927, E101.69877, 2075 m, 11.vii.2004, SRPT, SRP04071101; 5 ♂, Tsenkher Soum, Tsetserleg Gol ~50 km SSW Tavanbulag, N47.04409, E101.76352, 1902 m, 11.vii.2004, SRPT, SRP04071102; 22 ♂, Ikhtamir Soum, NW Khoit Tamir Gol ~25 km SW Ikhtamir, N47.50523, E100.93208, 1728 m, 14–15.vii.2004, SRPT, SRP04071402; 10 ♂, Chuluut

Soum, Khurmen/Davaat Gol 15 km SSE Chuluut/Jargalant, N47.42580, E100.30130, 2104 m, 15–16.vii.2004, SRPT, SRP04071503; 10 ♂, Ikhtamir Soum, Khoit Tamir Gol ~29 km SW Ikhtamir, N47.48567, E100.87875, 1749 m, 15.vii.2004, SRPT, SRP04071501; 3 ♂, Chuluut Soum, Khanui Gol ~60 km SW Ikhtamir, N47.50949, E100.57510, 1981 m, 15.vii.2004, SRPT, SRP04071502; 3 ♂, Chuluut Soum, Tsohiotiin Davaa (mountain pass), N47.68999, E100.21012, 2256 m, 17.vii.2004, J.K. Gelhaus #969; 1 ♂, Chuluut Soum, Chuluutin Gol 40 km N Chuluut/Jargalant, N47.890440, E100.31810, 1937 m, 17.vii.2004, SRPT, SRP04071701; 7 ♂, Tariat Soum, Nariin Gichgenii Gol/Urd Terkh Gol ~5 km SE Khorgo/Tariat, N48.12661, E99.94128, 2019 m, 17–18.vii.2004, SRPT, SRP04071702; 2 ♂, Tariat Soum, Terkhiin Tsagan Nuur ~8 km W Khorgo/Tariat, N48.14404, E99.78300, 2057 m, 18.vii.2004, SRPT, SRP04071801; 3 ♂, 1 ♀, Khangay Soum, Khoit Ekhnii Gol ~13 km SW Khunt, N47.75747, E99.35827, 2215 m, 18–19.vii.2004, SRPT, SRP04071803; 1 ♂, Khashaant Soum, Tarnay Gol, Mongol Els, 24 km W Rashaant, N47.35471, E103.62062, 1234 m, 1.vii.2011, C.R. Nelson & T.A. McKnight & MAIST, MAIS2011070102. **Bayan Olgii Aimag:** 1 ♀, Ulaanhus Soum, Ulastai Gol 2 km E Khokh-Ereg Military Outpost, N49.31867, E88.36612, 2392 m, 8.vii.2008, R.W. Bouchard, Jr., MAIS08070802; 1 ♂, Tsengel Soum, Sul Uuliin Gol, trib. of Tsagaan Gol, Altai-Tavan Bogd NP, N49.10448, E88.04845, 2796 m, 10.vii.2008, S. Podenas, MAIS08071001; 9 ♂, Tsengel Soum, Tsagaan Gol, 20 km W Zagast Nuur Bag, Entrance to Altai-Tavan Bogd NP, N49.09161, E88.10436, 2410 m, 9–12.vii.2008, S. Podenas, MAIS08070902; 7 ♂, 2 ♀, Tsengel Soum, Urt Khuiten Gol 6 km SW Asgut Uul, N48.72627, E88.40073, 2427 m, 14.vii.2008, R.W. Bouchard, Jr. MAIS08071401; 4 ♂, 1 ♀, Tsengel Soum, Khoton Nuur 15 km NW Syrgal, N48.66722, E88.29927, 2086 m, 14–15.vii.2008, S. Podenas, MAIS08071402; 8 ♂, Tsengel Soum, Rashaanii Gol, at bridge, trib. of Tsagaan Us Gol, N48.75565, E88.15266, 2098 m, 15.vii.2008, S. Podenas, MAIS08071501; 4 ♂, Tsengel Soum, Tsagaan Us Gol, 0.5 km upstream of confluence with Rhashaanii Gol, N48.75321, E88.14850, 2090 m, 15.vii.2008, MAIST, MAIS08071502; 4 ♂, 1 ♀, Tsengel Soum, Ikh Turgenii Gol, 6 km SSW Syrgal, N48.54395, E88.41477, 2140 m, 15–16.vii.2008, MAIST, MAIS08071503; 55 ♂, 1 ♀, Tsengel Soum, Khar Ovoo Gol, draining Khelkhee Lake, N48.62918, E88.28554, 2147 m, 15–16.vii.2008, MAIS2008071601; 14 ♂, Tsengel Soum, Partizanii Bulag below Khazabai Sala (waterfall), 2148 m, N48.61734, E88.31315, 16.vii.2008, R.W. Bouchard. Jr., MAIS08071602; 4 ♂, Tsengel Soum, Sumdairag Gol, 12 km S Syrgai, 2129 m, N48.50679, E88.50977, 16.vii.2008, J. Morse, Suvdaa, S. Podenas, MAIS08071604; 1 ♂, Tsengel Soum, Syrgali Gol, bridge over outflow between Khoton Nuur and Khurgen Nuur at Syrgal, 2095 m, 16.vii.2008, Suvdaa, MAIS08071603; 16 ♂, Sagsay Soum, Yamaatiin Gol, 17 km SW Dayan Military Base, N48.16728, E88.85435, 2073 m, 17.vii.2008, MAIS2008071703; 2 ♂, Ulaanhus Soum, Odgoi Gol, 21 km SE Syrgali, N48.44036, E88.60204, 2443 m, 17.vii.2008, MAIST, MAIS08071701; 4 ♂, 1 ♀, Sagsay Soum, Ikh Khanajashiin Gol, 17 km by road N Dayan, N48.39223, E88.88369, 2184 m, 18.vii.2008, MAIST, MAIS08071802. **Bayankhongor Aimag:** 2 ♂, Erdenesogt Soum, Erkhetkhayrkhan Gol, crossing to Khokh Gol, N46.62626, E101.36736, 2500 m, 5.vii.2011, S. Podenas, MAIS2011070501; 5 ♂, Erdenesogt Soum, Shargaljuut Gol near Salkhit Uul and forested hillside, N46.47630, E101.43793, 2414 m, 5.vii.2011, S. Podenas, MAIS2011070504. **Bulgan Aimag:** 1 ♂, Namnan ul Mountains, 23 km NW Somon Chutag, 1150 m, 21.vii.1968, Exp. Dr. Z. Kaszab, Nr. 1137 (HNHM); 77 ♂, 6 ♀, Bulgan Soum, Urd Tamir Gol ~38 km SW Tsetserleg, 12–13.vii.2004, N47.28244, E101.18793, 1872 m, SRP04071201; 3 ♂, 1 ♀, Bulgan Soum, Urd Tamir Gol ~50 km SW Tsetserleg, N47.21109, E101.07947, 1962 m, 13.vii.2004, SRPT, SRP04071301; 22 ♂, Bulgan Soum, Urd Tamir Gol braid upstream of bridge ~63 km SW Tsetserleg, N47.11192, E101.01048, 2066 m, 13–15.vii.2004, SRPT, SRP04071302; 1 ♂, 1 ♀, Bulgan Soum, unnamed hillside trib. of Khairkhan Davaani Gol, N46.94286, E100.85532, 2311 m, 13.vii.2004, J.K. Gelhaus, J.C. Morse, A.E.Z. Short, SRP04071303; 1 ♂, Bulgan Soum, Chandman Gol, trib. of Khairkhan Davaani Gol ~80 km SW of Tsetserleg, N47.00226, E100.91051, 2228 m, 13.vii.2004, SRPT, SRP04071305; 21 ♂, Baruun Tsuuts Gol, 49.4 km NE Hangal, N49.71502, E104.64275, 745 m, 6–7.vii.2005, SRPT, SRP05070602; 1 ♂, Manhtai Cold Spring, 5 km SW SRP05070602, N49.6809, E104.56469, 864 m, 7.vii.2005, SRPT, SRP05070701; 7 ♂, Khyalgant Soum, Baruun Burkhiin Gol, 36.56 km NNW Hangal, N49.62431, E104.24514, 1015 m, 7–8.vii.2005, SRPT, SRP05070702; 1 ♂, Teshig Soum, West Branch Tariakhtain Gol, N49.70189, E103.80034, 1432 m, 9.vii.2005, SRPT, SRP05070901; 3 ♂, Teshig Soum, Egiin Gol, 12.7 km SW Teshig, N49.88872, E102.50978, 998 m, 11–13.vii.2005, SRPT, SRP05071101; 10 ♂, Khishig-undur Soum, Airhan Nuur, South Shore, N49.63456, E102.64865, 937 m, 13.vii.2005, SRPT, SRP05071301; 6 ♂, Khutag-Ondor Soum, Unit Gol (local name Tolboriin Gol), 20.7 km ESE Khutag-Ondor, N49.3336, E102.97771, 951 m, 25–26.vii.2005, SRPT, SRP05072501; 6 ♂, Bugat Soum, Altat Gol, 35.2 km SW Khutag-Ondor, N49.21674, E103.10725, 1020 m, 26.vii.2005, SRPT, SRP05072601; 3 ♂, 12 km S Orchon, N48.53974, E103.60954, 26.vi.2006, 1129 m, SRP06062602; 2 ♂, Birch (*Betula*)-larch (*Larix*) forest, 15 km NW

Bulgan, 1435 m, N48.89933, E103.36507, 26.vi.2006, J.K. Gelhaus #1048; 1 ♂, Bulgan Soum, Khar Nuur, ~50 km NNW Bulgan, N47.24133, E90.75316, 2563 m, 7.vii.2009, MAIST, MAIS2009070703; 39 ♂, 1 ♀, Bulgan Soum, Northeast outfall river of Khar Nuur (Black Lake), ~50 km NNW Bulgan, N47.24368, E90.75253, 2560 m, 7.vii.2009. **Darkhan Aimag:** 7 ♂, Shariingol Soum, Khuitnii Gol, N49.46450, E106.66871, 852 m, 21.vii.2003, SRPT, SRP03072103. **Hovsgol Aimag:** 1 ♂, Hovsgol Lake, Borsog Gol (river) at shoreline, ~1650 m, 3.vii.1996, E. Hunter #96031; 1 ♂, west shore Khovsgol Nuur (lake), Khar-us cold springs, 1700 m, 50°56′30″N, 100°14′37″E, 4.vii.1996, E. Hunter #96066; 4 ♂, 1 ♀, Khovsgol Nuur (lake) at Khankh (town), north end, 1719 m, 51°30′23.11″N, 100°40′19.52″E, 12.vii.1996, E. Hunter #K9612; 1 ♂, Khovsgol Nuur (lake) at Khankh (town), 1719 m, ~51°33′28.30″N, 100°46′41.92″E, 15.vii.1996, E. Hunter #K9615; 1 ♂, Khovsgol Nuur (lake) at Khatgal (dock), 1657 m, 50°27′45″N, 100°10′20″E, 18.vii.1996, E. Hunter #K9618; 1 ♂, 2 ♀, N Somon Chatgal SW shore of Lake Chövsgöl nuur, 1650 m, Exp. Dr. Z. Kaszab, Nr. 1124, 18.viiI.1968 (HNHM); 1 ♀, 6 km WNW Somon Tosoncengel, 1480 m, Exp. Dr. Z. Kaszab, Nr. 980, 18.vi.–20.vii.1968 (HNHM); 26 ♂, Arbulag Soum, Ovor Gylaadin Gol (pooled stream), 7.0 km SE Sumber, 1987 m, N50.12844, E99.60749, 27–28.vi.2006, J.K. Gelhaus #1051, SRP06062701; 3 ♂, 1 ♀, Ulaan-Uul Soum, unnamed trib. (stream) of Beltes Gol, 34.0 km NE Bayanzurh, 2113 m, N50.42980, E99.21690, 28.vi.2006, J.K. Gelhaus #1054-A, SRP06062803; 1 ♂, Ulaan Uul Soum, Bagtag Gol (river) and wetland ponds/marshy meadow, 15 km NNE Ulaan Uul, 1598 m, N50.80484, E99.32228, 29–30.vi.2006, J.K. Gelhaus #1057, SRP06062904; 1 ♂, Renchinlhumbe Soum, Springs and spring fed brooks at Ikh Turuugiin Gol (stream), 35 km NNE Ulaan Uul, 1578 m, N50.99269, E99.35406, 30.vi.–1.vii.2006, J.K. Gelhaus #1058, SRP06063002; 1 ♂, Renchinlhumbe Soum, Arsayn Gol (river), 16 km N Renchinlhumbe, 1575 m, N51.25339, E99.66685, 2.vii.2006, J.K. Gelhaus #1062, SRP06070201; 2 ♂, Renchinlhumbe Soum, Jaray (Jarin) Gol (river), 33 km N Renchinlhumbe, 1580 m, N51.39865, E99.75060, 2–3.vii.2006, J.K. Gelhaus #1064, SRP06070203; 4 ♂, Tsagaannuur Soum, unnamed trib. of Shishged Gol ~16 km NW Tsagaannuur (town), 1606 m, N51.45833, E99.20051, 3–4.vii.2006, J.K. Gelhaus #1066, SRP06070302; 1 ♂, Renchinlhumbe Soum, Larch (*Larix siberica*) forest, 41 km S Tsagaannuur (town), 1604 m, N50.98796, E99.23112, 4.vii.2006, J.K. Gelhaus #1071; 13 ♂, 1 ♀, Ulaan-Uul Soum, Guna (Gunain), Gol (river), 11 km NNW Ulaan-Uul, N50.77518, E99.18892, 1615 m, 4.vii.2006, Malaise trap, SRP06070403; 1 ♂, Bayanzurh Soum, Beltes Gol (river), 10 km E Bayanzurh, 1688 m, N50.20129, E99.08625, 5.vii.2006, J.K. Gelhaus #1072; 12 ♂, Bayanzurh Soum, Beltes Gol (river), 6 km ENE Bayanzurh, 1682 m, N50.19880, E99.03148, 6.vii.2006, SRP06070601; 3 ♂, Bayanzurh Soum, Emtin Gol (stream), ~2 km S Bayanzurh, 1625 m, N50.15020, E99.97738, 6.vii.2006, J.K. Gelhaus #1075, SRP06070602; 1 ♂, Moron Soum, Tunamal Nuur (lake), 5.5 km W Arbulag, 1871 m, N49.89920, E99.39433, 6–7.vii.2006, J.K. Gelhaus #1076, SRP06070603; 4 ♂, Ikh Uul Soum, Selenge Moron (river) ~8 km W Ikh-Uul; 1069 m, N49.44641, E101.33625, 7–8.vii.2006, J.K. Gelhaus #1077, SRP06070701; 1 ♂, Khankh Soum, Sevsuul River, N51.1623611, E100.753833, 1656 m, 25.vi.2005, SRPT; 7 ♂, Khankh Soum, Shagnuul River, N51°15′18.6″, E100°50′45.8″, 1728 m, 25.vi.2005, SRPT; 5 ♂, Khankh Soum, Turag River, N51°17′11.1″, E100°49′12.3″, 1665 m, 25–26.vi.2005, SRPT; 7 ♂, Khankh Soum, Turag River, N51°17′12.6″, E100°49′49.0″, 1663 m, 26.vi.2005, SRPT; 1 ♂, Khankh Soum, Turag River, N51°17′28.1″, E100°48′49.8″, 1668 m, 26.vi.2005, SRPT; 3 ♂, Khankh Soum, Turag River, N51°19′33.7″, E100°54′05.7″, 1795 m, 26.vi.2005, SRPT; 1 ♂, 1 ♀, Khankh Soum, Shagnuul River and Hovsgol Lake nearby, N51.263, E100.779083, 1657 m, 27.vi.2005, SRPT; 3 ♂, Khankh Soum, Shagnuul Gol, 1694 m, 27.vi.2005, SRPT; 5 ♂, Khankh Soum, Shagnuul Gol (middle site), N51.2570278, E100.852444, 1726 m, 27.vi.2005, SRPT; 1 ♂, Khankh Soum, Sevsuul Gol and shore of Hovsgol Lake, N51°09′42.0″, E100°43′42.2″, 1658 m, 28.vi.2005, SRPT; 1 ♂, Khankh Soum, Noyon Gol (upper site), N51.2233611, E100.860833, 1801 m, 28.vi.2005, SRPT; 3 ♂, Khankh Soum, Sevsuul Gol, N51°09′37.1″, E100°45′31.3″, 1666 m, 29.vi.2005, SRPT; 38 ♂, 6 ♀, Erdene Bulgan Soum, Emt Gol, 33.2 km NW Tarialyn, N49.87742, E101.82073, 1496 m, 13–14.vi.2005, SRPT, SRP05071302; 7 ♂, 9 ♀, Erdene Bulgan Soum, 12.6 km S Erdene Bulgan, N49.99842, E101.60806, 1344 m, 14.vii.2005, SRPT, SRP05071401; 3 ♂, Erdene Bulgan Soum, Uur (Uuriin) Gol, 32.6 km NE Erdene Bulgan, N50.30193, E101.92869, 1063 m, 14–15.vii.2005, SRPT, SRP05071403; 1 ♂, 3 ♀, Erdene Bulgan Soum, Zerleg Gol, 35.6 km NE Erdene Bulgan, N50.32719, E101.95058, 1087 m, 15.vii.2005, SRPT, SRP05071501; 11 ♂, 1 ♀, Steppe outside Tsagaan-Uur (town), N50.53689; E101.52015, 1153 m, 16.vii.2005, J.K. Gelhaus #1016; 67 ♂, 4 ♀, Tsagaan-Uur Soum, Uilgan Gol, 26 km ENE Tsagaan-Uur, N50.6231, E101.87375, 1152 m, 15–16.vii.2005, SRPT, SRP05071502; 15 ♂, Tsagaan-Uur Soum, Uur (Uuriin) Gol, 7.1 km N Tsagaan-Uur, N50.60052, E101.52344, 1130 m, 16–17.vii.2005, SRPT, SRP05071601; 32 ♂, Chandmani-Ondor Soum, Darkhunt Gol, 23.5 km E Chandmani-Ondor, N50.50854, E101.26581, 1192 m, 17.vii.2005, SRPT, SRP05071701; 100 ♂, 2 ♀, Chandmani-Ondor Soum, Khalkhan Gol, 19.8 km E Chandmani-Ondor,

N50.51523, E101.21074, elev.1220 m, 17–18.vii.2005, SRPT, SRP05071702; 11 ♂, Chandmani-Ondor Soum, unnamed trib. of Hohoo Gol, N50.66022, E100.73886, 1566 m, 18.vii.2005, SRPT, SRP05071802; 5 ♂, 1 ♀, Chandmani-Ondor Soum, west branch (unnamed) of Khalkhan Gol, upstream of Bolnain Rashaan, 58 km NE Hatgal, N50.78323, E100.79572, 1676 m, 18–19.vii.2005, SRPT, SRP05071803; 1 ♂, east trib. of upper Hohoo Gol (Bugat Gol), 44.5 km NE Hatgal, N50.69174, E100.66691, 1595 m, 19.vii.2005, SRPT, SRP05071902; 2 ♂, 1 ♀, Bayanzurkh Soum, Altargana Gol, 4.2 km N Bayanzurkh, N50.21297, E98.96367, 1662 m, 21–22.vii.2005, SRPT, SRP05072103; 1 ♂, pool near Selenge Moron Gol at Teel (beginning of Selenge below confluence of five rivers), N49.26764, E100.82688, 1182 m, 24–25.vii.2005, SRPT, SRP05072401; 6 ♂, cold spring on Southern trib. of Beltesiin Gol, 10.1 km SW Sumber, N50.09674, E99.42659, 1882 m, 22.vii.2005, SRPT, SRP05072202; 4 ♂, Tumurbulag Soum, N49.23175, E99.90027, 1790 m, 23.vii.2005, SRPT, SRP05072302. **Khentii Aimag:** 5 ♂, Batshireet Soum, Eg Gol, jct Onon Gol, 8 km NE Batshireet, N48.71888, E110.27771, 1080 m, 16.vii.2011, S. Podenas, MAIS2011071602; 2 ♂, Dadal Soum, pine forest above Balj Gol, 4.1 km N Dadal, N49.05075, E111.58395, 956 m, 19.vii.2011, S. Podenas; 16 ♂, 3 ♀, Tsenkhermandal Soum, spring headwaters Tsenkher Gol, 29 km N Tsenkhermandal, N47.92564, E109.16114, 1589 m, 23.vii.2011, S. Podenas, MAIS2011072303. **Ovorhangay Aimag:** 2 ♂, Kharkhorin Soum, Sant Uul Pass, 23 km SE Shinebrigade, N46.87219, E103.14081, 2007 m, 5.vii.2004, SRPT, SRP04070501; 1 ♂, Hujirt Soum, Khavtsaliin Gol valley, N46.76292, E103.02561, 1750 m, 5–6.vii.2004, SRPT, SRP04070504; 4 ♂, Bat-Olziy Soum\Orkhon Gol ~34 km W Khujirt, N46.89303, E102.39457, 1610 m, 6.vii.2004, SRPT, SRP04070602; 9 ♂, Bat-Olziy Soum, braid of Orkhon Gol ~40 km W Khujirt, N46.88586, E102.34386, 1646 m, 6–7.vii.2004, SRPT, SRP04070603; 27 ♂, Bat-Olziy Soum, Orkhon's Waterfall on Ulaan Gol ~300 m S Orkhon Gol, ~84 km W Khujirt, N46.78742, E101.96021, 1809 m, 7.vii.2004, SRPT, SRP04070701; 58 ♂, Bat-Olziy Soum, Ulaan Gol ~93 km W Khujirt, N46.73093, E101.88583, 1894 m, 7–8.vii.2004, SRPT, SRP04070702; 8 ♂, Bat-Olziy Soum, trib. of Ulaan Gol ~92 km W Khujirt, N46.72826, E101.89317, 1941 m, 8.vii.2004, SRPT, SRP04070801; 1 ♂, Kharkhorin Soum, Kharzani Gol 3.5 km NE Shankh Bridgade, N47.05722, E102.99191, 1519 m, 8.vii.2004, SRPT, SRP04070803; 8 ♂, Uyanga Soum, Khangai Mountains, Khuysiyn Naiman Nuur Strictly Protected Area, streams entering east side of Shireet Nuur (lake), down from davaa (pass), N46.51908, E101.84940, 2446 m, 7.vii.2011, C.R. Nelson & T.A. McKnight & MAIST, MAIS2011070701; 9 ♂, Uyanga Soum, Khangai Mountains, Shuranga Gol, just outside entrance to Khuysiyn Naiman Nuur Strictly Protected Area, N46.47528, E101.88175, 2451 m, 7.vii.2011, S. Podenas, MAIS2011070703; 10 ♂, Uyanga Soum, Ovtiyn Gol, 20 km SE Bat-Olziy, N46.64265, E102.30885, 2069 m, 8.vii.2011, S. Podenas, MAIS2011070801; 9 ♂, Bat-Olziy Soum, Ovtiyn Gol, 10 km SE Bat-Olziy, N46.75972, E102.30905, 1847 m, 8.vii.2011, S. Podenas, MAIS2011070803. **Selenge Aimag:** 12 ♂, 2 ♀, Mandal Soum, Boyant Gol (trib. of Tunkhel Gol), 13.8 km above town Tunkhel, 2.0 km upstream of Shonkhor Camp, N48.67237, E106.87851, 1078 m, 16–17.vii.2003, SRPT, SRP03071602; 2 ♂, Bugant/Yaroo Soum, Bar Chuluu Gol, N49.03282, E106.96935, 975 m, 17.vii.2003, SRPT, SRP03071704; 5 ♂, Bugant/Yaroo Soum, Khongiin Gol at Yeroo Gol confluence, N49.08636, E107.30750, 943 m, 18–19.vii.2003, SRPT, SRP03071803; 32 ♂, Bugant/Yaroo Soum, unnamed trib. of Yalbag Gol, 49.7 km W Zuunkharaa Bridge, N49°04′57.7″, E106°53′51.7″, 1115 m, 17.vii.2003, Suvdtsetseg, SRP03071703; 6 ♂, Khuder Soum, Galttiin Gol c. 6 km S Khuder, N49.73769, E107.48766, 702 m, 24–25.vii.2003, SRPT, SRP03072402; 8 ♂, Khuder Soum, Tsagaan Shiluustiin Gol ca. 5 km S Khuder, N49.73763, E107.49333, 704 m, 23–24.vii.2003, SRPT, SRP03072302; 5 ♂, Khuder Soum, unnamed stream 54.2 km E Tavin (Yeroo), N49.77751, E107.26517, 907 m, 25.vii.2003, SRPT, SRP03072501; 2 ♂, Mandal Soum, Dart Gol 38.9 km W Zuunkharaa Bridge, N49.05571, E106.80383, 1228 m, 17.vii.2003, J.K. Gelhaus, S. Podenas, SRP03071702; 4 ♂, Mandal Soum, Sharingol headwaters 4.6 km below southern ridgetop, N49.10789, E106.65275, 1124 m, 21.vii.2003, SRPT, SRP03072101; 3 ♂, Pine forest slope, N50°19′53.3″, E105°04′48.9″, 765 m, 26.vii.2003, J.K. Gelhaus #936; 10 ♂, Tsagaannuur Soum, SW shore of Tsagaan Nuur, N49.95588, E105.33791, 668 m, 25.vii.2003, SRPT, SRP03072502; 1 ♂, Baruunharaa Soum, Haraa Gol, 2.3 km S Bayangol, N48.87738, E106.12375, 807 m, 4–5.vii.2005, SRPT, SRP05070402; 2 ♂, Zuunburen Soum, Selenge Gol, 7.8 km NW Zuunburen, N50.10285, E105.78217, 647 m, 5–6.vii.2005, SRPT, SRP05070501; 1 ♂, Tsagaannuur Soum,Wetland, 10.1 km SW Tsagaanuur, N50.04519, E105.36084, 706 m, 6.vii.2005, SRPT, SRP05070601; 3 ♂, davaa (pass) SW Sogooch, N49.83555, E104.99729, 971 m, 6.vii.2005, C.R. Nelson #8184 & SRPT; 4 ♂, Tsagaannuur Soum, davaa (mountain pass), 53.6 km S Tsagaannuur (town), N49.83561, E104.99727, 973 m, 6.vii.2005, J.K. Gelhaus #995. **Tov Aimag:** 2 ♂, Erdene Soum, Gorkhi Terelj NP, Terelj Gol braid downstream from Terelj, 10.6 km N Mungut Rock Road, N47.97944, E107.47761, 1487 m, 5.vii.2003, SRPT, SRP03070502; 7 ♂, Erdene Soum, Gorkhi Terelj NP; Tuul River ca. 100 m upstream of confluence with Terelj

River, N47.96806, E107.59365, 1467 m, 5.vii.2003, SRPT, SRP03070503; 4 ♂, Erdene Soum, Gorkhi Terelj NP, W Bayangin Gol 8.2 km upstream of Tuul River Road, N48.08026, E107.63841, 1527 m, 6.vii.2003, SRPT, SRP03070603; 3 ♂, Erdene Soum, Gorkhi Terelj NP, Khokh Chuluutiin Gol, N48.12675, E107.57996, 1680 m, 6.vii.2003, SRPT, SRP03070604; 2 ♂, Erdene Soum, Gorkhi Terelj NP, W Bayangin Gol, 20.1 km upstream of Tuul River Road, N48.16668, E107.69548, 1623 m, 6.vii.2003, SRPT, SRP03070605; 2 ♂, Tov Aimag Erdene Soum, Gorkhi Terelj NP, E Bayangin Gol, 12.9 km upstream of Tuul River Bridge, N48.14846, E107.75838, 1596 m, 7.vii.2003, SRPT, SRP03070703; 1 ♂, Erdene Soum, Gorkhi Terelj NP, E Bayangin Gol, 4.2 km upstream of Tuul River Bridge, N48.07956, E107.77729, 1526 m, 7.vii.2003, SRPT, SRP03070704; 1 ♂, Erdene Soum, Gorkhi Terelj NP, Tuul River, 10.1 km upstream of Tuul River Bridge, N48.09549, E107.84265, 1531 m, 8.vii.2003, SRPT, SRP03070801; 17 ♂, Erdene Soum, Gorkhi Terelj NP, unnamed braid of Tuul River, N48.14846, E107.91267, 1564 m, 8–9.vii.2003, SRPT, SRP03070805; 9 ♂, 2 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on W side, 1.6 km upstream from Daichin crossing, N48.21780, E107.90392, 1594 m, 9.vii.2003, SRPT, SRP03070902; 1 ♂, 1 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on W side, c. 5 km upstream from Daichin crossing, N48.24734, E107.90589, 1610 m, 10.vii.2003, SRPT, SRP03071001; 5 ♂, 1 ♀, Erdene Soum, Gorkhi Terelj NP, Tuul River at Daichin crossing, N48°12′41.6″, E107°54′78.0″, 10.vii.2003, Namkhaidorj, Monkhbayar, SRP03071003; 8 ♂, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on E side 8.5 km downstream of Galtain Gol, N48.09720, E107.84928, 1542 m, 11.vii.2003, SRPT, SRP03071101; 4 ♂, Erdene Soum, Gorkhi Terelj NP, E side oxbow of Tuul River, N48°06′53.6″, E107°53′35.5″, 1560 m, 11.vii.2003, SRPT, SRP03071102; 14 ♂, Batsumber Soum, unnamed trib. of Segnogor Gol, 14.3 km upstream of Segnogor Amralt, N48.43755, E107.03066, 1255 m, 15.vii.2003, SRPT, SRP03071501; 11 ♂, Erdene Soum, unnamed river NE Khagiin Har Nuur, Gorkhi Terelj NP, N48.42080, E107.91406, 1818 m, 28.vii.2003, SRPT, SRP03072802; 36 ♂, 1 ♀, Cherlen Rver basin, Dund burchijn gol, 1487 m, 2–3.viii.2003, N48.4438889, E108.624, S. Podenas; 8 ♂, Cherlen River basin, Terelzhijn gol, 1482 m, 4–5.viii.2003, N48.4227778, E108.6505, S. Podenas; 8 ♂, Cherlen gol, 1393 m, 5–6.viii.2003, N48.3744444, E108.857222, S. Podenas; 2 ♂, 1 ♀, Zuud baidlagyn gol, 1437 m, 6–7.viii.2003, N48.1925, E108.6116, S. Podenas; 4 ♂, Zuunmod Soum, Turgeniy Gol (stream), 8 km NNW Zuunmod, 1581 m, N47.77758, E106.92780, 14.vii.2006, J.K. Gelhaus #1073-B, SRP06071401; 5 ♂, Odlog Udleg canyon, Batsumber Soum, N48.26480, E106.93345, 1359 m, 16.vii.2006, SRP06071602; 1 ♂, Batsumber Soum, Bayan gol, N48.35418, E106.8383, 1145 m, 5.vii.2011, O. Yadamsuren, MAIS 2011070502; 1 ♂, Erdene Soum, Baruun Bayan gol, N48.07718, E107.63927, 1544 m, 6.vii.2011, O. Yadamsuren, MAIS2011070603; 2 ♂, Mongomorit Soum, Tuul gol, N48.04708, E107.74532, 1517 m, 7.vii.2011, O. Yadamsuren, MAIS2011070701; 5 ♂, Erdene Soum, Galtain gol, N48.13485, E107.92422, 1565 m, 7.vii.2011, O. Yadamsuren, MAIS2011070703; 1 ♂, Erdene Soum, Tuul gol, N48.18108, E107.91869, 1573 m, 7.vii.2011, O. Yadamsuren, MAIS2011070704; 2 ♂, Erdene Soum, Gorkhi Terelj NP, stream 0.5 km N Gorkhi Davaa (Pass), N47.94981, E107.45511, 1593 m, 11.vii.2011, S. Podenas, MAIS2011071101; 30 ♂, 2 ♀, Erdene Soum, Bulnayn Gol, jct Galttyn Gol, 33 km W Mongonmorit, N48.12563, E108.02163, 1596 m, 12.vii.2011, S. Podenas, MAIS2011071204; 5 ♂, Erdene Soum, Shar Bulag, Yellow Spring, 26 km W Mongonmorit, N48.14814, E108.07956, 1629 m, 13.vii.2011, S. Podenas, MAIS2011071301; 13 ♂, Erdene Soum, Zuun Baydlag Gol, 15 km SW Mongonmorit, N48.17390, E108.26500, 1641 m, 14.vii.2011, S. Podenas, MAIS2011071401; 12 ♂, 2 ♀, Mongonmorit Soum, Zuun Baydlag Gol, downstream, 15 km SW Mongonmorit, N48.10818, E108.36736, 1475 m, 14.vii.2011, S. Podenas, MAIS2011071402; 8 ♂, Mongonmorit Soum, Burkhin Gol, 4.5 km NW Mongonmorit, N48.25508, E108.48447, 1475 m, 14.vii.2011, S. Podenas, MAIS2011071403; 8 ♂, 1 ♀, Mongonmorit Soum, Kherlen Gol, 16 km SE Mongonmorit, N48.13212, E108.63913, 1376 m, 15.vii.2011, S. Podenas, MAIS2011071501; 1 ♂, Mongonmorit Soum, Zuun Baydlag Gol, 4 km SW Mongonmorit, N48.09511, E108.38592, 1452 m, 25.vii.2011, MAIS2011072501. **Uvs Aimag:** 1 ♀, 4 km ESE Pass Ulaan davaa, between Lake Örög nuur and Ulaangom, 1700 m, Exp. Dr. Z. Kaszab, Nr. 1074, 6.vii.1968 (HNHM); 1 ♂, Tarialan Soum, Kharkhiraa Gol, 4 km W Tarialan, N49.77959, E91.86026, 1453 m, 2–3.vii.2010, MAIST, MAIS2010070201; 1 ♂, Khovd Soum, Goojuur Gol, 25 km NE Khovd, N49.42978, E91.19503, 1975 m, 5–6.vii.2010, MAIST, MAIS2010070505; 3 ♂, Khovd Soum, Goojuur Waterfall, 29 km NE Khovd, N49.44144, E91.25202, 2274 m, 6.vii.2010, MAIST, MAIS2010070601; 1 ♂, Khovd Soum, braid of Shiver Gol, 12 km E Khovd, N49.24592, E91.06149, 1489 m, 6–7.vii.2010, MAIST, MAIS2010070604; 1 ♂, Bokhmoron Soum, Altan Gadasni Gol, 7 km N Jigertei Bag, Gulzat Protected Area, N49.99679, E90.27887, 1763 m, 10–11.vii.2010, MAIST, MAIS2010071003; 1 ♂, Turgen Soum, Khondlon Gol, 4.5 km W Turgen, N50.08403, E91.61472, 1295 m, 13–14.vii.2010, MAIST, MAIS2010071303; 2 ♂, Turgen Soum, Springs S side of Khondlon Gol, 6 km W Turgen, N50.07458, E91.60140, 1316 m, 14.vii.2010,

MAIST, MAIS2010071401; 13 ♂, 5 ♀, Davst Soum, Tokhilog Gol, by Mongolian military border outpost, N50.69165, E92.59283, 1003 m, 14–15.vii.2010, MAIST, MAIS2010071403; 16 ♂, Sagil Soum, Borshoo Gol, 29 km NNE Sagil, N50.57615, E91.77029, 1281 m, 15–16.vii.2010, MAIST, MAIS2010071502; 2 ♂, Turgen Soum, Javartain Gol, 33.5 km SW Turgen, N49.88653, E91.34708, 1871 m, 16.vii.2010, MAIST, MAIS2010071603; 2 ♂, Turgen Soum, Javartain Gol & Turgen Gol, 33 km SW Turgen, N49.89234, E91.35239, 1849 m, 16–17.vii.2010, MAIST, MAIS2010071602; 12 ♂, Ondorkhangai Soum, Baruunturuuni Gol & Morguugiin Gol, 20 km NNW Ondorkhangai, N49.44592, E94.79595, 1688 m, 19–20.vii.2010, MAIST, MAIS2010071902; 10 ♂, 1 ♀, Tsagaankhayrkhan Soum, Onchun Gol, 15 km ESE Tsagaankhayrkhan, N49.38851, E94.44290, 1832 m, 20–21.vii.2010, MAIST, MAIS2010072001. **Zavkhan Aimag:** 1 ♂, Choit chunch, 24 km E Somon Songino, 2000 m, Exp. Dr. Z. Kaszab, Nr. 1096, 12.vii.1986 (HNHM); 1 ♂, 24 km E Somon Songino, 2000 m, Exp. Dr. Z. Kaszab, Nr. 1097, 12.vii.1968 (HNHM); 1 ♂, Ikh-Uul Soum, Ideriin Gol ~28 km E Tosontsengel, N48.71968, E98.65184, 1654 m, 19–20.vii.2004, SRPT, SRP04071903; 1 ♂, Tosontsengel Soum, Delgarakhiin Gol ~16 km S Tosontsengel, N48.61518, E98.23096, 1761 m, 20–21.vii.2004, SRPT, SRP04072001; 20 ♂, 1 ♀, Tosontsengel Soum, Gunza Gol ~38 km SW Tosontsengel, N48.62624, E97.89617, 1831 m, 21–22.vii.2004, SRPT, SRP04072102; 6 ♂, 1 ♀, Mountain pass (davaa), N48.42180, E97.83063, 2135 m, 22.vii.2004, J.K. Gelhaus #979; 9 ♂, 2 ♀, Tosontsengel Soum, Tegshiin Gol ~70 km SW Tosontsengel, N48.34410, E97.87312, 1927 m, 22.vii.2004, SRPT, SRP04072201; 2 ♂, Tosontsengel Soum, unnamed reed lake and marsh by Tegshiin Gol, ~70 km SW Tosontsengel, N48°19′52.6″, E97°51′52.2″, 22.vii.2004, A.E.Z. Short, J.K. Gelhaus, Enkhnasan, SRP04072202; 7 ♂, Ider Soum Ideriin Gol ~4 km NE Zuunmod/Ider, N48.24995, E97.40627, 1929 m, 22–23.vii.2004, SRPT, SRP04072203; 15 ♂, 1 ♀, Ider Soum, Dogshin/Nogoon Nuur ~21 km SE Zuunmod/Ider, N48.06257, E97.55064, 2054 m, 23–24.vii.2004, SRPT, SRP04072302; 1 ♂, Ider Soum, Ideriin Gol ~22 km SE Zuunmod/Ider, N48.05989, E97.55073, 2053 m, 23–24.vii.2004, SRPT, SRP04072303; 1 ♂, Ider Soum, Zagastain Gol ~11 km NNE Zagastain Davaa, N48.15779, E97.21441, 2108 m, 24.vii.2004, SRPT, SRP04072401; 6 ♂, Telmen Soum, Ideriin Gol ~15 km SSW Telmen/Ovogdii, N48.53255, E97.52093, 1823 m, 24–25.vii.2004, SRPT, SRP04072402; 1 ♂, Tosontsengel Soum, Ar Teeliin Gol ~24 km SW Tosontsengel, N48.65028, E98.36208, 1803 m, 25.vii.2004, SRPT, SRP04072501; 48 ♂, 5 ♀, Ikh-Uul Soum, Deed Tsetsuukhiin Gol ~10 km NW Solongotiin Davaa, N48.36436, E98.92737, 2072 m, 25.vii.2004, SRPT, SRP04072502.

Elevation range in Mongolia. Adults were collected at altitudes ranging from 640 to 2800 m.

Period of activity. Adults are active from mid-June through to early August.

Known distribution. Kazakhstan, Mongolia (Map 14) and Russia (western and eastern parts of Siberia, Far East).

Redescription. Male. Body length 12.0–16.1 mm, wing length 13.9–18.0 mm. General body coloration brownish yellow.

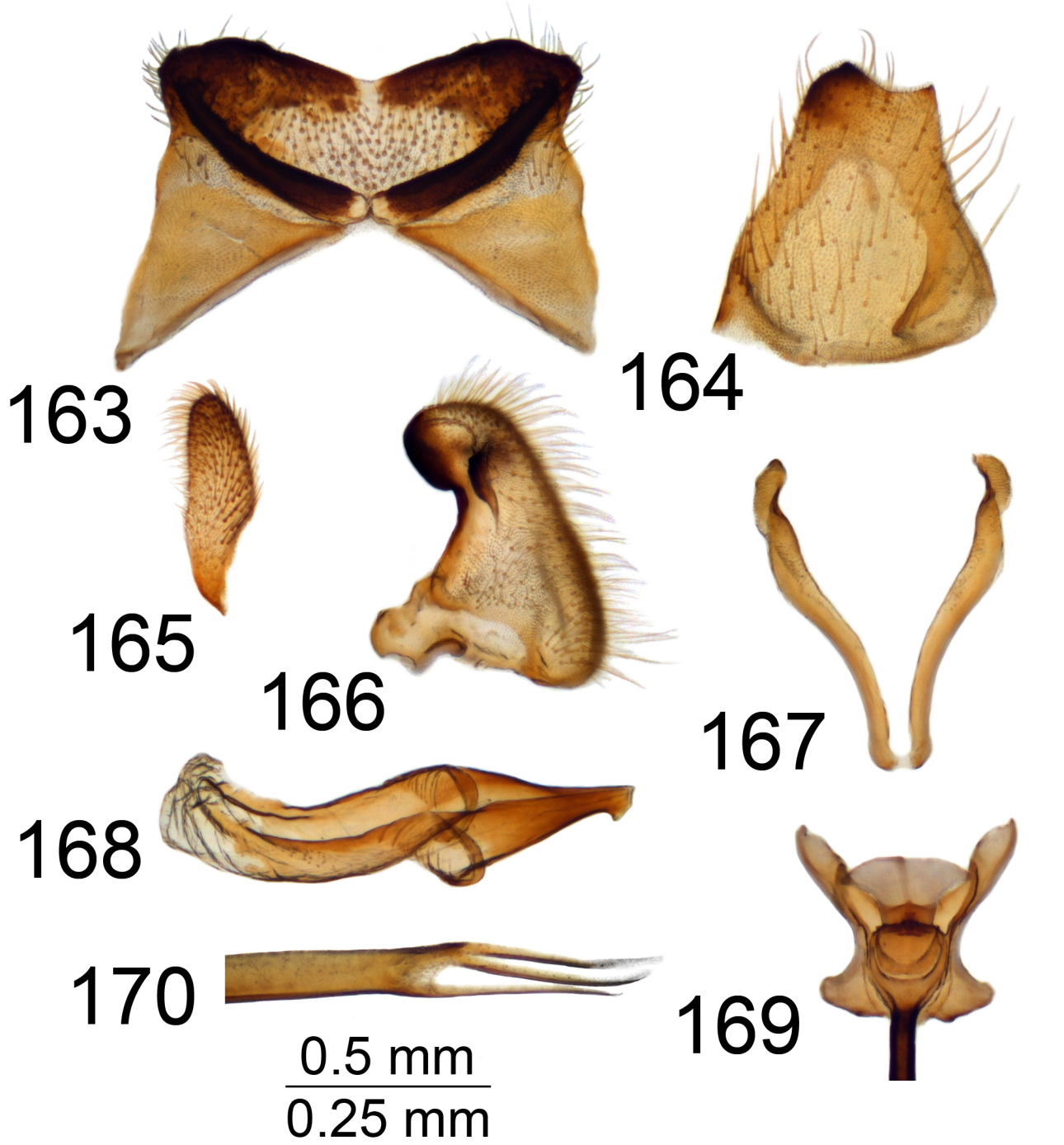
Head. Gray. Vertex and occiput gray with indistinct median line. Rostrum brownish yellow, dorsally sparsely dusted with gray, nasus conspicuous. Antenna 13-segmented, if bent backward reaching beyond base of wing. Scape, pedicel and first flagellomere yellow, succeeding flagellomere brown. Each flagellomere except first one with weak basal enlargement and deeply incised. Apical flagellomere very small, reduced, distinctly shorter than preceding flagellomere. Verticils longer than corresponding segments. Palpus dark brown.

Thorax. Brownish gray. Pronotum light brown with broad brown median line. Prescutum and presutural scutum gray with 4 brownish longitudinal stripes indistinctly bordered by brown. Intermediate pair separated. Postsutural scutum gray, scutal lobe with 2 spots indistinctly bordered by brown. Scutellum light brown with brown median line. Postnotum gray pruinose with brown median line. Pleura pruinose, brownish gray. Coxa yellowish, dusted with gray. Trochanters yellowish. Femora yellowish with narrowly darkened distal part. Tibiae yellowish with darkened distal part. Tarsal segments brown. Tarsal claws without tooth. Wing patterned with brown. Halter with pale stem and brown knob.

Abdomen. Yellow, with conspicuous broad dark brown dorsal and lateral stripes. Segment 1 sparsely dusted with gray. Lateral and caudal borders of tergites pale.

Hypopygium. Yellow. Tergite 9 forming narrowed concave plate (Fig. 163). Main body of tergal plate pale with blackened rim. Posterior margin of tergal plate broadly emarginated. Lateral angles of tergal plate obtuse and blackened. Anterior portion of tergal plate raised into broad sclerotised border. Border medially interrupted by pale. Gonocoxite shaped as large subrectangular plate, apex gently bifid with large obtuse black tooth and small denticle (Fig. 164). Outer gonostylus widestest at middle with apex rounded (Fig. 165). Inner gonostylus large, mid-dorsal

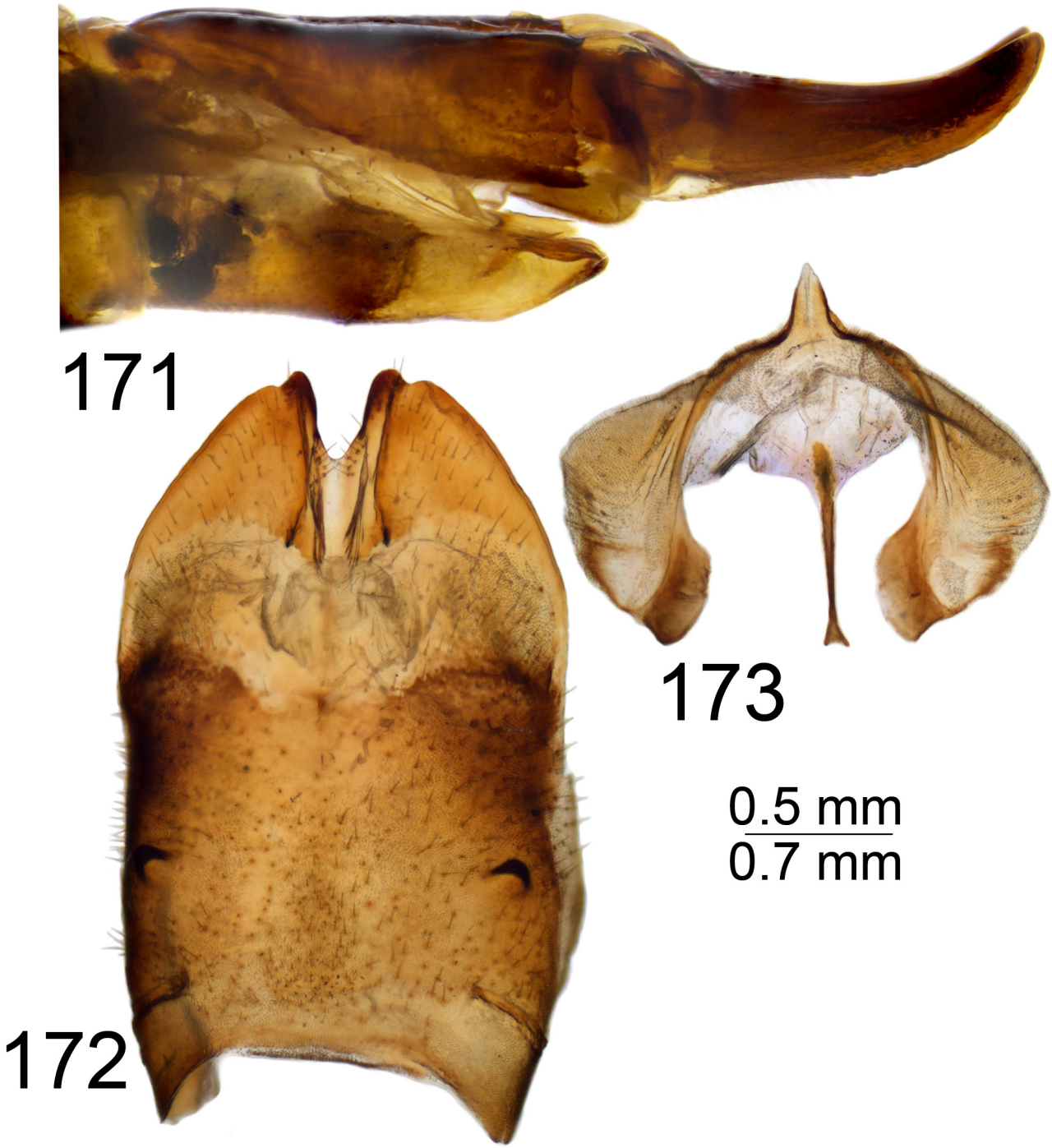
edge with blackened plate, beak sclerotised and rounded (Fig. 166). Gonocoxal fragment (Fig. 167) with medial sclerites slender, flattened posteriorly, anteriorly fused by membrane and together forming V-shaped structure. Lateral sclerite very small and inconspicuous. Aedeagal guide in shape of triangular groove, gonapophyses short and wrinkled, adminicular rods long (Fig. 168). Sperm pump with central vesicle flattened (Fig. 169). Compressor apodeme shaped as large plate without median incision. Posterior immovable apodeme much longer than compressor apodeme appearing as slender lobe. about same length as compressor apodeme lobe with rounded apex. Anterior immovable apodeme laterally obtuse. Aedeagus shaped as elongate tube, about 6.9 times as long as sperm pump, basally and medially dark brown, apically passing into yellow. Distal part with lateral and ventral incisions shorter than in *T.* (*V.*) *virgatula*, appearing trident-shaped (Fig. 170).



FIGURES 163–170. Hypopygium of male *T.* (*Vestiplex*) *longitudinalis*. **163.** Tergite 9, dorsal view; **164.** Gonocoxite, lateral view; **165.** Left outer gonostylus, lateral view; **166.** Left inner gonostylus, lateral view; **167.** Gonocoxal fragment, dorsal view; **168.** Aedeagal guide, lateral view; **169.** Sperm pump, dorsal view; **170.** Distal part of aedeagus, lateral view. Scale of 163–169 = 0.5 mm, 170 = 0.25 mm.

Female. Body length 20.9–26.0 mm, wing length 2.0–3.0 mm (Fig. 3). Female differs from male by reduced wings and elongate abdomen. Antenna short, if bent backward reaching base of wing. Scape, pedicel and first flagellomere yellowish, succeeding flagellomeres brownish with small weak basal enlargements.

Ovipositor (Figs 171–173). Tergite 10 shiny brown. Cercus brown, longer than tergite 10, relatively broad with tip obtuse, outer margin with indistinct small serration (Fig. 171). Sternite 8 anteriorly with 2 small lateral projections. Hypovalva extremely short, sclerotized and stout projection, distinctly shorter than in *T.* (*V.*) *virgatula* (Fig. 172). Sternite 9 with anterior part distinctly broadened, posterior part short and acute. Furca anteriorly dark brown and narrow, posteriorly membranous except median yellowish-brown area (Fig. 173). *Bursa copulatrix* and spermathecal ducts without sclerotisation, generally similar to *T.* (*V.*) *virgatula*. Spermatheca spherical (Fig. 14).



FIGURES 171–173. Ovipositor of female *T.* (*Vestiplex*) *longitudinalis*. **171.** Ovipositor, left lateral view; **172.** Sternite 8 with hypovalvae, ventral view; **173.** Sternite 9, furca and bursa copulatrix, dorsal view. Scale of 171 = 0.7 mm, 172–173 = 0.5 mm.

Tipula (*Vestiplex*) *virgatula virgatula* Riedel

(Figs 12, 14, 174–184; Map 14)

Tipula virgatula Riedel, 1913: 58.
Tipula subcarinata Alexander, 1922: 347.
Tipula (*Vestiplex*) *subcarinata*: Alexander, 1935: 119; 1936a: 2.
Tipula (*Vestiplex*) *subcarinata subcarinata*: Savchenko, 1960: 192; Savchenko, 1964: 211 (synonymy).
Tipula (*Vestiplex*) *virgatula virgatula*: Savchenko, 1964: 211.
Tipula edentata Alexander, 1922: 349.
Tipula (*Vestiplex*) *edentata*: Savchenko, 1960; Savchenko, 1964: 211 (possible synonymy of *T.* (*V.*) *virgatula*); Oosterbroek & Theowald, 1992: 160 (synonymy not certain); Podenas *et al.*, 2013: 113 (as synonym of *T.* (*V.*) *virgatula*).

Type material examined. *Tipula* (*Vestiplex*) *virgatula* Riedel: **HOLOTYPE** ♂: **MONGOLIA,** N. Mongolei Leder 92, *Tipula virgatula*, m. [mihi] ♂, Type det. M.P. Riedel, Typ (NHMV). **COTYPE:** ♂, N. Mongolei Leder 92, *Tipula virgatula* m. [mihi] ♂, Type det. M.P. Riedel, Cotype Riedel = *T.* (*Vestiplex*) *subcarinata* Alexander [identified by E.N. Savchenko] (ZMHB).

Tipula (*Vestiplex*) *edentata* Alexander: **HOLOTYPE** ♀: **MONGOLIA,** August 1909, Dr. du Chazaud, Mission de Lacoste (MNHN). Wing slide mounted (USNM).

Note on types. According to Alexander (1922) the type specimen of *T.* (*V.*) *edentata* is preserved at MNHN, however its presence in the collection is not confirmed.

Additional material examined. MONGOLIA. Arkhangay Aimag: 2 ♂, Tsenkher Soum, Nuuriin Khooloi lake ~9 km SW Tavanbulag, N47.33933, E101.82093, 1693 m, 10.vii.2004, SRPT, SRP04071001; 3 ♀, Tsenkher Soum, Tsetserleg Gol ~50 km SSW Tavanbulag, N47.04409, E101.76352, 1902 m, 11.vii.2004, SRPT, SRP04071102; 24 ♂, 8 ♀, Ikhtamir Soum, NW braid of Khoit Tamir Gol ~25 km SW Ikhtamir, N47.50523, E100.93208, 1728 m, 14–15.vii.2004, SRPT, SRP04071402; 15 ♂, 2 ♀, Ikhtamir Soum, Khoit Tamir Gol ~29 km SW Ikhtamir, N47.48567, E100.87875, 1749 m, 15.vii.2004, SRPT, SRP04071501; 11 ♂, 2 ♀, Chuluut Soum, Khanui Gol ~60 km SW Ikhtamir, N47.50949, E100.57510, 1981 m, 15.vii.2004, SRPT, SRP04071502; 12 ♂, 1 ♀, Chuluut Soum, Khurmen/Davaat Gol 15 km SSE Chuluut/Jargalant, N47.42580, E100.30130, 2104 m, 15–16.vii.2004, SRPT, SRP04071503; 2 ♂, Chuluut Soum ponds at Egiin Davaa ~47 km SW Chuluut/Jargalant, N47.21198, E99.91114, 2582 m, 16.vii.2004, A.E.Z. Short, J.K. Gelhaus, Enkhnasan, SRP04071601; 1 ♂, Chuluut Soum, Tsohiotiin Davaa (mountain pass), N47.68999, E100.21012, 2256 m, 17.vii.2004, J.K. Gelhaus #969; 1 ♂, Ikhtamir Soum, E side of Khoit Tamir Gol 4 km NE Ikhtamir, N47.59928, E101.24521, 1602 m, 14.vii.2004, SRPT, SRP04071401; 19 ♂, Chuluut Soum, Chuluutin Gol 40 km N Chuluut/Jargalant, N47.890440, E100.31810, 1937 m, 17.vii.2004, SRPT, SRP04071701; 88 ♂, 4 ♀, Tariat Soum, Nariin Gichgenii Gol/Urd Terkh Gol ~5 km SE Khorgo/Tariat, N48.12661, E99.94128, 2019 m, 17–18.vii.2004, SRPT, SRP04071702; 67 ♂, 3 ♀, Tariat Soum, Terkhiin Tsagan Nuur ~8 km W of Khorgo/Tariat, N48.14404, E99.78300, 2057 m, 18.vii.2004, SRPT, SRP04071801; 88 ♂, 6 ♀, Tariat Soum, Khunt Nuur ~3 km SW Tsagaan nuur Brigade, N48.07248, E99.52216, 2062 m, 18.vii.2004, SRPT, SRP04071802. **Bayan Olgii Aimag:** 3 ♂, Tsengel Soum, Sul Uuliin Gol, trib. of Tsagaan Gol, Altai-Tavan Bogd NP, N49.10448, E88.04845, 2796 m, 10.vii.2008, S. Podenas, MAIS08071001; 28 ♂, 3 ♀, Tsengel Soum, Tsagaan Gol, 20 km W Zagast Nuur Bag, Entrance to Altai-Tavan Bogd NP, N49.09161, E88.10436, 2410 m, 12.vii.2008, S. Podenas, MAIS08070902; 3 ♂, Tsengel Soum, Mogoitiin Gol 13 km ESE Asgat Uul, N48.75859, E88.60339, 2151 m, 14.vii.2008, S. Podenas, MAIS08071305; 56 ♂, 11 ♀, Tsengel Soum, Khoton Nuur 15 km NW Syrgal, N48.66722, E88.29927, 2086 m, 14–15.vii.2008, S. Podenas, R.W. Bouchard, Jr., MAIS08071402; 1 ♂, Tsengel Soum, Partizanii Bulag below Khazabai Sala (waterfall), 2148 m, N48.61734, E88.31315, 16.vii.2008, R.W. Bouchard, Jr., MAIS08071602; 1 ♂, 1 ♀, Tsengel Soum, Syrgali Gol, bridge over outflow between Khoton Nuur and Khurgen Nuur at Syrgal, 2095 m, N49.59925, E88.43707, 16.vii.2008, Suvdaa, MAIS08071603; 1 ♂, Tsengel Soum, Sumdairag Gol, 12 km S Syrgai, 2129 m, N48.50679, E88.50977, 16.vii.2008, J. Morse, Suvdaa, S. Podenas, MAIS08071604; 20 ♂, 6 ♀, Tsengel Soum, Rashaanii Gol, at bridge, trib. of Tsagaan Us Gol, N48.75565, E88.15266, 2098 m, 15.vii.2008, S. Podenas, MAIS08071501; 15 ♂, Tsengel Soum, Khar Ovoo Gol, draining Khelkhee Lake, N48.62918, E88.28554, 2147 m, 15–16.vii.2008, MAIS2008071601; 2 ♂, Sagsay Soum, Yamaatiin Gol, 17 km SW Dayan Military Base, N48.16728, E88.85435, 2073 m, 17.vii.2008, MAIS2008071703; 1 ♂, Sagsay Soum, pools attached to Dayan Lake, 2 km N Dayan Military Base, N48.27453, E88.86900, 2230 m, 18.vii.2008, MAIS2008071801; 3 ♂, Deluun Soum, Burgedtein Gol 3.5 km S Buyant Gol, N47.58121, E91.17047, 2049 m, 4.vii.2009, Mountainous stream with willows on banks, grass short, grazed; 2 ♂, Nogoonnuur Soum, Zakhin Us Gol, 15 km W Nogoonnuur,

N49.57774, E90.03497, 1764 m, 8–9.vii.2010, MAIST, MAIS2010070803; 1 ♂, Nogoonnuur Soum, unnamed ponds, 20 km WNW Nogoonnuur, Siylkhemiyn Nuruu Protected Area, N49.71056, E89.98618, 1751 m, 10.vii.2010, MAIST, MAIS2010071001. **Bayankhongor Aimag:** 5 ♀, Changaj Mountains, Ulaan colon, 18 km S Pass Egijn davaa, 2300 m, Exp. Dr. Z. Kaszab, 1966, Nr. 552, 21.vi.1966 (HNHM); 13 ♂, Erdenesogt Soum, Shargaljuut Gol, 10 km NE Shargaljuut Rashaan Hot Spring, jct Ugalzyn Gol, N46.35902, E101.27559, 2186 m, 4.vii.2011, MAIS2011070402; 1 ♂, Erdenesogt Soum, Erkhetkhayrkhan Gol, crossing to Khokh Gol, N46.62626, E101.36736, 2500 m, 5.vii.2011, S. Podenas, MAIS2011070501. **Bulgan Aimag:** 12 ♂, 3 ♀, Bulgan Soum, Urd Tamir Gol ~38 km SW Tsetserleg, N47.28244, E101.18793, 1872 m, 12–13.vii.2004, SRPT, SRP04071201; 5 ♂, Bulgan Soum, unnamed hillside trib. of Khairkhan Davaani Gol, N46.94286, E100.85532, 2311 m, 13.vii.2004, J.K. Gelhaus, J.C. Morse, A.E.Z. Short, SRP04071303; 1 ♂, Bulgan Soum, Urd Tamir Gol braid upstream of bridge ~63 km SW Tsetserleg, N47.11192, E101.01048, 2066 m, 13–15.vii.2004, SRPT, SRP04071302; 1 ♂, Teshig Soum, wetland near confluence of Tariakhtain Gol and Egiin Gol, N49.74339, E103.10503, 936 m, 10.vii.2005, SRPT, SRP05071002; 41 ♂, Teshig Soum, Egiin Gol, 12.7 km SW Teshig, N49.88872, E102.50978, 998 m, 11–13.vii.2005, SRPT, SRP05071101; 12 ♂, 1 ♀, Teshig Soum, wetland, 4.3 km SSW Teshig, N49.90725, E102.65665, 970 m, 10–11.vii.2005, SRPT, SRP05071003; 2 ♂, Bureghangay Soum, steppe, grassland along roadside, 63 km SE Orhon, 1028 m, N48.26890, E104.19501, 26.vi.2006, J.K. Gelhaus #1047; 1 ♂, Birch (*Betula*)-larch (*Larix*) forest, 15 km NW Bulgan, 1435 m, N48.89933, E103.36507, 26.vi.2006, J.K. Gelhaus #1048. **Darkhan Aimag:** 1 ♂, Shariingol Soum, Khuitnii Gol, N49.46450, E106.66871, 852 m, 21.vii.2003, SRPT, SRP03072103. **Dornod Aimag:** 3 ♂, Bayn Uul Soum, pine forest, 2 km S Ulikhan Deed Ulikhan town, N49.49401, E112.56936, 853 m, 21.vii.2011, S. Podenas, MAIS2011072101. **Hovsgol Aimag:** 6 ♂, Hovsgol lake, Borsog Gol (river) at shoreline, 1650 m, 3.vii.1996, E. Hunter #96031; 7 ♂, Khankh Soum, Sevsuul River, N51.1623611, E100.753833, 1656 m, 25.vi.2005, SRPT; 1 ♂, Khankh Soum, Noyon River, N51.2029722, E100.805833, 1707 m, 25.vi.2005, SRPT; 1 ♀, Khankh Soum, Shagnuul River, N51°15′18.6″, E100°50′45.8″, 1728 m, 25.vi.2005, SRPT; 9 ♂, Khankh Soum, Turag River, N51°17′11.1″, E100°49′12.3″, 1665 m, 25–26.vi.2005, SRPT; 3 ♂, Khankh Soum, mouth of Turag River—Hovsgol lake, N51°18′17.2”, E100°47′23.2″, 1655 m, 26.vi.2005, SRPT; 1 ♂, Khankh Soum, Turag River, N51°17′12.6″, E100°49′49.0″, 1663 m, 26.vi.2005, SRPT; 13 ♂, Khankh Soum, Turag River, N51°17′28.1″, E100°48′49.8″, 1668 m, 26.vi.2005, SRPT; 1 ♂, Khankh Soum, Turag River, N51°19′33.7″, E100°54′05.7″, 1795 m, 26.vi.2005, SRPT; 17 ♂, 1 ♀, Khankh Soum, Shagnuul River and Hovsgol lake nearby, N51°15′46.8″, E100°46′44.7″, 1657 m, 27.vi.2005, SRPT; 18 ♂, Khankh Soum, Shagnuul Gol, 1694 m, 27.vi.2005, SRPT; 1 ♂, Khankh Soum, Shagnuul Gol, 1727 m, 27.vi.2005, SRPT; 1 ♂, Khankh Soum, mouth of Noyon Gol at Hovsgol lake, N51°12′47.3″, E100°45′11.1″, 1607 m, 28.vi.2005, SRPT; 3 ♂, Khankh Soum, Sevsuul Gol and shore of Hovsgol lake, N51°09′42.0″, E100°43′42.2″, 1658 m, 28.vi.2005, SRPT; 1 ♂, Khankh Soum, Sevsuul Gol, N51°09′37.1″, E100°45′31.3″, 1666 m, 29.vi.2005, SRPT; 1 ♂, Khankh Soum, Sevsuul Gol, N51°09′22.3″, E100°46′36.6″, 1686 m, 29.vi.2005, SRPT; 3 ♂, Khankh Soum, Dalbay River, N51.00271, E100.49329, 1726 m, 1.vii.2005, SRPT; 3 ♂, Erdene Bulgan Soum, Emt Gol, 33.2 km NW Tarialyn, N49.87742, E101.82073, 1496 m, 13–14.vii.2005, SRPT, SRP05071302; 1 ♂, Chandmani-Ondor Soum, Hohoo Gol, 1.5 km SE Chandmani-Ondor, N50.46416, E100.9491, 1251 m, 18.vii.2005, SRPT, SRP05071801; 1 ♂, Chandmani-Ondor Soum, west branch (unnamed) of Khalkhan Gol, upstream of Bolnain Rashaan, 58 km NE Hatgal, N50.78323, E100.79572, 1676 m, 18–19.vii.2005, SRPT, SRP05071803; 2 ♂, east trib. of upper Hohoo Gol (Bugat Gol), 44.5 km NE Hatgal, N50.69174, E100.66691, 1595 m, 19.vii.2005, SRPT, SRP05071902; 9 ♂, Bayanzurkh Soum, Altargana Gol, 4.2 km N Bayanzurkh, N50.21297, E98.96367, 1662 m, 21–22.vii.2005, SRPT, SRP05072103; 9 ♂, Khankh Soum, Dalbay valley, N51.0240556, E100.7558611, 1670 m, 24–25.vi.2005, SRPT; 2 ♂, Tumurbulag Soum, Bugcei (Bugceiin) Gol, 45.5 km SW Moron, N49.26168, E99.88242, 1618 m, 23.vii.2005, SRPT, SRP05072301; 1 ♂, Tsagaan-Uur Soum, Uilgan Gol, 26 km ENE Tsagaan-Uur, N50.6231, E101.87375, 1152 m, 15–16.vii.2005, SRPT, SRP05071502; 1 ♂, Tumurbulag Soum, N49.23175, E99.90027, 1790 m, 23.vii.2005, SRPT, SRP05072302; 11 ♂, Hovsgol Aimag Steppe grassland; 23 km ESE Moron, 1554 m, N49.57650, E100.46652, 27.vi.2006, J.K. Gelhaus #1050; 2 ♂, Arbulag Soum, Ovor Gylaadin Gol (pooled stream), 7.0 km SE Sumber, 1987 m, N50.12844, E99.60749, 27–28.vi.2006, J.K. Gelhaus #1051, SRP06062701; 9 ♂, Bayanzurh Soum, Ovor Gylaadin Gol (small stream), 20.0 km NW Sumber, 1802 m, N50.25681, E99.28587, 28.vi.2006, J.K. Gelhaus #1052, SRP06062801; 5 ♂, 7 ♀, Hovsgol Aimag Ulaan-Uul Soum, Beltes Gol (river) 30.0 km NE Bayanzurh, 1791 m, N50.31142, E99.32278, 28.vi.2006, J.K. Gelhaus #1053, SRP06062802; 2 ♂, Ulaan-Uul Soum, unnamed trib. (stream) of Beltes Gol, 34.0 km NE Bayanzurh, 2113 m, N50.42980, E99.21690, 28.vi.2006, J.K. Gelhaus #1054-A, SRP06062803; 1 ♂, Hovsgol Aimag Ulaan-Uul Soum, Guna (Gunain) Gol (river), 51 km NE Bayanzurh, 1761 m, N50.61893, E99.12289, 29.vi.2006, J.K. Gelhaus #1055, SRP06062903; 4

♂, Ulaan Uul Soum, larch forest on hilltop, 15 km NNE Ulaan Uul, 1704 m, N50.81465, E99.32621, 29.vi.2006, J.K. Gelhaus #1056; 5 ♂, 1 ♀, Ulaan Uul Soum, Bagtag Gol (river) and wetland ponds/marshy meadow, 15 km NNE Ulaan Uul, 1598 m, N50.80484, E99.32228, 29–30.vi.2006, J.K. Gelhaus #1057, SRP06062904 & 06063001; 1 ♂, 1 ♀, Renchinlhumbe Soum, Hog Gol (river), 25 km W Renchinlhumbe, 1569 m, N51.09576, E99.31911, 1.vii.2006, J.K. Gelhaus #1060, SRP06070101; 8 ♂, Renchinlhumbe Soum, wetland (3 ponds) in sandy grassland, 19 km N Renchinlhumbe, 1595 m, N51.27236, E99.71152, 2.vii.2006, J.K. Gelhaus #1063, SRP06070202; 2 ♂, Renchinlhumbe Soum, Jaray (Jarin) Gol (river), 33 km N Renchinlhumbe, 1580 m, N51.39865, E99.75060, 2–3.vii.2006, J.K. Gelhaus #1064, SRP06070203; 31 ♂, 2 ♀, Renchinlhumbe Soum, Outlet stream of Targan Nuur (lake), ~11 km NE Tsagaannuur (town), 1552 m, N51.42940, E99.42113, 3.vii.2006, J.K. Gelhaus #1065, SRP06070301; 2 ♂, Tsagaannuur Soum, unnamed trib. of Shishged Gol ~16 km NW Tsagaannuur (town), 1606 m, N51.45833, E99.20051, 3–4.vii.2006, J.K. Gelhaus #1066, SRP06070302; 4 ♂, Renchinlhumbe Soum, Larch (*Larix siberica*) forest, 41 km S Tsagaannuur (town), 1604 m, N50.98796, E99.23112, 4.vii.2006, J.K. Gelhaus #1071; 2 ♂, 3 ♀, Ulaan-Uul Soum, Guna (Gunain) Gol (river), 11 km NNW Ulaan-Uul, N50.77518, E99.18892, 1615 m, 4.vii.2006, SRP06070403; 1 ♂, Bayanzurh Soum, Beltes Gol (river), 10 km E Bayanzurh, 1688 m, N50.20129, E99.08625, 5.vii.2006, J.K. Gelhaus #1072; 22 ♂, Bayanzurh Soum, Beltes Gol (river), 6 km ENE Bayanzurh, 1682 m, N50.19880, E99.03148, 6.vii.2006, SRP06070601; 10 ♂, Bayanzurh Soum, Emtin Gol (stream), ~2 km S Bayanzurh, 1625 m, N50.15020, E99.97738, 6.vii.2006, J.K. Gelhaus #1075, SRP06070602; 11 ♂, 1 ♀, Moron Soum, Tunamal Nuur (lake), 5.5 km W Arbulag, 1871 m, N49.89920, E99.39433, 6–7.vii.2006, J.K. Gelhaus #1076, SRP06070603; 2 ♂, Ikh Uul Soum, Selenge Moron (river) ~8 km W Ikh-Uul, 1069 m, N49.44641, E101.33625, 7–8.vii.2006, J.K. Gelhaus #1077, SRP06070701. **Khentii Aimag:** 1 ♂, Khovd Aimag, Khovd Soum, Dogd Gol, 3 km W Khovd soum centre, 1745 m, N48.12139, E91.33124, 1.vii.2008, S. Podenas, MAIS08070102; 3 ♂, Khovd Aimag, Duut Soum. Tsagaan Burgasii Gol ~15 km NE Duut, N47.55936, E91.76095, 1865 m, 18–19.vii.2009; 1 ♂, Khovd Aimag, Duut Soum, Nevtiin Rashaan Springs jct Tsagaanburgasii Gol 9 km E Duut, N47.53136, E91.70514, 2051 m, 19.vii.2009; 4 ♂, Omnodelger Soum, Khurkhiyn Gol, 39 km NE Tsenkhermandal, N48.04989, E109.32549, 1364 m, 15.vii.2011, S. Podenas, MAIS2011071502; 1 ♂, Binder Soum, Onon Gol, jct Khurkh Gol, 6.5 km SE Binder, N48.58405, E110.67959, 1039 m, 17.vii.2011, S. Podenas, MAIS2011071701; 2 ♂, Binder Soum, Khurkh Gol, jct Onon Gol, 6.5 km SE Binder, N48.58354, E110.67884, 1038 m, 17.vii.2011, MAIS2011071702; 4 ♂, Dadal Soum, Uuts Gol, 30 km NE Dadal, N49.24091, E111.84976, 904 m, 19.vii.2011, S. Podenas, MAIS2011071902; 1 ♂, Norovlin Soum, Ulz Gol, 45 km SW Bayan Uul, N48.86579, E112.20216, 963 m, 21.vii.2011, S. Podenas, MAIS2011072102. **Ovorhangay Aimag:** 3 ♂, Changaj Mountains, 21 km E somon Narijnteel, 2080 m, Exp. Dr. Z. Kaszab, 1964, Nr. 213, 27.vi.1964 (HNHM); 2 ♂, Changaj Mountains, 5 km NE somon Chusirt, 1730 m, Exp. Dr. Z. Kaszab, 1964, Nrs. 225, 226, 29.vi.1964 (HNHM); 20 ♂, Esonzyil Soum, Zegst/Sarin Gol, 74 km NW Arvayheer, N46.79062, E103.32486, 1665 m, 4–5.vii.2004, SRPT, SRP04070403; 6 ♂, Kharkhorin Soum, Sant Uul pass, 23 km SE Shinebrigade, N46.87219, E103.14081, 2007, 5.vii.2004, SRPT, SRP04070501; 1 ♂, Zuunbayan-Ulaan Soum, Millenium Road A0301 marker 380.6 km ~50 km NE Arvayheer, N46.60919, E103.10400, 1820 m, 5.vii.2004, SRPT, SRP04070502; 43 ♂, 7 ♀, Hujirt Soum, Khavtsaliin Gol valley, N46.76292, E103.02561, 1750 m, 5–6.vii.2004, SRPT, SRP04070504; 4 ♂, Khujirt Soum, Kharzanii Gol 12 km SE Khujirt, N46.80020, E102.84406, 1706 m, 6.vii.2004, SRPT, SRP04070601; 7 ♂, Ovporhangay Aimag, Bat-Olziy Soum\Orkhon Gol ~34 km W Khujirt, N46.89303, E102.39457, 1610 m, 6.vii.2004, SRPT, SRP04070602; 35 ♂, 2 ♀, Bat-Olziy Soum, braid of Orkhon Gol ~40 km W Khujirt, N46.88586, E102.34386, 1646 m, 6–7.vii.2004, SRPT, SRP04070603; 7 ♂, Bat-Olziy Soum, Orkhon's Waterfall on Ulaan Gol ~300 m S Orkhon Gol, ~84 km W Khujirt, N46.78742, E101.96021, 1809 m, 7.vii.2004, SRPT, SRP04070701; 107 ♂, 39 ♀, Bat-Olziy Soum, Ulaan Gol ~93 km W Khujirt, N46.73093, E101.88583, 1894 m, 7–8.vii.2004, SRPT, SRP04070702; 1 ♂, 1 ♀, Kharkhorin Soum, Kharzani Gol 3.5 km NE Shankh Bridgade, N47.05722, E102.99191, 1519 m, 8.vii.2004, SRPT, SRP04070803; 3 ♂, Kharkhorin Soum, Orkhon Gol 6 km W Kharkhorin center, N47.20226, E102.80169, 1462 m, 8–9.vii.2004, SRPT, SRP04070901; 5 ♂, Bat-Olziit Soum, Orkhon gol, N46.79082, E101.93123, 1819 m, 24.vi.2011, O. Yadamsuren, MAIS2011062401; 1 ♂, Ovorkhangay Aimag, Olziyt Soum, E Sanguiyn Dalay Nuur, N46.67575, E103.30890, 1707 m, 2.vii.2011, S. Podenas, MAIS2011070202. **Selenge Aimag:** 4 ♂, Mandal Soum, Boyant Gol (trib. of Tunkhel Gol), 13.8 km above Tunkhel, 2.0 km upstream of Shonkhor Camp, N48.67237, E106.87851, 1078 m, 16–17.vii.2003, SRPT, SRP03071602; 1 ♂, Javkhlant Soum, wetland/pools near left river bank, Yeroo River, 11.5 km upstream of Dulaan Khaan bridge, N49.84014, E106.33228, 647 m, 22–23.vii.2003, SRPT, SRP03072202; 1 ♂, Khuder Soum, Khandgait Lake, 35.4 km E Khandgait Brigade (farm) and c. 18 km SW Khuder, N49.72086, E107.32710, 819 m,

23.vii.2003, SRPT, SRP03072301; 1 ♂, Baruunharaa Soum, Haraa Gol, 2.3 km S Bayangol, N48.87738, E106.12375, 807 m, 4–5.vii.2005, SRPT, SRP05070402; 2 ♂, Zuunburen Soum, Selenge Gol, 7.8 km NW Zuunburen, N50.10285, E105.78217, 647 m, 5–6.vii.2005, SRPT, SRP05070501; 3 ♂, Khotol Soum, Orkhon Gol, 15.0 km WNW Orkhon, N49.1633, E105.18749, 756 m, 26–27.vii.2005, SRPT, SRP05072602; 1 ♂, Eroo Soum, Bayan gol, N49.6298, E107.01804, 820 m, 1.vii.2011, O. Yadamsuren, MAIS2011070102; 1 ♂, Khuder Soum, Bayan gol, N49.61433, E106.92656, 751 m, 1.vii.2011, O. Yadamsuren, MAIS2011070101. **Tov Aimag:** 7 ♂, Erdene Soum, Gorkhi Terelj NP, W Bayangin Gol 8.2 km upstream of Tuul River Road, N48.08026, E107.63841, 1527 m, 6.vii.2003, SRPT, SRP03070603; 2 ♂, Erdene Soum, Gorkhi Terelj NP, Khokh Chuluutiin Gol, N48.12675, E107.57996, 1680 m, 6.vii.2003, SRPT, SRP03070604; 2 ♂, Tov Aimag Erdene Soum, Gorkhi Terelj NP, E Bayangin Gol, 12.9 km upstream from Tuul River Bridge, N48.14846, E107.75838, 1596 m, 7.vii.2003, SRPT, SRP03070703; 4 ♂, Erdene Soum, Gorkhi Terelj NP, E Bayangin Gol, 4.2 km upstream of Tuul River Bridge, N48.07956, E107.77729, 1526 m, 7.vii.2003, SRPT, SRP03070704; 12 ♂, Erdene Soum, Gorkhi Terelj NP, Tuul River, 10.1 km upstream of Tuul River Bridge, N48.09549, E107.84265, 1531 m, 8.vii.2003, SRPT, SRP03070801; 2 ♂, Erdene Soum, Gorkhi Terelj NP, unnamed braid of Tuul River, N48.14846, E107.91267, 1564 m, 8–9.vii.2003, SRPT, SRP03070805; 12 ♂, 1 ♀, Erdene Soum, Gorkhi Terelj NP, unnamed trib. of Tuul River on E side 8.5 km downstream of Galtain Gol, N48.09720, E107.84928, 1542 m, 11.vii.2003, SRPT, SRP03071101; 9 ♂, Cherlen gol, near Cherlen Gol River, N48.11688, E108.37866, 1393 m, 5–6.viii.2003, SRPT; 2 ♂, env. Ulaan Baatar, Ihtenger, Tuul gol, N47.88349, E106.98829, 23.vi.2006, S. Podenas, SRP06062302; 1 ♂, Gorkhi Terelj NP, S Terelj, N47°56′24″, E107°27′06″, 1626 m, 28–29.v.2009, S. Podenas, MAIS2009062802; 5 ♂, Gorkhi-Terelj NP, Tuul River, near park entrance, N47.82965, E107.35424, 1410 m, 30.vi.2010, J.K. Gelhaus #1287, C.R. Nelson, A. Reschikov, T.A. McKnight; 1 ♂, Erdene Soum, Gorkhi Terelj NP, stream 0.5 km N Gorkhi Davaa (Pass), N47.94981 E107.45511, 1593 m, 11.vii.2011, S. Podenas, MAIS2011071101; 1 ♀, Mongonmorit Soum, Zuun Baydlag Gol, downstream, 15 km SW Mongonmorit, N48.10818, E108.36736, 1475 m, 14.vii.2011, S. Podenas, MAIS2011071402. **Ulaanbaatar:** 3 ♂, Ulaanbaatar, city center nr. Nat. Univ. Mongol. bldg. 2, N47.92494, E106.92178, 1305 m, 28.vi.2010, MAIST. **Uvs Aimag:** 1 ♂, 1 ♀, Tarialan Soum, Kharkhiraa Gol, 4 km W Tarialan, N49.77959, E91.86026, 1453 m, 2–3.vii.2010, MAIST, MAIS2010070201; 2 ♂, Tarialan Soum, Khartarvagatay Gol, 30 km SW Tarialan, N49.55006, E91.70007, 2309 m, 3.vii.2010, MAIST, MAIS2010070301; 1 ♂, 1 ♀, Tarialan Soum, Nutsgen Gol, 70 km SW Tarialan, N49.53507, E91.60309, 2552 m, 3.vii.2010, MAIST, MAIS2010070302; 2 ♂, Tarialan Soum, Dund Gol, 73 km SW Tarialan, N49.51831, E91.58729, 2464 m, 3.vii.2010, MAIST, MAIS2010070303; 1 ♂, Omnogovi Soum, unnamed lake (1.5-2 km²), 24 km NNE Omnogovi, N49.32741, E91.82642, 2069 m, 4.vii.2010, MAIST, MAIS2010070401; 2 ♂, Khovd Soum, Goojuur Gol, 25 km NE Khovd, N49.42978, E91.19503, 1975 m, 5–6.vii.2010, MAIST, MAIS2010070505; 5 ♂, Khovd Soum, Shiver/Ireg Gol, 25 km NE Khovd, N49.43119, E91.19093, 1964 m, 5–6.vii.2010, MAIST, MAIS2010070504; 2 ♂, Khovd Soum, Goojuur Waterfall, 29 km NE Khovd, N49.44144, E91.25202, 2274 m, 6.vii.2010, MAIST, MAIS2010070601; 2 ♂, Khovd Soum, springs by Goojuur Gol, 27 km NE Khovd, N49.43095, E91.21487, 2274 m, 6.vii.2010, MAIST, MAIS2010070602; 6 ♂, Bokhmoron Soum, Altan Gadasni Gol, 7 km N Jigertei Bag Gulzat Protected Area, N49.99679, E90.27887, 1763 m, 10–11.vii.2010, MAIST, MAIS2010071003, J.K. Gelhaus #1323; 1 ♂, Sagil Soum, Tsagaan Gol, 10 km W Uureg Nuur Bag, Gulzat Protected Area, N50.17117, E90.72800, 1629 m, 11–13.vii.2010, MAIST, MAIS2010071103; 1 ♂, Turgen Soum, Khondlon Gol, 4.5 km W Turgen, N50.08403, E91.61472, 1295 m, 13–14.vii.2010, MAIST, MAIS2010071303; 7 ♂, Turgen Soum, springs S side of Khondlon Gol, 6 km W Turgen, N50.07458, E91.60140, 1316 m, 14.vii.2010, MAIST, MAIS2010071401; 2 ♂, Davst Soum, Tokhilog Gol, near Mongolian military border outpost, N50.69165, E92.59283, 1003 m, 14–15.vii.2010, MAIST, MAIS2010071403; 36 ♂, 1 ♀, Sagil Soum, Borshoo Gol, 29 km NNE Sagil, N50.57615, E91.77029, 1281 m, 15–16.vii.2010, MAIST, MAIS2010071502; 1 ♂, Turgen Soum, Javartain Gol, 33.5 km SW Turgen, N49.88653, E91.34708, 1871 m, 16.vii.2010, MAIST, MAIS2010071603; 22 ♂, Turgen Soum, Javartain Gol & Turgen Gol, 33 km SW Turgen, N49.89234, E91.35239, 1849 m, 16–17.vii.2010, MAIST, MAIS2010071602; 1 ♂, Turgen Soum, Buural Gol, 30 km SW Turgen, N49.90381, E91.41097, 1812 m, 17.vii.2010, MAIST, MAIS2010071605; 3 ♂, Tsagaankhayrkhan Soum, Onchun Gol, 15 km ESE Tsagaankhayrkhan, N49.38851, E94.44290, 1832 m, 20–21.vii.2010, MAIST, MAIS2010072001. **Zavkhan Aimag:** 9 ♂, Ikh-Uul Soum, Ideriin Gol ~28 km E Tosontsengel, N48.71968, E98.65184, 1654 m, 19–20.vii.2004, SRPT, SRP04071903; 4 ♂, Tosontsengel Soum, Delgarakhiin Gol ~16 km S Tosontsengel, N48.61518, E98.23096, 1761 m, 20–21.vii.2004, SRPT, SRP04072001; 17 ♂, Tosontsengel Soum, Gunza Gol ~38 km SW Tosontsengel, N48.62624, E97.89617, 1831 m, 21–22.vii.2004, SRPT, SRP04072102; 1 ♂, 3 ♀, Telmen Soum, Ideriin Gol ~15 km SSW Telmen/Ovogdii,

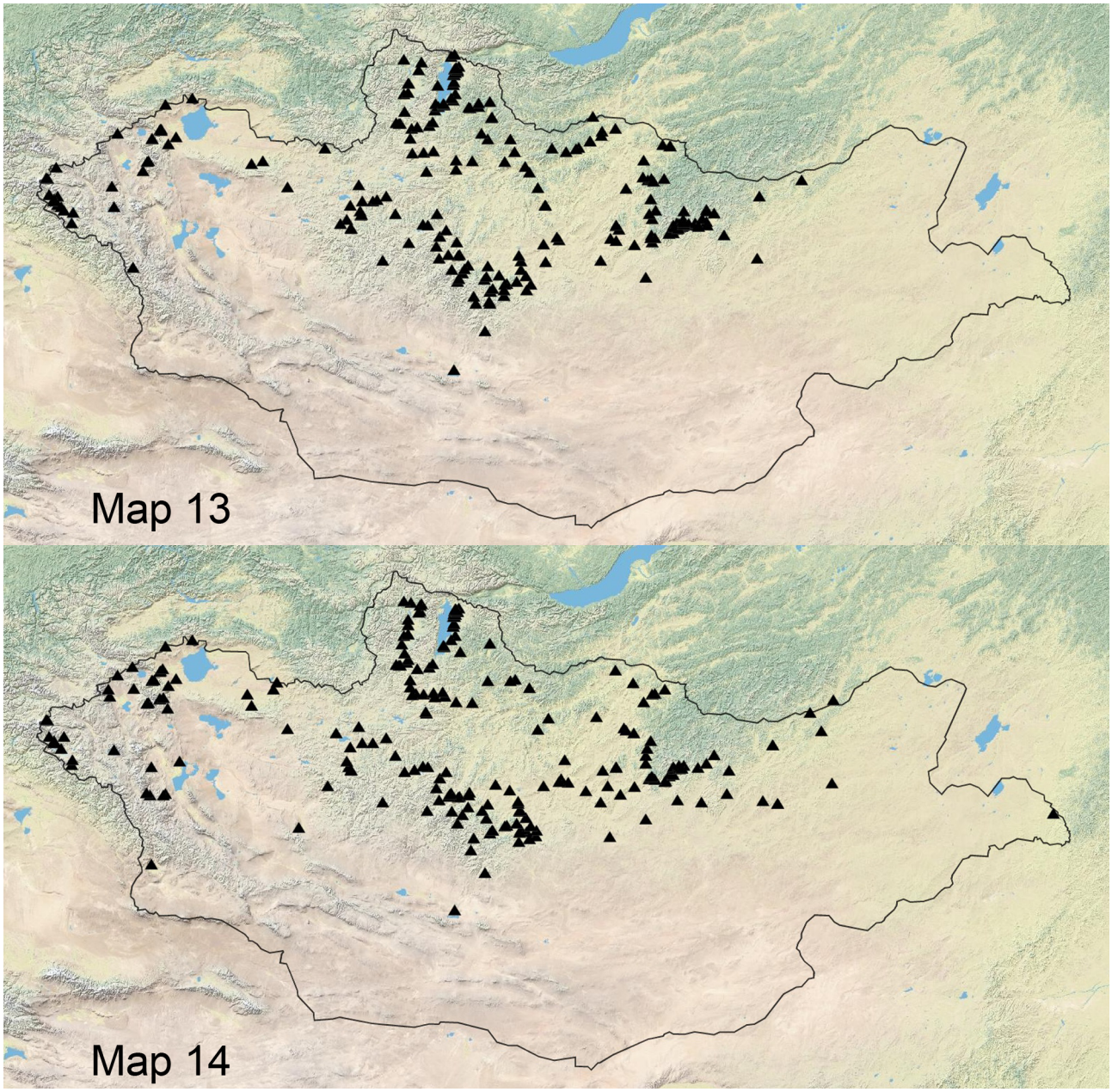
N48.53255, E97.52093, 1823 m, 24–25.vii.2004, SRPT, SRP04072402; 1 ♂, 2 ♀, Ider Soum Ideriin Gol ~4 km NE Zuunmod/Ider, N48.24995, E97.40627, 1929 m, 22–23.vii.2004, SRPT, SRP04072203; 2 ♂, 1 ♀, Ider Soum, Dogshin/Nogoon Nuur ~21 km SE Zuunmod/Ider, N48.06257, E97.55064, 2054 m, 23–24.vii.2004, SRPT, SRP04072302; 2 ♂, Ider Soum, ponds by Ideriin Gol at Darkhjan Uul Brigade ~12 km SE Zuunmod/Ider, N48.13246, E97.48425, 2025 m, 23.vii.2004, SRPT, SRP04072301; 1 ♂, 3 ♀, Ikh-Uul Soum, Deed Tsetsuukhiin Gol ~10 km NW Solongotiin Davaa, N48.36436, E98.92737, 2072 m, 25.vii.2004, SRPT, SRP04072502.

Elevation range in Mongolia. Adults were collected at altitudes ranging from 600 m to 2800 m.

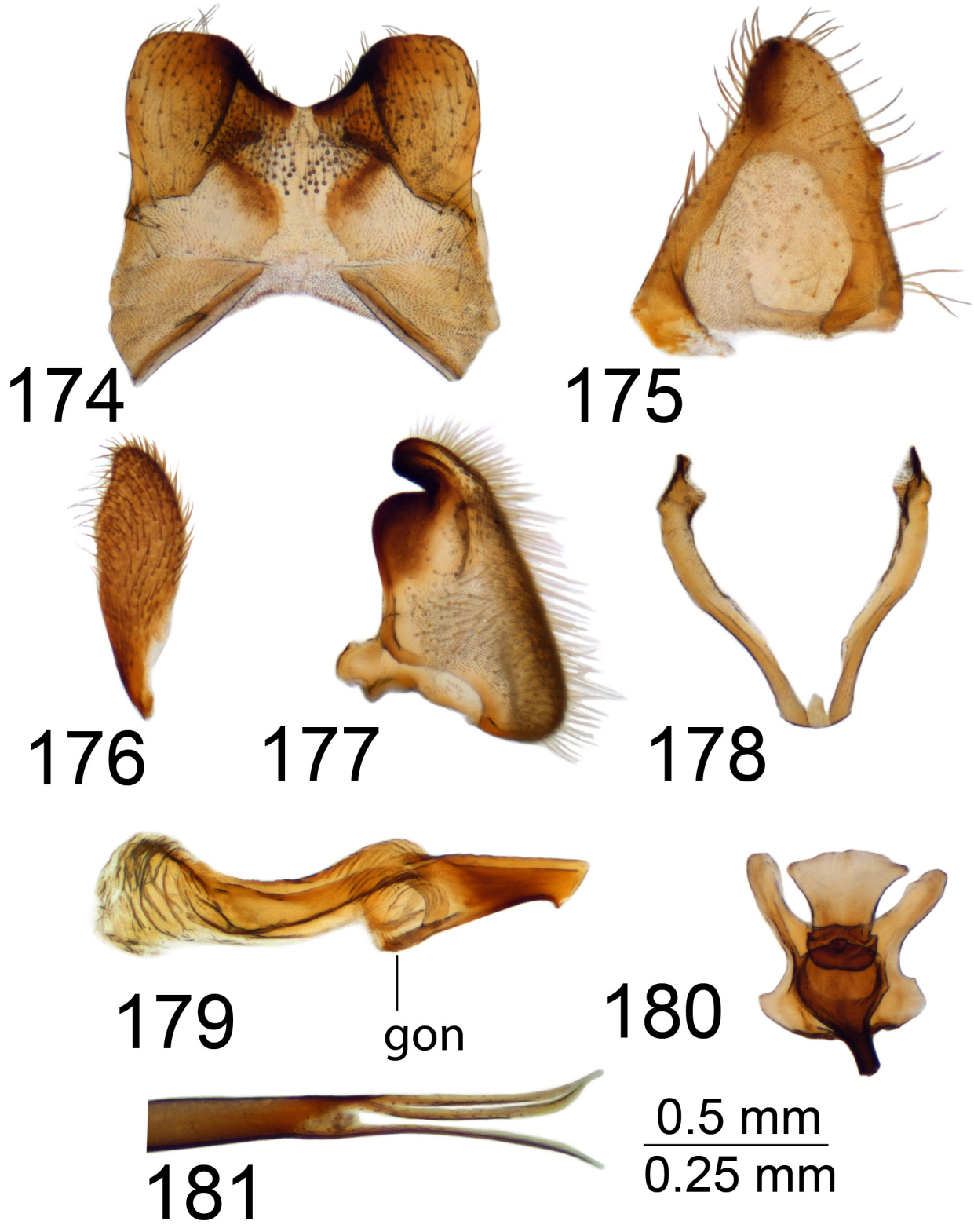
Period of activity. Adults are active from the mid-June through to early August.

Known distribution. China, Kazakhstan, Mongolia (Map 14) and Russia (western and eastern parts of Siberia).

Male. Body length 13.6–16.1 mm, wing length 14.6–17.3 mm. General body coloration brownish yellow.

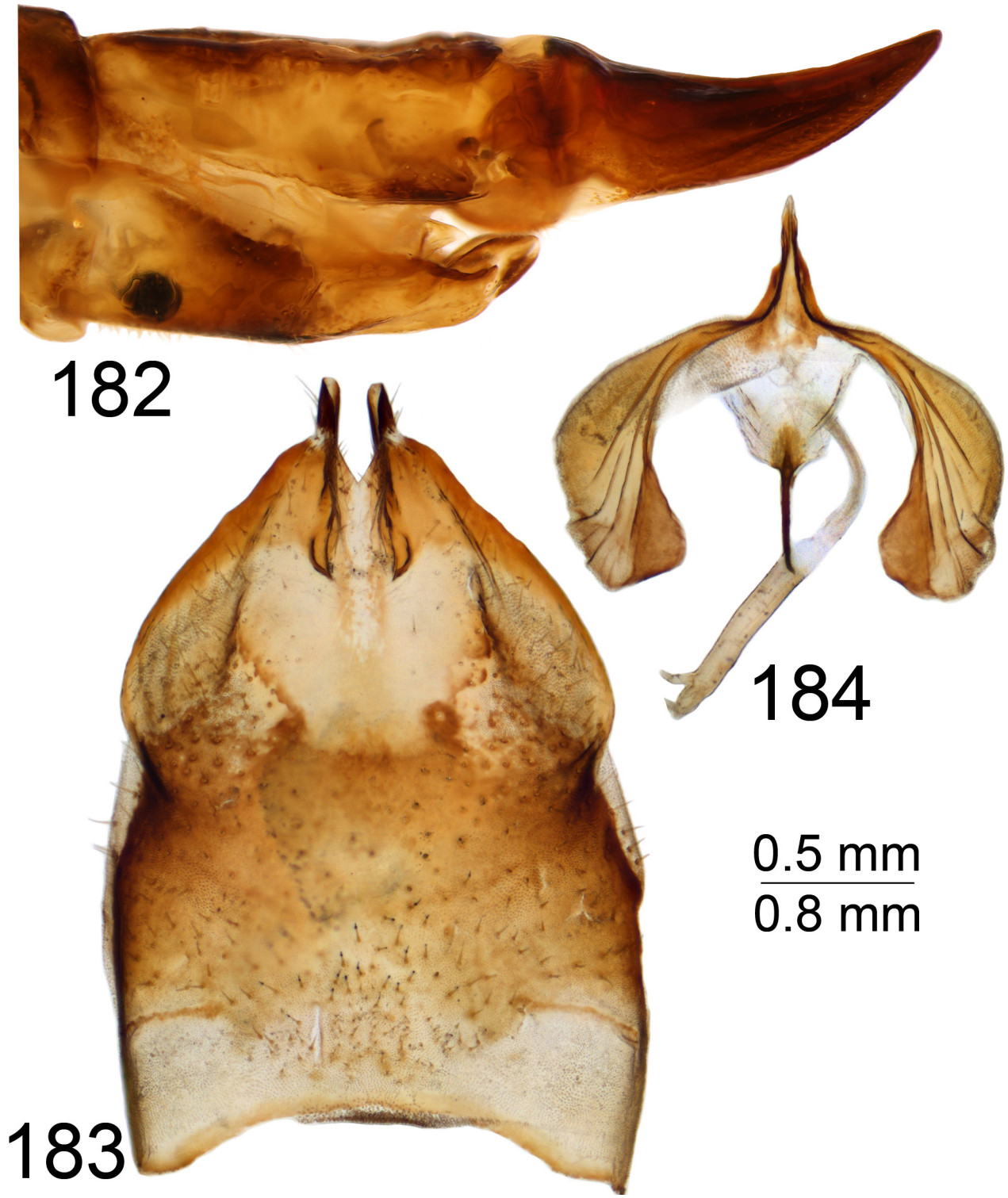


MAPS 13–14. Distribution maps of *T.* (*Vestiplex*) crane flies in Mongolia. **13.** *T.* (*Vestiplex*) *longitudinalis*; **14.** *T.* (*Vestiplex*) *virgatula*.



FIGURES 174–181. Hypopygium of male *T.* (*Vestiplex*) *virgatula*. **174.** Tergite 9, dorsal view; **175.** Gonocoxite, lateral view; **176.** Left outer gonostylus, lateral view; **177.** Left inner gonostylus, lateral view; **178.** Gonocoxal fragment, dorsal view; **179.** Aedeagal guide, lateral view; **180.** Sperm pump, dorsal view; **181.** Distal part of aedeagus, lateral view. Abbreviation: gon, gonapophysis. Scale of 174–180 = 0.5 mm, 181 = 0.25 mm.

Head. Gray. Vertex and occiput light gray with narrow median line. Rostrum coloration varies from yellow to brownish yellow, nasus conspicuous. Antenna 13-segmented, if bent backward reaching beyond base of wing. Scape and pedicel yellow, flagellomeres 1–3 bicolorous, succeeding dark brown. Each flagellomere, except first one, with weak basal enlargement and deeply incised. Apical flagellomere very small, reduced, distinctly shorter than preceding flagellomere. Verticils as long as respective segments. Palpus with 2 basal segments brownish, succeeding dark brown.



FIGURES 182–184. Ovipositor of female *T.* (*Vestiplex*) *virgatula*. **182.** Ovipositor, left lateral view; **183.** Sternite 8 with hypovalvae, ventral view; **184.** Sternite 9, furca and bursa copulatrix, dorsal view. Scale of 182 = 0.8 mm, 183–184 = 0.5 mm.

Thorax. Brownish gray. Pronotum light brown with broad brown median line. Prescutum and presutural scutum gray with 4 brownish longitudinal stripes indistinctly bordered by dark brown. Intermediate pair separated. Postsutural scutum gray, scutal lobe with 2 spots indistinctly bordered by brown. Scutellum light brown with brown median line. Postnotum gray pruinose with brown median line. Pleura brownish gray pruinose. Coxae yellowish, dusted with gray. Trochanters yellowish. Femora yellowish with narrowly darkened distal part. Tibiae yellowish with darkened distal part. Tarsal segments brown. Tarsal claws without tooth. Wing patterned with brown. Halter with pale stem and brown knob.

Abdomen. Yellow, with conspicuous dark brown dorsal and lateral stripes. Segment 1 sparsely dusted with gray. Lateral and caudal borders of tergites pale. Sternites sparsely dusted.

Hypopygium. Yellow. Tergite 9 forming large flattened plate (Fig. 174). Posterior margin of tergal plate with broad U-shaped blackened notch, lateral lobes obtusely rounded. Dorsal surface of tergal plate with 2 oblique carina, converging posteriorly. Gonocoxite shaped as large flattish plate with apex obtuse blackened, inconspicuous lateral tooth in middle of posterior surface (Fig. 175). Outer gonostylus widest at middle with apex rounded (Fig. 176). Inner gonostylus large, mid-dorsal edge with indistinct pale plate, upper beak sclerotised and rounded, lower beak sclerotised and swollen, both beaks are separated by deep notch (Fig. 177). Gonocoxal fragment (Fig. 178) with medial sclerites flattened posteriorly, anteriorly fused into weak base and together forming V-shaped structure. Lateral sclerite very small and inconspicuous. Aedeagal guide in shape of triangular broad-based groove, gonapophyses short and wrinkled, adminicular rods broad (Fig. 179). Sperm pump with central vesicle flattened (Fig. 180). Compressor apodeme shaped as large plate without median incision. Posterior immovable apodeme about same length as compressor apodeme with rounded apex. Anterior immovable apodeme rounded. Aedeagus shaped as elongate tube, about 7.4 times as long as sperm pump, basally and medially dark brown, apically passing into yellow (Figs 12, 181). Distal part with deep lateral and ventral incisions, appearing trident-shaped (Fig. 181).

Female. Body length 21.2–27.5 mm, wing length 2.2–2.7 mm. Female differs from male by reduced wings and elongate abdomen. Antenna short, if bent backward reaching base of wing. Antenna brown, flagellomeres except first one with small weak basal enlargements. Dorsal abdominal stripe broad, black.

Ovipositor (Figs 182–184). Tergite 10 shiny brown. Cercus brown, longer than tergite 10, broad at base with tip acute, outer margin with indistinct serration (Fig. 182). Hypovalva short, sclerotized stout projection (Fig. 183). Sternite 9 with anterior part distinctly broadened, posterior part long and acute. Furca anteriorly dark brown and narrow, posteriorly membranous, except median yellowish-brown area medially. Bursa copulatrix and spermathecal ducts without sclerotisation (Fig. 184). Spermatheca spherical (Fig. 15).

Remarks. The nominative subspecies *T.* (*V.*) *virgatula virgatula* is widely distributed in Mongolia, also known from Russia (west and east of Siberia), Kazakhstan and China (northwest) (Oosterbroek 2019). The subspecies *T.* (*V.*) *virgatula montivaga* was described by Savchenko (1960) from Alatau mountain range in Kazakhstan and also known from Kyrgyzstan and China (Xinjiang province). According to Savchenko (1960, 1964) the subspecies differs by darker body coloration, males with longer antennae reaching the base of the abdomen; flagellomeres with basal enlargement smaller than in *T.* (*V.*) *virgatula virgatula* with shallower incisions; tergite 9 with oblique carina much darker (Savchenko 1964, fig. 151–2); inner gonostylus with beak massive (Savchenko 1964, fig. 152–2). These characters clearly indicate that *T.* (*V.*) *virgatula montivaga* should be elevated to full species level, but study of the male and female terminalia, including type specimens are needed to establish its taxonomic treatment.

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