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Monograph

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A revision of the spider genus *Raveniola* (Araneae, Nemesiidae). II. Species from Central Asia

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Abstract. The Central Asian representatives of the spider genus *Raveniola* Zonstein, 1987 (Araneae, Nemesiidae) are revised. The genus is found to encompass 29 regional species: ♀ *Raveniola afghana* sp. nov. (Afghanistan), ♂♀ *R. alajensis* sp. nov. (Kyrgyzstan, Tajikistan), ♂ *R. caudata* Zonstein, 2009 (Tajikistan), ♂♀ *R. concolor* Zonstein, 2000 (India), ♂♀ *R. cucullata* sp. nov. (Tajikistan), ♂♀ *R. diluta* sp. nov. (Tajikistan), ♂♀ *R. dolosa* sp. nov. (Tajikistan), ♂♀ *R. fedotovi* (Charitonov, 1946) (Uzbekistan), ♂♀ *R. ferghanensis* (Zonstein, 1984) (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan), ♂♀ *R. hirta* sp. nov. (Tajikistan), ♂♀ *R. ignobilis* sp. nov. (Tajikistan), ♂ *R. inopinata* sp. nov. (Tajikistan), ♂ *R. insolita* sp. nov. (Tajikistan), ♀ *R. karategensis* sp. nov. (Tajikistan), ♂♀ *R. kirgizica* sp. nov. (Kyrgyzstan), ♂ *R. kopetdaghensis* (Fet, 1984) (Turkmenistan), ♂♀ *R. mikhailovi* Zonstein, 2021 (Kyrgyzstan, Uzbekistan), ♂♀ *R. nenilini* sp. nov. (Uzbekistan), ♂♀ *R. ornata* sp. nov. (Tajikistan, Uzbekistan), ♂♀ *R. ornatula* sp. nov. (Tajikistan), ♂ *R. ovchinnikovi* sp. nov. (Kazakhstan, Kyrgyzstan), ♂♀ *R. pallens* sp. nov. (Uzbekistan), ♂♀ *R. pamira* sp. nov. (Tajikistan), ♂♀ *R. redikorzevi* (Spassky, 1937) (Turkmenistan), ♀ *R. sororcula* sp. nov. (Tajikistan), ♀ *R. tarabaevi* sp. nov. (Kazakhstan), ♂♀ *R. virgata* (Simon, 1891), the type species of the genus (Kyrgyzstan), ♂♀ *R. vulpina* sp. nov. (Kyrgyzstan) and ♂♀ *R. zyuzini* sp. nov. (Uzbekistan). Redescriptions of eight previously described species are given, the descriptions of 21 above-listed new species are provided, and the female of *R. redikorzevi* is described for the first time. All mentioned species are assigned herein to four species groups (including two of them previously separated and another two newly established ones), which are confined exclusively to the region. Keys to the species groups and included species, as well as data on their variation, distribution and habitats, are provided.

Keywords. Mygalomorphae, new records, new species, Afghanistan, India, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan.

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Table of contents

Introduction.....	3
Materials and methods	4
Depositories	4

Comparative material examined	4
Illustrations	6
Measurements	6
Geographical and ecological data	6
Terminology	6
Abbreviations	7
Results	8
Taxonomy	8
Family Nemesiidae	8
<i>Raveniola</i> (Central Asian species)	8
Key to Central Asian species groups of <i>Raveniola</i>	10
<i>Raveniola caudata</i> species group	10
Key to the species of the <i>Raveniola caudata</i> species group	11
<i>Raveniola caudata</i> Zonstein, 2009	11
<i>Raveniola inopinata</i> sp. nov.	13
<i>Raveniola redikorzevi</i> (Spassky, 1937)	14
<i>Raveniola concolor</i> species group	17
Key to the species of the <i>Raveniola concolor</i> species group	17
<i>Raveniola afghana</i> sp. nov.	20
<i>Raveniola alajensis</i> sp. nov.	21
<i>Raveniola concolor</i> Zonstein, 2000	24
<i>Raveniola cucullata</i> sp. nov.	26
<i>Raveniola dolosa</i> sp. nov.	29
<i>Raveniola hirta</i> sp. nov.	31
<i>Raveniola ignobilis</i> sp. nov.	34
<i>Raveniola insolita</i> sp. nov.	36
<i>Raveniola karategensis</i> sp. nov.	38
<i>Raveniola ornata</i> sp. nov.	39
<i>Raveniola ornatula</i> sp. nov.	42
<i>Raveniola pamira</i> sp. nov.	44
<i>Raveniola sororcula</i> sp. nov.	47
<i>Raveniola diluta</i> species group	49
Key to the species of the <i>Raveniola diluta</i> species group	49
<i>Raveniola diluta</i> sp. nov.	50
<i>Raveniola fedotovi</i> (Charitonov, 1946)	52
<i>Raveniola pallens</i> sp. nov.	55
<i>Raveniola zyuzini</i> sp. nov.	57
<i>Raveniola virgata</i> species group	59
Key to the species of the <i>Raveniola virgata</i> species group	60
<i>Raveniola ferghanensis</i> (Zonstein, 1984)	61
<i>Raveniola kirgizica</i> sp. nov.	64
<i>Raveniola kopetdaghensis</i> (Fet, 1984)	66
<i>Raveniola mikhailovi</i> Zonstein, 2021	68
<i>Raveniola nenilini</i> sp. nov.	71
<i>Raveniola ovchinnikovi</i> sp. nov.	74
<i>Raveniola tarabaevi</i> sp. nov.	75
<i>Raveniola virgata</i> (Simon, 1891)	77
<i>Raveniola vulpina</i> sp. nov.	81
Data on natural history	83
Habitats	83
Burrows and retreats	84

Phenology	85
Feeding	85
Mating.....	86
Predators	87
Discussion	87
Preliminary notes	87
Structures	87
Other features.....	92
Relationships.....	93
Biogeography.....	95
Acknowledgements.....	97
References.....	98
Figures.....	108

Introduction

The current study constitutes a continuation of a taxonomic revision engaging with the widespread and species-rich Asian genus *Raveniola* Zonstein, 1987. The previous first part of the revision was devoted to the species from West Asia (Zonstein *et al.* 2018). The continuation, presented here, provides a revision of the congeners distributed within Central Asia, considered geographically as comprising the entire territories of Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, as well as the adjacent territories of China, India, Iran, and Pakistan.

The first known Central Asian representative of the studied genus was described by Simon (1891) from “Turkestan, Margelhan”. In the original description, this species was assigned to the broadly considered genus *Brachythele* Ausserer, 1871 as *B. virgata* Simon, 1891. Later, Caporiacco (1934) reported the presence of *B. virgata* also in the northwestern Himalayas. An additional seven Central Asian species, treated as belonging to *Brachythele*, were then described by Spassky (1937), Charitonov (1946), Andreeva (1968), Fet (1984) and Zonstein (1984b). One of these species, *B. arnoldii* Zonstein, 1984, was synonymised with *B. virgata* shortly after its initial description, and by the mid-1980s, *Brachythele* was considered to include, in addition to other members, seven Central Asian species separated into the *virgata* species group (Zonstein 1985).

Raven (1985) transferred *Brachythele* from Dipluridae Simon, 1889 to Nemesiidae Simon, 1889 and recognized it as encompassing only a few East Mediterranean species. Shortly afterwards, Zonstein (1987) established *Raveniola*, a new nemesiid genus that incorporated all the former extra-Mediterranean Palearctic species of *Brachythele*, except for the Central Asian *B. birulai* Spassky, 1937 and *B. karatauvi* Andreeva, 1968. Concurrently, the two latter species were provisionally referred to *Anemesia* Pocock, 1895 (Cyrtoucheniidae Simon, 1889); their formal transfer to this genus was provided by Mikhailov (1996, 1997).

For several years following the first description, *Raveniola* was considered to comprise 11 initially associated species, including five known from Central Asia (Platnick 1989). Later, a few additional Central Asian *Raveniola* spp. were either described or redescribed (Zonstein 2000a, 2009, 2021; Zonstein & Esyunin 2023). Within Central Asia, *Raveniola* has thus hitherto been known to encompass eight species distributed from Turkmenistan in the southwest to Kyrgyzstan in the northeast (World Spider Catalog 2024). This unusual combination of such an extensive range with only a few included records suggests that the above data could possibly be based on a random and scattered sampling. They appear to reflect the result of an incomplete inventory rather than a real number of the regional species belonging to *Raveniola*.

In this study, all the available material related to the Central Asian *Raveniola* spp. was examined and revised: viz. 614 specimens, comprising 29 species. Twenty-one new species are described, and females of *R. redikorzevi* (Spassky, 1937) are described for the first time. In addition to the two known species groups represented within the region, two supplementary Central Asian groups are newly separated and established. Keys to the species and to the species groups, as well as data on the species distribution and ecology, are also provided.

Material and methods

Depositories

Specimens from the following institutions were studied:

AMNH	=	American Museum of Natural History, New York, USA
AUZM	=	Anadolu University Zoological Museum, Eskişehir, Turkey
CAS	=	Californian Academy of Sciences, San Francisco, USA
FMNH	=	Field Museum of Natural History, Chicago, USA
IZCAS	=	Institute of Zoology, Chinese Academy of Sciences, Beijing, China
MACN	=	Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina
MCSN	=	Museo civico di Storia naturale, Genova, Italy
MCZ	=	Museum of Comparative Zoology, Cambridge, USA
MHNG	=	Muséum d’histoire naturelle, Genève, Switzerland
MIZW	=	Muzeum i Instytut Zoologii Polskiej Akademii Nauk, Warsaw, Poland
MNHN	=	Muséum national d’Histoire naturelle, Paris, France
NHMD	=	Natural History Museum of Denmark, Copenhagen, Denmark
NHML	=	Natural History Museum London, UK
NMW	=	Naturhistorisches Museum Wien, Austria
PSU	=	Department of Zoology, Perm State University, Russia
QM	=	Queensland Museum, Brisbane, Australia
RMCA	=	Royal Museum for Central Africa, Tervuren, Belgium
SMF	=	Senckenberg Museum, Frankfurt-am-Main, Germany
SMNH	=	Steinhardt Museum of Natural History, Tel Aviv University, Israel
ZISP	=	Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
ZMMU	=	Zoological Museum of Moscow University, Russia
ZMUT	=	Zoological Museum, University of Turku, Finland

Comparative material examined

In addition to Central Asian *Raveniola* spp., the following members of the families Nemesiidae Simon, 1889, Cyrtoucheniidae Simon, 1889, Entypesidae Bond, Opatova & Hedin, 2020, and Pycnothelidae Chamberlin, 1917 were examined:

Raveniola (Western-Asian species): the types of *R. adjarica* Zonstein, Kunt & Yağmur, 2018 (SMNH), *R. birecikensis* Zonstein, Kunt & Yağmur, 2018 (AUZM), *R. dunini* Zonstein, Kunt & Yağmur, 2018 (SMNH), *R. hyrcanica* Dunin, 1988 (ZISP), *R. niedermeyeri* (Brignoli, 1972) (MHNG), *R. pontica* (Spassky, 1937) (ZISP), *R. sinani* Zonstein, Kunt & Yağmur, 2018 (AUZM), *R. turcica* Zonstein, Kunt & Yağmur, 2018 (AUZM), *R. vonwicki* Zonstein, 2000 (ZISP) and *R. zaitzevi* (Charitonov, 1948) (PSU). For details, see Zonstein *et al.* (2018).

Raveniola (Eastern-Asian species): the types of *R. chayi* Li & Zonstein, 2015 (IZCAS), *R. montana* Zonstein & Marusik, 2012 (IZCAS), *R. shangrila* Zonstein & Marusik, 2012 (IZCAS), *R. songi* Zonstein & Marusik, 2012 (IZCAS), *R. yunnanensis* Zonstein & Marusik, 2012 (IZCAS), *Sinopesa guangxi* Raven & Schwendinger, 1995 (MCZ), as well as conspecific males of *R. hebeinica* Zhu, Zhang & Zhang, 1999 (SMNH). For details, see Zonstein & Marusik (2012); Li & Zonstein (2015).

Other Nemesiidae:

Nemesia Audouin, 1826: the types of *N. algerina* Zonstein, 2019 (MNHN), *N. almoravida* Zonstein, 2019 (MNHN), *N. annaba* Zonstein, 2019 (MNHN), *N. decaei* Zonstein, 2019 (MNHN), *N. dido* Zonstein, 2019 (MNHN) and *N. tanit* Zonstein, 2019 (MNHN), as well as conspecific males and females of *N. africana* (C.L. Koch, 1838) (MNHN) and *R. dorthesi* Thorell, 1875 (MNHN), and males of *N. seldeni* Decae, 2005. For details, see Zonstein (2017, 2019).

Iberesia Decae & Cardoso, 1937: the lectotype and paralectotypes of *Iberesia barbara* (Lucas, 1846) (MNHN AR 5060). For details, see Zonstein (2016).

Brachythele Ausserer, 1871: the holotype of *B. bentzieni* Zonstein, 2008 (MNHN), as well as conspecific males and females of *B. denieri* Simon, 1916 (SMNH), *B. langourovi* Lazarov, 2005 (SMNH), *B. media* Ausserer, 1871 (NHML, SMF) and *B. varrialei* (Dalmas, 1920) (SMNH). For details, see Dimitrov & Zonstein (2022); Özkütük *et al.* (2022).

Calisoga Chamberlin, 1937: the holotype of *Brachythele longitarsis* Simon, 1891 (MNHN 8109–B361).

Anamidae Simon, 1889:

Aname L. Koch, 1873: *A. pallida* L. Koch, 1873: AUSTRALIA • 1 ♂, 1 ♀; Rockhampton; 1–28 Feb. 1992; D. Wallace leg.; QM, kindly donated to SMNH by Robert Raven.

Bemmeridae Simon, 1903:

Atmetochilus Simon, 1887: the types of *A. koponeni* Zonstein & Marusik, 2016 (ZMUT, ZISP), *A. lehtineni* Zonstein & Marusik, 2016 (ZMUT, SMF) and *A. sumatranus* Zonstein & Marusik, 2016 (ZISP). For details, see Zonstein & Marusik (2016).

Damarchus Thorell, 1891: the types of *Latouchia batuensis* Roewer, 1962 = *D. cavernicola* Abraham, 1924 (SMF). For details, see Zonstein & Marusik (2014).

Cyrtaucheniidae Simon, 1889:

Anemesia Pocock, 1895: *A. tubifex* (Pocock, 1889) – the female holotype of *Nemesia tubifex* (NHML) and conspecific males and females (SMNH). For details, see Zonstein (2018b).

Entypesidae Bond, Opatova & Hedin, 2020:

Entypesa Simon, 1902: the types of *E. andohahela* Zonstein, 2018 (FMNH), *E. enacara* Zonstein, 2018 (FMNH), *E. fisheri* Zonstein, 2018 (FMNH), *E. nebulosa* Simon, 1902 (MNHN) and *E. rastellata* Zonstein, 2018 (FMNH), as well as males and females of *E. nebulosa* (FMNH) and several undescribed species (AMNH, CAS, RMCA). For details, see Zonstein (2018a); Zonstein & Ríos-Tamayo (2021).

Ekapa Ríos-Tamayo, Lyle & Sole, 2023: *E. curvipes* (Purcell, 1902): SOUTH AFRICA • 1 ♂; Western Cape, Constantina; 4–12 Oct. 1992; B. Heydenrych leg.; RMCA ARA 174999.

Pycnothelidae Chamberlin, 1917:

Acantogonathus Holmberg, 1881: *A. confusus* Goloboff, 1995: CHILE • 1 ♀; env. of Temuco Town; 21 Jan. 2014; K. Eskov & D. Scherbakov leg.; SMNH; *A. huaquen* Goloboff, 1995: CHILE • 1 ♀; Nat. Park La Campana; 17 Dec. 2014; D. Scherbakov leg.; SMNH; *A. nahuelbuta* Goloboff, 1995: CHILE • 10 ♀♀; Nat. Park Nahuelbuta; 22–26 Jan. 2014; K. Eskov leg.; SMNH.

Stenoterommata Pocock, 1895: *S. platensis* Holmberg, 1881: ARGENTINA • 2 ♂♂, 1 ♀; 22 km S of Magdalena; 25–26 Jun. 1983; P. Goloboff and M. Ramirez leg.; MACN, kindly donated to SMNH by Martín Ramírez and Ivan Mangalhaes.

Illustrations

Photographs were taken using a Zeiss Discovery V20 stereo microscope with a Canon PowerShot G9 camera (in 2015–2019), and an Olympus SZX16 stereo microscope with a Canon EOS 80D camera (since 2020), and prepared using the Helicon Focus 7.6.2 Pro (<http://www.heliconsoft.com>) stacking software. A considerable part of photographs showing the total views was taken using a Canon 500D digital camera coupled with 100 mm Canon macro lenses. Illustrations of the dissected vulvae placed into a small Petri dish filled with a solution of 85% lactic acid was made after maceration of the dissected structures in a 10% potassium hydroxide aqueous solution. Scanning electron micrographs were made using the SEM JEOL JSM-5200 scanning microscope at the Zoological Museum, University of Turku, Finland. The distribution maps were produced using the online mapping application SimpleMapp (Shorthouse 2010).

Measurements

Measurements were taken through the above-mentioned stereo microscopes with an accuracy of 0.01 mm. All measurements are given in millimetres. The total body length includes the chelicerae but not the spinnerets. The length of the sternum was measured along the straight line between the posterior tip of the sternum and the hindmost part of the labium. Lengths of leg and palp segments were measured on the dorsal side, and lengths of spinneret segments on the ventral side, from midpoint of anterior margin to midpoint of posterior margin. Diameter of AME is usually given as a diameter of a sharply edged AME circle. When the eye dome was mounted well and could be measured, the corresponding data follow in brackets. Any eye interdistances counting this parameter are also given in the brackets.

Geographical and ecological data

The names of countries, localities and geographical areas are given in their modern spelling and the borders according to their current position. Names and limits of orographic and biogeographic units are given according to Kryzhanovsky (2002) and Nikolaev (2002). The altitude is shown in meters above sea level. Coordinates are given for material collected after 1994–1995 according to the GPS data; and before this date according to the corresponding former Soviet military maps of 1:100000 or 1:200000 scale. When used without brackets, the coordinates refer to the collecting place(s). The coordinates between brackets refer to the indicated nearest locality and follow it. When necessary, the earlier obtained data were checked, specified and improved, using Google Earth Pro 7.3™. During 1987–1992, some of the retreats and dug spider burrows were studied, and fragments of the prey consumed by spiders were obtained. The prey remains were identified in 1999–2002 by Y.S. Tarbinsky and S.V. Ovchinnikov (Institute of Biology, Kyrgyz Academy of Sciences).

Terminology

COPULATORY BULB. This term is intended to replace the previously used “male palpal organ” (see Zonstein 2018b; Zonstein *et al.* 2018). The two reasons, which prevent the use of the latter term herein are its vagueness as well as its obligatory gender reference. The first means that the previously used term contains absolutely no reference to the role, character, function or properties of the designated structure, being limited only to an indication of its location. The second calls for a mandatory reference to the gender, while the replacement term does not require such a binding. As in the case of the spermathecae (“female spermathecae”), the phrase “male copulatory bulb” is a needless clarification per se. Over the last few years, the replacement term has been rather frequently used in studies devoted to the taxonomy of nemesiids and their allies (see Ríos-Tamayo *et al.* 2021, 2023; Özkütük *et al.* 2022; Pertegal & Molero-Baltanás 2022; Pertegal *et al.* 2022; etc.).

CUSPULES. These structures, characteristic for the majority of mygalomorph spiders and unknown in other taxa of the Araneae (Raven 1985), present radically shortened and thickened setae, modified into

low stumps with either blunt, or rounded, or (rarely) pointed tips, which can spread on the labium and maxillae. With a few exceptions, the members of *Raveniola* possess only maxillary cuspules.

MALE INTERCHELICERAL TUMESCENCE. According to Raven (1985: 8), this term corresponds to “a pallid and soft area at the lower basal interface of the chelicerae near the tip of the closed fang of some male mygalomorphs”. When discernible, this area is topographically confined to a flattened prolateral (inner) surface of the chelicerae.

MEGASPINE(S). The term, introduced by Raven (1980), was intended to mark unusually strong but movable spines located on the tibia I of males in some taxa of the Mygalomorphae, playing the same role as the mating spur in other male mygalomorphs, i.e., fixing male and female bodies in the same position during the copulation.

SPERMATHECAL BRANCH. This name is used herein to designate each of the two accessory diverticula, which diverge from the spermathecal base (as shown in Figs 484, 488). It has not been widely used in the mygalomorph spider taxonomy, although this term has recently been applied in several studies (Ortega *et al.* 2013; Indicatti *et al.* 2015; Harvy *et al.* 2018; Signorotto *et al.* 2023; etc.). In the given particular case, the offered term looks to be more preferable than the usually used “stalk” or “lobe”, because the considered structures may be long and multilobate in itself. Often (and almost always, regarding the inner branch), demarcation of the entire structure into a clearly defined stalk and a distinct spermathecal head seems impossible.

SPERMATHECAL TRUNK. The term is used when the spermathecal base and one of the branches (viz. the inner branch) are poorly differentiated from each other, and together form a continuous structure, corresponding to the “main branch” in Signorotto *et al.* (2023). The remaining outer branch, which in Central Asian *Raveniola* spp. usually consists of two distinguishable sections (a narrow, strictly sclerotised proximal “neck” and a distal, lesser sclerotised and dilated “fundus”), can be considered in this case as the “lateral diverticulum”. See Figs 527, 529, 531, 533, 547.

Abbreviations

ALE	=	anterior lateral eyes
AME	=	anterior median eyes
CL	=	carapace length
CW	=	carapace width
d	=	dorsal
isb	=	inner spermathecal branch
ld	=	lateral diverticulum
LL	=	labium length
LW	=	labium width
M	=	megaspine
MIT	=	male intercheliceral tumescence
osb	=	outer spermathecal branch
p	=	prolateral
pd	=	prodorsal
PLE	=	posterior lateral eyes
PLS	=	posterior lateral spinnerets
PME	=	posterior median eyes
PMS	=	posterior median spinnerets
PTC	=	paired tarsal claws

pv	=	proventral
sb	=	spermathecal base
SL	=	sternum length
st	=	spermathecal trunk
SW	=	sternum width
r	=	retrolatera
rd	=	retrodorsal
rv	=	retroventral
TBL	=	total body length
v	=	ventral

Results

Taxonomy

Class Arachnida Cuvier, 1812
Order Araneae Clerck, 1757
Family Nemesiidae Simon, 1889

Raveniola Zonstein, 1987

Raveniola Zonstein, 1987: 1014.

Brachythele [part] – Ausserer 1871: 177. — Simon 1891: 304. — Caporiacco 1934: 113. — Spassky 1937: 363–367; 1952: 193. — Spassky & Minenkova 1940: 140. — Charitonov 1946: 19; 1948: 135. — Brignoli 1972: 409. — Mkheidze 1983: 155. — Fet 1984: 37. — Zonstein 1984b: 41–45; 1985: 158–160.

Anemesia [part] – Denis 1958: 82.

Raveniola – Zonstein & Marusik 2012: 74. — Li & Zonstein 2015: 3. — Zonstein *et al.* 2018: 5. — Zonstein 2021: 209.

Type species

Brachythele virgata Simon, 1891, by original designation.

Diagnostic characters

According to Zonstein *et al.* (2018: 5), *Raveniola* and *Sinopesa* share the presence of two (sometimes three) retroventral megaspines located sequentially on tibia I in males (a unique position among male nemesiids) and paired spermathecae in females, each two-branched (or with a lateral diverticulum); a maxillary serrula and preening combs are absent. *Raveniola* differs from *Sinopesa* chiefly by having a noticeably longer and denser leg scopula (vs a short and rare scopula in the latter genus), and a developed leg and carapace setation.

General characteristics of Central Asian species

It should be noted that no common characters shared only by Central Asian *Raveniola* spp., and distinguishing these species from all the Western and Eastern Asian congeners, were found. At the same time, in three Central Asian species groups based on *R. caudata*, *R. concolor* and *R. diluta* sp. nov., each of them possesses at least one unique group trait (see the corresponding group diagnoses). Regarding the remaining group based on *R. virgata*, the members differ from most other species but show some resemblance to several extra-regional congeners, viz. *R. niedermeyeri* and *R. vonwicki* from Iran, and *R. hebeinica* from China (Figs 444, 448, 459, 538, 540, 545, cf. Zhu *et al.* 1999: figs 1–10; Zonstein & Marusik 2012: fig. 39; Zonstein *et al.* 2018: figs 158, 164, 185, 197, 210–212).

Morphological peculiarities of Central Asian *Raveniola* species

HABITUS. The studied spiders are mostly small or medium-sized nemesiids with a carapace length of 3–12 mm.

CEPHALOTHORAX. Carapace broadly oval and hirsute, with cephalic part slightly to noticeably higher than thoracic part. Male thoracic fovea very short, pit-like, T-shaped, or gently recurved. Female thoracic fovea short and narrow, nearly straight in most species, or very gently arched (procurved or recurved) in some species. Eye tubercle moderately elevated (better developed than in species from Western Asia). Chelicerae in some species with weak rastellum composed of spike-shaped setae. Maxillae generally with numerous cusps confined to probasal edge; maxillary serrula absent, as in other *Raveniola* spp.

STRUCTURES OF LEGS I–IV. Leg scopula varies from dense and moderately long to thin and short. Scopula distal on metatarsi I–II, generally entire on tarsi I and II, divided by setae or absent on tarsi III and IV; females also with usually entire scopula on palpal tarsus. Tarsi I–IV without spines. PTC I–IV biserially and densely dentate (females possess lesser dentate paired claws than conspecific males), unpaired claw small, curved and bare.

MALE PALP. Tibia long, fairly slender and spinose. Cymbium with or without spines. Copulatory bulb inserted at apical part of cymbium. Embolus tapering or broadly tipped, with or without keels and ridges, varying in length from relatively short to long and slender.

SPERMATHECAE. A pair of wide or narrow spermathecae, each with two distinct branches. In many species, the spermathecal base and the inner branch are poorly differentiated from each other and together they form a continuous spermathecal trunk. Long or short outer branch (lateral diverticulum) always distinct.

SPINNERETS. Two pairs or one pair of spinnerets. PMS vary from medium-sized to very small, with or without functional spigots, or absent in some species. Apical segment of PLS ranges from triangular (most species) to digitiform or even elongate in some species.

Species included

In view of the new congeners included herein, *Raveniola* currently comprises 66 species; 29 of them occur in Central Asia: *R. afghana* sp. nov., *R. alajensis* sp. nov., *R. caudata* Zonstein, 2009, *R. concolor* Zonstein, 2000, *R. cucullata* sp. nov., *R. diluta* sp. nov., *R. dolosa* sp. nov., *R. fedotovi* (Charitonov, 1946), *R. ferghanensis* (Zonstein, 1984), *R. hirta* sp. nov., *R. ignobilis* sp. nov., *R. inopinata* sp. nov., *R. insolita* sp. nov., *R. karategensis* sp. nov., *R. kirgizica* sp. nov., *R. kopetdaghensis* (Fet, 1984), *R. mikhailovi* Zonstein, 2021, *R. nenilini* sp. nov., *R. ornata* sp. nov., *R. ornatula* sp. nov., *R. ovchinnikovi* sp. nov., *R. pallens* sp. nov., *R. pamira* sp. nov., *R. redikorzevi* (Spassky, 1937), *R. sororcula* sp. nov., *R. tarabaevi* sp. nov., *R. virgata* (Simon, 1891), *R. vulpina* sp. nov., and *R. zyuzini* sp. nov.

Species grouping

To assist with identifications, the species treated here are assigned to four species groups, according chiefly to the structure of the spinnerets and the male and female copulatory organs. These assignments are preliminary, because males and females in some species are unknown and they are not based on a phylogenetic grouping, though some of the groups may indeed reflect phylogenetic relationships.

Distribution and ecology

Within Central Asia, representatives of *Raveniola* are distributed from the western part of Kopetdagh (Turkmenistan) in the west, through the Badkhyz Plateau and Hindu-Koh Mts (passing and skirting the desert plains of the huge Turan Depression), to southeastern Kazakhstan in the north-east and to Ladakh (northwestern India) in the south-east (see Fig. 747). Due to the greater diversity of Central Asian

landscapes, compared to Western Asian ones, there is a wider range of inhabited biotopes (including semi-deserts and highlands) and of the corresponding ecological strategies and adaptations. Like Western Asian congeners, most Central Asian *Raveniola* spp. use natural retreats (usually cavities under rocks or abandoned burrows of other animals) to build primitive burrow-like dwellings, sparsely covered with silk. However, some species inhabiting lowland arid bioms or, conversely, highland biotopes, are found to be true bothrobiont spiders digging deep open burrows with silk lining or without it.

Key to the Central Asian species groups of *Raveniola* Zonstein, 1987

Males

1. Embolus broadly tipped (Figs 379–384, 466–468). Apical segment of PLS elongate (Figs 555–557) *caudata* group
 - Embolus with well-defined thin and curved subapical part (Figs 385–465, 469–478). Apical segment of PLS triangular (as in Figs 563, 568, 593, 605, 609, 614) or shortly digitiform (as in Figs 581, 604, 612) 2
2. Embolus needle-shaped and evenly tapering, with subapical part very gently curved and lacking bends and keels, as in Figs 439–465, 478 *virgata* group
 - Embolus with proximal and apical parts separated by bend (often provided with keel), as in Figs 385–438, 469–477 3
3. Cymbium shorter (Figs 352–364). Narrowly tapering proximal part of embolus considerably longer than its apical part (Figs 385–428). PMS present (Figs 560, 563, 565, 571, 573, 575, 584) *concolor* group
 - Cymbium longer (Figs 365–369). Broadly tapering proximal part of embolus slightly longer than its apical part (Figs 429–438). PMS absent (Figs 589, 591, 585) *diluta* group

Females

1. Apical segment of PLS elongate (as in Fig. 558) *caudata* group
 - Apical segment of PLS triangular (as in Figs 559, 561, 562, 567, 569, 572, 586, 588, 594, 600, 607, 615, 618) or shortly digitiform (Figs 578, 579, 582) 2
2. PMS relatively large (Figs 566, 576, 585), medium-sized (Figs 564, 572, 574, 587) or small (Figs 568, 570, 578–580, 582–583), but always with apical spigots (as in Figs 482–483). Numerous (> 25) maxillary cuspules arranged in a wide triangular area (Figs 230–242). Spermathecae as in Figs 489–525 *concolor* group
 - PMS tiny (Figs 599, 603, 611, 613, 615, 617), without spigots (as in Figs 485–486), or absent (as in Figs 592, 594). Less numerous (< 25) cuspules spread along probasal maxillary heel (Figs 243–255). Spermathecae different (see Figs 526–554) 3
3. PMS absent. Spermathecae with wide bases and short robust inner branches (Figs 526–533) *diluta* group
 - PMS usually present (absent in *R. kopetdaghensis*). Spermathecae with narrow bases; shape of inner branch differs (Figs 534–554) *virgata* group

Raveniola caudata species group

Diagnostic characters

Maxilla with numerous cuspules arranged in a triangular area (Figs 202–204). PMS medium-sized to large. Apical segment of PLS elongate and considerably longer than in other *Raveniola* spp. (Figs 555–558 cf. Figs 559–618). Males: tibiae and metatarsi I–II without modified hairs (Figs 256, 258, 260, 290);

cymbium moderately short (as in Figs 349–351); embolus broadly tipped, always with well-developed subapical keel (Figs 379–384, 466–468). Females: spermathecae (known only for one species of the group) very wide, each with two short, thin, and closely spaced stalks (Figs 487–488).

Species included

Raveniola caudata Zonstein, 2009, *R. inopinata* sp. nov., and *R. redikorzevi* (Spassky, 1937).

Key to the species of the *caudata* group

Males

1. Carapace and legs ginger brown or brownish orange, abdomen paler, light yellowish brown, with or without dorsal pattern (Figs 1, 3); PMS larger, basal segment of PLS 1.8–2 times as long as PMS (Figs 555, 557); embolic keel larger and higher (Figs 379, 383) 2
– Carapace and legs dark sepia brown, abdomen almost uniformly greyish brown (not lighter than carapace, see Fig. 2); PMS smaller, basal segment of PLS 2.5 times as long as PMS (Fig. 556); embolic keel smaller and lower (Fig. 381) *R. inopinata* sp. nov.
2. Abdomen with clearly developed darker dorsal pattern (Fig. 3). Copulatory bulb 2.5 times as long as wide, with proximal part of embolus less tapering (Fig. 383) *R. redikorzevi* (Spassky, 1937).
– Abdomen with indistinct dorsal pattern (Fig. 1). Copulatory bulb 2 times as long as wide, with proximal part of embolus more tapering (Fig. 379) *R. caudata* Zonstein, 2009.

Females

Within the group, only the female of *R. redikorzevi* is currently known (see below).

Raveniola caudata Zonstein, 2009

Figs 1, 82, 136, 202, 256–257, 349, 379–380, 555, 619–621, 748–749

Raveniola caudata Zonstein, 2009: 368, figs 1, 3, 5–6, 8 (♂).

Raveniola caudata – Mikhailov 2013: 12. — Zonstein *et al.* 2018: fig. 167 (♂).

Diagnosis

The species differs from *Raveniola inopinata* sp. nov. by having a considerably paler colour of ginger orange carapace and legs (which are dark sepia brown in the latter species; see Figs 1 and 2). *Raveniola caudata* can be distinguished from *R. redikorzevi* by its almost indistinct dorsal abdominal pattern. Males of *R. caudata* differ from males of the two other species of the group in having shorter laterodistal hair tufts on tarsi I–IV (Fig. 257 cf. Figs 259, 324) and by the shorter and less tapering proximal part of the embolus (Figs 379–380 cf. Figs 381–384).

Material examined

Holotype

TAJIKISTAN • ♂; Panj Karatau Mts, western slope of Mt Astana, 2.8 km WSW of summit; 37°22.8' N, 69°12.8' E; 1020 m a.s.l.; 24 Apr. 1991; S.V. Ovchinnikov leg.; SMNH.

Additional material (1 ♂, 1 juv.)

TAJIKISTAN • 1 juv.; Aруктау Mts, surroundings of Ganjina; 37°58' N, 68°34' E; 700–800 m a.s.l.; 16 Apr. 1968; V.F. Bahvalov leg.; SMNH • 1 ♂ (with both palps lost prior to collection); Vahsh Karatau Mts, 3 km NW of Mt Hojamaston; 38°01.4' N, 68°56.8' E; 940 m a.s.l.; 21 Apr. 1989; S. Zonstein leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 1.

MEASUREMENTS. TBL 19.30, CL 7.13, CW 6.27, LL 0.57, LW 1.26, SL 3.52, SW 3.21.

COLOUR. Carapace, palps and legs ginger orange; eye tubercle with central and two symmetrical lateral brownish-black spots surrounding AME and lateral eyes respectively; chelicerae cherry red; sternum, labium and maxillae light yellowish orange; metatarsi and tarsi gradually lighten toward apices; entire abdomen light yellowish grey, dorsally with almost indistinct darker pattern represented by few very weakly developed pairs of posteriorly-inclined greyish fasciae; spinnerets uniformly light yellowish grey.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 82. Clypeus and eye group as in Fig. 136. Eye diameters and interdistances: AME 0.16(0.22), ALE 0.28, PLE 0.16, PME 0.12; AME–AME 0.16(0.10), ALE–AME 0.07(0.04), ALE–PLE 0.06, PLE–PME 0.04, PME–PME 0.43. Each cheliceral furrow with 10 promarginal teeth and 5 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 202. Maxillae with 52–57 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 256. Trichobothria: 2 rows of 9–12 each on tibiae, 13–15 on metatarsi, 15–18 on tarsi, 9–10 on cymbium. Scopula: distal $\frac{1}{3}$ on metatarsi I–II, entire on tarsi I–II, widely divided by setae on tarsus III, absent on tarsus IV. Tarsi I–IV apically with very moderately dense lateral tufts of relatively short setae (Fig 257). Paired claws on tarsi I–IV with 8–11 teeth on each margin.

LEG MEASUREMENTS.

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.23	2.27	3.46	–	1.35	11.31
Leg I	6.32	3.65	5.03	5.27	3.10	23.37
Leg II	6.22	3.23	4.98	5.02	3.03	22.48
Leg III	5.55	2.88	4.10	5.87	3.27	21.67
Leg IV	6.97	3.25	5.53	7.70	3.73	27.18

SPINATION. Palp: femur d4, pd3, rd2; patella p2; tibia d4, p3, r2, v4; cymbium d6(5). Leg I: femur d4, pd3, rd3; patella p2; tibia p3(1), pv2(1), r2+2M; metatarsus v1a. Leg II: femur d4, pd3; patella p2; tibia p3, v8(6); metatarsus p1; v6. Leg III: femur d4, pd3, rd3; patella p2, r1; tibia d2, p2, r2, v7(5); metatarsus d2, p3, r2, v10(9). Leg IV: femur d4, pd4(3), rd3; patella p2, r1; tibia d3(2), p3, r3(2), v7; metatarsus d3, p3, r3, v10(9). Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 349. Broadly tipped embolus with noticeably shortened basal part and with pronounced subapical keel (Figs 379–380).

SPINNERETS. See Fig. 555. PMS: length 0.75; diameter 0.28. PLS: maximal diameter 0.65; length of basal, medial and apical segments 1.22, 0.85, 1.23; total length 3.30; apical segment elongate.

Female

Unknown.

Ecology

The species inhabits open shrubland and low forest biotopes with co-dominating *Pistacia vera* L., *Cercis griffithii* Boiss., *Acer* spp. and *Prunus* spp. (see Figs 619–620). Males were found under rocks; the

only juvenile specimen was found, according to the original label data, inside a gerbil's burrow. The microbiotope situated directly in the type locality (shown in Fig. 621) is a pile of stones in the foreground, from where the holotype was collected in 1991. The corresponding photograph was taken in 2015.

Distribution

South Tajikistan, as shown in Figs 748–749. In the original description, the distance between the ridge summit and the type locality was indicated incorrectly (see Zonstein 2009).

Raveniola inopinata sp. nov.

[urn:lsid:zoobank.org:act:95D11393-B830-4068-8CC7-91D33AE45BA7](https://doi.org/10.21203/rs.3.rs-11393-B830-4068-8CC7-91D33AE45BA7)

Figs 2, 63–64, 83, 137, 203, 258–259, 350, 381–382, 556, 622, 748–749

Diagnosis

Differs from *R. caudata* and *R. redikorzevi* by having a darker and almost uniformly brown colouration of body and legs, as well as in having noticeably smaller PMS (in *R. inopinata* sp. nov. the proximal segment of PLS is 2.5 times as long as PMS vs 1.8–2 times in the latter species). In the male of *R. inopinata* sp. nov., the copulatory bulb is relatively slender (ca 3 times as long as wide vs 2–2.5 times in males of the two other species), with smaller and less pronounced subapical embolic keel (Figs 381–382 cf. Figs 379–380, 383–384).

Etymology

The specific epithet '*inopinata*' is a Latin adjective (of the feminine gender) that means 'unexpected'. This name was chosen because the holotype of this rare species was quite unexpectedly found only a few kilometres from the type locality of the equally rare *R. caudata*.

Material examined

Holotype

TAJIKISTAN • ♂; Panj Karatau Mts, western slope of Mt Astana, 0.9 km SW of summit; 37°22.9' N, 69°14.3' E; 1550 m a.s.l.; 4 May 2015; S. Zonstein leg.; SMNH.

Description

Male (holotype)

HABITUS. See Figs 2, 63–64.

MEASUREMENTS. TBL 13.85, CL 6.31, CW 5.67, LL 0.51, LW 1.05, SL 3.10, SW 2.76.

COLOUR. Carapace, palps and legs dorsally dark sepia brown; eye tubercle blackish brown; chelicerae dark chestnut brown; sternum, labium, maxillae, palps and legs ventrally light sepia brown; abdomen almost uniformly greyish brown, dorsally with small and paler median greyish spot in anterior quarter; book-lungs and spinnerets pale sepia brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 83. Clypeus and eye group as in Fig. 137. Eye diameters and interdistances: AME 0.18(0.24), ALE 0.30, PLE 0.16, PME 0.13; AME–AME 0.15(0.09), ALE–AME 0.08(0.05), ALE–PLE 0.06, PLE–PME 0.06, PME–PME 0.40. Each cheliceral furrow with 10 promarginal teeth and 6–7 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 203. Maxillae with ca 45 cuspules each.

LEGS. Tibia and metatarsus I as shown in Fig. 258. Scopula: entire and distal on metatarsi I–II, entire on tarsi I–II; widely divided on tarsus III, widely divided and mixed with setae on tarsus IV. Trichobothria:

2 rows each of 12–14 on tibiae, 20–23 on metatarsi, 20–25 on tarsi, 15–16 on cymbium. Tarsi I–IV apically with moderately dense lateral tufts of long setae (Fig. 259). Paired claws on tarsi I–IV with 8–10 teeth in each row.

LEG MEASUREMENTS.

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.62	1.85	3.12	–	1.23	9.82
Leg I	6.12	3.13	4.54	4.94	2.81	21.54
Leg II	5.45	2.90	4.43	4.67	2.76	20.21
Leg III	5.08	2.31	3.45	5.14	2.72	18.70
Leg IV	6.67	2.77	4.81	6.89	3.43	24.57

SPINATION. Palp: femur d4(5), pd2, rd2; patella p2; tibia d2, p5, pv1, r1, rv3; cymbium d6(7). Leg I: femur d4, pd3, rd3; patella p1; tibia p2, pv3, r1, rv2+2M; metatarsus v2a. Leg II: femur d4, pd3, rd3; patella p1; tibia p3, v8; metatarsus p1; v6. Leg III: femur d4, pd3, rd3; patella p2, r1(0); tibia d3(2), p3, r3, v8; metatarsus d3, p3, r3, v8. Leg IV: femur d4, pd3, rd4(2); patella p1, r1; tibia d2(1), p3, r3, v8; metatarsus d2, p4, r4, v10. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 350. Broadly tipped embolus provided with relatively low and gradually rounded subapical keel (Figs 381–382).

SPINNERETS. See Fig. 556. PMS: length 0.51; diameter 0.23. PLS: maximal diameter 0.45; length of basal, medial and apical segments 1.23, 0.84, 1.22; total length 3.29; apical segment elongate.

Female

Unknown.

Ecology

The holotype was collected in a stepped low sparse forest dominated by *Acer*, *Crataegus* and *Prunus* spp.; the spider was found in a small hollow between two slopes under a stone (Figs 63–64, 622).

Distribution

Known only from the type locality. See Figs 748–749.

***Raveniola redikorzevi* (Spassky, 1937)**

Figs 3, 36, 84, 110, 138, 166, 196, 204, 229, 260, 290, 319–324, 351, 383–384, 466–468, 479–481, 487–488, 557–558, 623–626, 748–749

Brachythele redikorzevi Spassky, 1937: 366, fig. 3 (♂).

Brachythele redikorzevi – Spassky & Minenkova 1940: 140. — Roewer 1942: 196. — Spassky 1952: 193. — Bonnet 1955: 912. — Ovcharenko & Fet 1980: 442. — Zonstein 1985: 159.

Raveniola redikorzevi – Zonstein 1987: 1015; 2009: 39, figs 2, 4, 7, 9 (♂). — Platnick 1989: 91. — Mikhailov & Fet 1994: 502. — Mikhailov 1996: 77; 1997: 20; 2013: 12.

Diagnosis

Differs from the other two species of this group in having a distinctly developed dorsal abdominal pattern and an even longer apical segment of PLS. Males of *R. redikorzevi* can be distinguished from males of *R. caudata* and *R. inopinata* sp. nov. in possessing noticeably stouter though similarly long

legs, closer spaced megaspines, a stouter palpal tibia and cymbium, as well as by details of the embolic keel and tip (see Figs 260, 351, 383–384, 466–468 cf. Figs 256, 258, 349–350, 379–382).

Material examined

Holotype

TURKMENISTAN • ♂; Akar-Cheshme; 24 Apr. 1936; L. Freiberg leg.; ZISP.

Additional material (12 ♂♂, 1 ♀)

TURKMENISTAN • 1 ♂; western part of Badkhyz Plateau, surroundings of Akar-Cheshme well; 35°47' N, 61°28' E; 850 m a.s.l.; 16 Apr. 1985; S. Zonstein leg.; SMNH • 3 ♂♂; south-eastern border of Badkhyz Plateau, Kyzyl-Djar ravine; 35°49' N, 61°51' E; 500–600 m a.s.l.; 1–31 Mar. 1978; G.T. Kuznetsov leg.; SMNH • 1 ♂; same collection data as for preceding; 11 Apr. 1993; D.A. Milko leg.; SMNH • 2 ♂♂; central part of Badkhyz Plateau, Kepele well; 35°48' N, 61°33' E; 700 m a.s.l.; 1–31 Mar. 1980; R.E. Zlotin leg.; SMNH • 2 ♂♂, 1 ♀; same collection data as for preceding; 16 Apr. 1984; SMNH • 1 ♂, same collection data as for preceding; 35°48.2' N, 61°32.8' E; 810 m a.s.l.; 10 Apr. 2002; A.V. Gromov leg.; ZMMU • 2 ♂♂; Zulfagar Mts, surroundings of Nardevanly spring; 35°47' N, 61°21' E; 1100 m a.s.l.; 13 Apr. 1993; S. Zonstein leg.; SMNH.

Redescription

Male (a conspecific specimen from the type locality, Akar-Cheshme, SMNH)

HABITUS. See Fig. 3.

MEASUREMENTS. TBL 17.40, CL 8.07, CW 7.47, LL 0.70, LW 1.49, SL 3.74, SW 3.45.

COLOUR. Carapace, palps and legs including femora, patellae, tibiae, metatarsus I and cymbium brownish orange; eye tubercle weakly darkened, with dark brown spot surrounding AME and narrow brownish fasciae edging other eyes; chelicerae ginger red; sternum, labium, maxillae, metatarsi II–IV and tarsi I–IV light brownish orange; abdomen light yellowish brown, dorsally with diffuse brown pattern consisting of broad median lanceolate spot crossed and fused with few fairly broad and irregularly shaped transverse chevrons; spinnerets pale yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 84. Clypeus and eye group as in Fig. 138. Eye diameters and interdistances: AME 0.20(0.27), ALE 0.35, PLE 0.19, PME 0.16, AME–AME 0.13(0.07), ALE–AME 0.12(0.09), ALE–PLE 0.12, PLE–PME 0.08, PME–PME 0.54. Each cheliceral furrow with 10 promarginal teeth and 5–6 mesobasal denticles. MIT indiscernible (Fig. 196). Sternum, labium and maxillae as shown in Fig. 204. Maxillae with 26–27 cuspules each.

LEGS. Tibia and metatarsus I as shown in Figs 260, 290. Scopula: distal 1/3 on metatarsi I–II, entire on tarsi I–II, narrowly divided by setae on tarsi III, widely divided on tarsi IV. Trichobothria: 2 rows of 9–12 each on tibiae, 15–19 on metatarsi, 19–24 on tarsi, 9–10 on cymbium. Trichobothrial bases and tarsal organ I as shown in Figs 320–323. Tarsi I–IV apically with dense lateral tufts of long setae (Fig. 324). Paired claws on tarsi I–IV with 9–11 teeth on each margin.

SPINATION. Palp: femur d4, pd2, rd2(1); patella p2; tibia d3, p3, r3, v6; cymbium d4(5). Leg I: femur d4, pd3, rd3; patella p2; tibia p3, pv2, r2, rv2+2M; metatarsus v2a. Leg II: femur d4, pd3, rd2; patella p2; tibia p3, r1, v8(6); metatarsus d1, p3; v7. Leg III: femur d4, pd3, rd3; patella p3, r1; tibia d3, p3, r3, v8(7); metatarsus d1, pd3, p3, r3, v8. Leg IV: femur d4, pd4(3), rd4; patella p2, r1; tibia d4(3), p3, r3, v8; metatarsus d1, p4, pd2, r3, v9. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 351. Broadly tipped embolus provided with relatively high and sharply rounded subapical keel (Figs 383–384, 466–468).

SPINNERETS. See Fig. 557. PMS: length 0.78; diameter 0.34. PLS: maximal diameter 0.63; length of basal, medial and apical segments 1.40, 1.03, 1.62; total length 4.05; apical segment elongate.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.70 (3.71)	2.67 (1.99)	4.38 (2.59)	–	1.43 (2.04)	13.18 (10.33)
Leg I	7.32 (4.65)	3.97 (2.78)	5.35 (3.79)	5.51 (2.61)	3.28 (1.92)	25.43 (15.75)
Leg II	7.03 (4.33)	3.68 (2.69)	5.04 (3.54)	5.23 (2.49)	3.20 (1.92)	24.18 (14.97)
Leg III	6.33 (3.05)	3.05 (1.76)	4.37 (2.15)	6.07 (2.53)	3.15 (1.89)	22.97 (11.38)
Leg IV	7.82 (4.88)	3.53 (2.54)	5.78 (3.72)	7.93 (4.63)	3.72 (2.43)	28.78 (18.20)

Female (surroundings of Kepele well)

HABITUS. See Fig. 36.

MEASUREMENTS. TBL 16.50, CL 6.69, CW 5.83, LL 0.59, LW 1.30, SL 3.37, SW 2.70.

COLOUR. As in male, but carapace and legs I–IV paler, light yellowish orange.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 110. Clypeus and eye group as in Fig. 166. Eye diameters and interdistances: AME 0.16(0.24), ALE 0.30, PLE 0.16, PME 0.14, AME–AME 0.20(0.12), ALE–AME 0.11(0.07), ALE–PLE 0.12, PLE–PME 0.12, PME–PME 0.49. Cheliceral furrow with 8 promarginal teeth and 2–3 denticles. Sternum, labium and maxillae as shown in Fig. 229. Maxillae with 40–42 cuspules each.

LEGS. Scopula: distal $\frac{1}{3}$ on metatarsi I–II, entire on palpal tarsus and tarsi I–II, widely divided and mixed with setae on tarsi III–IV. Trichobothria: 2 rows of 11–13 each on tibiae, 16–21 on metatarsi, 19–24 on tarsi, 14–15 on cymbium. Paired claws on tarsi I–III with 5–7 teeth on each margin, but paired caws on tarsus IV with 4 and 2 teeth in inner and outer row, respectively. Palpal claw with 4 long teeth on promargin.

SPINATION. Palpal femur and femora I–IV with 1–2 basodorsal spines and 2–3 dorsal bristles; patella I, palpal patella and tarsi I–IV aspinose. Palp: femur pd1(0); tibia v6(5); tarsus v2(1). Leg I: femur pd2; tibia p2, v7(5); metatarsus v6. Leg II: femur pd2; patella p2; tibia p3(1), v7; metatarsus p2, v7. Leg III: femur pd1, rd1; patella p2; tibia d2, p2, r2, v4; metatarsus d2, p4, r3, v9. Leg IV: femur pd1, rd2; patella p1, r1; tibia d1, p2, r3, v7; metatarsus d1, p3, r3, v8.

SPERMATHECAE. Each paired spermatheca mound-like with low and wide base carrying two short, slender and narrowly spaced stalks (Figs 487–488).

SPINNERETS. See Fig. 558. PMS: length 0.63; diameter 0.28. PLS: maximal diameter 0.70; length of basal, medial and apical segments 1.22, 0.78, 1.49; total length 3.49; apical segment elongate.

Variation

Carapace length in males (n=8) varies from 6.25 to 8.20. In some specimens, dorsal abdominal pattern may be noticeably darker and more contrasting than in the figured male and female.

Ecology

The species inhabits lowland semideserts, open low woodlands dominated by *Pistacea vera* L., and montane steppes (Figs 623–626); wandering males occur under rocks. According to the personal communication of R.E. Zlotin (Research Institute of Geography, Russian Academy of Sciences,

Moscow), the specimens collected by him were captured when he investigated the abandoned burrows of xerophilic rodents (mostly, of gerbils, *Meriones* spp.) and reptilians.

Distribution

South Turkmenistan: Badkhyz Plateau, including its western mountainous border (Zulfagar Mts). Very likely, the species can also occur within the neighbouring territories of Iran and Afghanistan. See Figs 748–749.

Notes

Zonstein (2009) considered the only known conspecific female as an immature specimen (judging from its smaller size in comparison with the majority of collected males belonging to the same species). However, the dissection that followed the premature appreciation revealed that this relatively small female is nevertheless adult and possesses normally developed spermathecae.

Raveniola concolor species group

Diagnostic characters

Maxilla with numerous cuspules arranged in a triangular area (Figs 205–215, 230–242). PLS chiefly medium-sized, sometimes small (Figs 559–588). Apical segment of PLS mostly triangular, though in some species shortly digitiform (as in Figs 577–579, 581). Males: tibiae and metatarsi I–II in many species of the group with long, thin and erect hairs (Figs 262, 265, 267, 269–272, 297–302); cymbium very short (as in Figs 352–364); tapering embolus bent and screwed subapically, with or without subapical keels (Figs 385–428). Females: spermathecae mostly U- or V-shaped with wide bases and with inner and outer branches more or less widely separated apart (Figs 490–512, 520–525), or spermathecae narrow F- or Y-shaped in some species (Figs 489, 513–519).

Species included

Raveniola afghana sp. nov., *R. alajensis* sp. nov., *R. concolor* Zonstein, 2000, *R. cucullata* sp. nov., *R. dolosa* sp. nov., *R. hirta* sp. nov., *R. ignobilis* sp. nov., *R. insolita* sp. nov., *R. karategensis* sp. nov., *R. ornata* sp. nov., *R. ornatula* sp. nov., *R. pamira* sp. nov. and *R. sororcula* sp. nov.

Key to the species of the *concolor* group

Males

Males of *Raveniola afghana* sp. nov., *R. karategensis* sp. nov. and *R. sororcula* sp. nov. are unknown.

1. Hairs on tibia and metatarsus IV unmodified. Embolus either subequal to tegulum in length, or considerably longer than the latter (Figs 385–399, 403–428) 2
 - Tibia and metatarsus IV with dense thin and long modified hairs (Fig. 313). Embolus shorter than tegulum (Figs 400–402)..... *R. hirta* sp. nov.
2. Embolus approximately as long as tegulum (Figs 397–399, 403–408)..... 3
 - Embolus considerably longer than tegulum (Figs 385–396, 409–428)..... 4
3. Proximal part of embolus (viewed from lateral aspect) with two raised opposite keels (Figs 403, 406) *R. ignobilis* sp. nov.
 - Proximal part of embolus with two poorly discernible vestigial keels (Figs 397–398) *R. dolosa* sp. nov.

4. Sternum broadly oval (Figs 205–211, 214–215). PMS medium-sized to moderately small; apical segment of PLS triangular (Figs 560, 563, 565, 568, 571, 573, 575, 584)..... 5
 - Sternum subcircular (Figs 212–213). PMS small and thin; apical segment of PLS shortly digitiform (Figs 577, 781)..... 9
5. Abdomen with darker chevron-like pattern (Figs 4–7, 9–10, 13–14) 6
 - Abdomen uniformly dark coloured *R. concolor* Zonstein, 2000
6. Palpal tibia very long, 4.7–5.1 times as long as wide (Figs 352, 360). Embolus with long proximal and short distal sections, as in Figs 385–387, 409–411 7
 - Palpal tibia shorter, 4–4.5 times as long as wide (Figs 354–355, 363–364). Embolus differs (Figs 389–396, 418–428) 8
7. Palpal tibia longer, 5–5.1 times as long as wide (Fig. 352). Proximal part of embolus stouter and clearly keeled (Figs 385–387) *R. alajensis* sp. nov.
 - Palpal tibia relatively shorter, 4.7 times as long as wide (Fig. 360). Proximal part of embolus with keel vestige and thinner (Figs 409–411)..... *R. insolita* sp. nov.
8. Tibia and metatarsus I elongate, slender, and covered with very long thin setae (Figs 271–272). Metatarsus I, viewed from ventral aspect, with narrowed arcuate proximal section (Figs 301, 302). Embolus with almost equally short and low dorsal and ventral keels (Figs 418–428) *R. pamira* sp. nov.
 - Tibia and metatarsus I stouter and covered with less modified shorter setae (Figs 263–264). Metatarsus I, viewed from ventral aspect, without certain basal constriction (Figs 293–294). Embolus with long and raised ventral keel; dorsal keel absent (Figs 389–396, 469–470)..... *R. cucullata* sp. nov.
9. Labium longer and narrower, maxillae with relatively smaller but more numerous cuspules (Fig. 212). Tarsi I–IV apically with relatively dense laterodistal tufts of long setae. Embolus longer and less tapering, with relatively shorter distal part (Figs 412–414)..... *R. ornata* sp. nov.
 - Labium shorter and broader, maxillae with relatively larger but less numerous cuspules (Fig. 213). Tarsi I–IV apically with sparse laterodistal tufts of short setae. Embolus shorter and more tapering, with relatively longer distal part (Figs 415–417) *R. ornatula* sp. nov.

Females

Females of *Raveniola insolita* sp. nov. are unknown.

1. Anterodistal edge of chelicera with dense brush of stout setae in front of fang base. Tibia and metatarsus IV with dense, evenly thin, long, and more or less uniformly arranged modified hairs (Figs 310–311, 314, 316–317) 2
 - Anterodistal edge of chelicera without dense brush of stout setae. Hairs on tibia and metatarsus IV heterogeneous and unmodified (as in Figs 312, 315, 318) 5
2. Clypeus shorter than diameter of ALE; anterior eye row nearly straight (Fig. 167). Spermathecae with short and straight branches (Figs 491–493, 504–508, 510–512)..... 3
 - Clypeus noticeably wider than diameter of ALE; anterior eye row strictly procurved (Fig. 167). Spermathecae with long twisted branches (Figs 489–490) *R. afghana* sp. nov.
3. Abdomen dorsally uniformly dark or with poorly discernible dark chevron-like pattern (Figs 42, 44). Spermathecae with unevenly wide pair of branches: outer branch clearly slenderer than the massive and often multilobate inner branch (Figs 504–508, 510–512) 4
 - Abdomen dorsally with distinct, dark chevron-like pattern (Fig. 38). Each spermatheca with almost uniformly slender inner and outer branches (Figs 491–493)..... *R. alajensis* sp. nov.

4. Abdomen dorsally uniformly dark brown or with almost indistinct paler chevrons (Fig. 42). Tibia and metatarsus IV dorsally with extremely dense modified hairs (Fig. 314). Spermathecae as in Figs 504–508 *R. hirta* sp. nov.
- Abdomen dorsally medium brown with poorly discernible dark brown chevron-like pattern (Fig. 44). Tibia and metatarsus IV dorsally with moderately dense modified hairs (Figs 316–317). Spermathecae as in Figs 510–512..... *R. karategensis* sp. nov.
5. Abdomen with darker chevron-like or reticulate pattern (Figs 39–41, 43, 45–49). Spermathecae with dissimilar inner and outer branches on low common base (Figs 495–503, 509, 520–525), or with main trunk and lateral diverticulum (Figs 513–519) 6
- Abdomen uniformly dark coloured. Spermathecae with similar inner and outer branches on high common base (Fig. 494) *R. concolor* Zonstein, 2000
6. Sternum broadly oval (Figs 233–235, 237, 241–242). Abdomen without darker ventral pattern or with a few dark marks on ventral side. PMS mostly medium-sized; apical segment of PLS shorter and triangular (as in Figs 566–567, 574, 585–588)..... 7
- Sternum subcircular (Figs 239–240). Abdomen with more or less dense maculate pattern on ventral side (Figs 580, 583). PMS small and thin; apical segment of PLS longer and shortly digitiform (Figs 578–579, 582)..... 11
7. Habitus as in Figs 39–40, 48–49. Each paired spermatheca U-shaped, with outer and inner branches distinctly separated from each other; inner branch often multilobate (Figs 494–499, 520–525) 8
- Habitus as in Figs 41, 43. Each paired spermatheca V-shaped, with outer and inner branches arising very close to each other; inner branch entire (Figs 500–503, 509) 10
8. Maxillae with 70–90 cuspules (Figs 241–242). Tarsus II with entire scopula. Spermathecae usually shorter and broader spaced from each other (Figs 520–525). Basal segment of PLS ventrally with denser spigots confined to about posterior 0.35–0.40 of its length (Figs 585, 587)..... 9
- Maxillae with 35–60 cuspules (Figs 233–234). Scopula on tarsus II widely divided. Spermathecae usually longer and closer spaced from each other (Figs 495–499). Basal segment of PLS ventrally with sparser spigots confined to about posterior 0.20–0.25 of its length (Figs 564, 566)..... *R. cucullata* sp. nov.
9. Spermathecae with stouter multilobate inner branches (Figs 520–523). Apical segment of PLS longer and about 1.5 times as long as wide (Figs 585–586)..... *R. pamira* sp. nov.
- Spermathecae with thinner and smaller inner branches (Figs 524–525). Apical segment of PLS shorter and about as long as wide (Figs 587–588) *R. sororcula* sp. nov.
10. PMS smaller; apical segment of PLS longer (Figs 569–570). Inner and outer spermathecal branches shorter (Figs 500–503)..... *R. dolosa* sp. nov.
- PMS larger; apical segment of PLS shorter (Fig. 574). Inner and outer spermathecal branches longer (Fig. 509) *R. ignobilis* sp. nov.
11. Habitus as in Figs 45–46. Labium longer and narrower, maxillae with relatively smaller but more numerous cuspules (Fig. 239). Spermathecae with entire trunks (Figs 513–519). Ventral abdominal pattern sparser (Fig. 580)..... *R. ornata* sp. nov.
- Habitus as in Fig. 47. Labium shorter and broader, maxillae with relatively larger but less numerous cuspules (Fig. 240). Spermathecae with mostly two- or three-lobate trunks (Figs 517–519). Ventral abdominal pattern denser (Fig. 583)..... *R. ornatula* sp. nov.

***Raveniola afghana* sp. nov.**

[urn:lsid:zoobank.org:act:4CC0D56D-66E1-4890-8A23-AC5529B927BB](https://urn.lsid:zoobank.org:act:4CC0D56D-66E1-4890-8A23-AC5529B927BB)

Figs 37, 111, 167, 230, 310, 489–490, 559, 750

Anemesia tubifex – Denis 1958: 82 (♀; misidentified, not *Nemesia tubifex* Pocock, 1889).

Raveniola sp. aff. *concolor* – Zonstein 2018b: 48 (♀).

Diagnosis

The new species shares with *Raveniola alajensis* sp. nov., *R. hirta* sp. nov. and *R. karategensis* sp. nov. the presence of modified long hairs on the female tibia and metatarsus IV (Fig. 310 cf. Figs 311, 314, 316–317). Females of *R. afghana* sp. nov. are well distinguishable by the long twisted branches of their spermathecae vs dissimilarly arranged spermathecal branches in all other species included in the same group known from females (Figs 489, 490 cf. Figs 491–525).

Etymology

The specific epithet is derived from the name of the country (among the meanings of ‘Afghan’, one corresponds to a native or inhabitant of Afghanistan); the gender is feminine.

Material examined

Holotype

AFGHANISTAN • ♀; Bāmīān Province, Koh-i-Baba Mts, Tarapas; 34°29' N, 67°08' E; 3200 m a.s.l.; 23 Jul. 1948; N. Haarløv leg.; NHMD.

Paratypes (11 ♀♀)

AFGHANISTAN • 6 ♀♀; same data as for holotype, Pushtah-ye Guli (Puistangoli, as labeled); 34°35' N, 67°09' E; 3000–3400 m a.s.l.; 1 Aug. 1948; N. Haarløv leg.; NHMD • 5 ♀♀; Wardak Province, Sar-e Djejanghana in vicinity of Mt Shan Fuladi; [34°39' N, 67°38' E]; 3000–3400 m a.s.l.; 8 Aug. 1948; N. Haarløv leg.; NHMD.

Description

Female (holotype)

HABITUS. See Fig. 37.

MEASUREMENTS. TBL 26.80, CL 9.31, CW 7.98, LL 1.04, LW 1.80, SL 5.18, SW 4.29.

COLOUR. Carapace, palps and legs dorsally medium yellowish brown; chelicerae, thoracic fovea and radial grooves of carapace dark brownish orange; eye tubercle with fused blackish brown rings surrounding AMEs and lateral eyes; sternum, labium, maxillae, palps and legs ventrally yellowish orange; abdomen dorsally medium chestnut brown with poorly discernible darker brown dorsal chevron-like pattern, venter of abdomen including spinnerets uniformly dark yellow.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 111. Clypeus and eye group as in Fig. 167. Eye diameters and interdistances: AME 0.20(0.28), ALE 0.37, PLE 0.24, PME 0.22; AME–AME 0.20(0.12), ALE–AME 0.23(0.19), ALE–PLE 0.23, PLE–PME 0.07, PME–PME 0.68. Chelicerae with weak rastellum of ca 40 dense spikes located in front of fang base. Each cheliceral furrow with 7 promarginal teeth and 3 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 230. Posterior pair of sternal sigilla oval and located distantly from sternal edge. Maxillae with ca 60 cuspules each.

LEGS. Tibia, metatarsus and tarsus IV covered with long, thin and dense dorsal hairs, 2–2.5 times as long as maximal width of corresponding segment (Fig. 310). Scopula: entire and distal on metatarsi I–II,

entire on palpal tarsus and tarsi I–II, proventral and mixed with setae on tarsus III, absent on tarsus IV. Trichobothria: 2 rows of 10–11 each on tibiae, 21–24 on metatarsi, 18–20 on tarsi. Palpal claw with 6 teeth. PTC I–IV with 6–7 teeth on inner and 7–9 teeth on outer margin.

LEG MEASUREMENTS.

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.98	2.58	3.45	–	3.83	14.84
Leg I	7.24	3.90	5.43	4.91	3.17	24.65
Leg II	7.06	3.79	4.27	4.46	3.17	22.75
Leg III	6.01	3.09	3.32	4.62	3.09	20.13
Leg IV	7.12	3.62	5.22	6.06	3.03	25.05

SPINATION. Palpal femur and femora I–IV with 1 basodorsal spine and 4–5 dorsal bristles; patellae I and IV, and tarsi I–II aspinose. Palp: femur pd1; patella v1; tibia p1, v14(12); tarsus v2. Leg I: femur pd1; tibia p1, v4(3); metatarsus p1, v2a. Leg II: femur pd1; patella p1; tibia p3(2), v6; metatarsus p3, v7. Leg III: femur pd2, rd2; patella p3; tibia p2, r2, v7; metatarsus p3, r3, v9; tarsus p2. Leg IV: tibia v5(4); metatarsus p4, r3, v9; tarsus p1.

SPERMATHECAE. F-shaped, with moderately low and narrow bases broadly spaced from each other, each with two long, narrow, diverged and twisted stalks, and slightly dilated inner and outer terminal heads (Fig. 490).

SPINNERETS. See Fig. 559. PMS: length 0.83, diameter 0.39. PLS: maximal diameter 1.04; length of basal, medial and apical segments 1.90, 0.97, 0.91; total length 3.78; apical segment triangular.

Male

Unknown.

Variation

Carapace length in females (n=8) varies from 9.31 to 11.96. The variation in the shape of the spermathecae as shown in Figs 489–490.

Ecology

The species inhabits woodless slopes in the alpine zone at an altitude of 3000–3400 m a.s.l. According to Denis (1958), the spiders were collected from their burrows with an open (unprotected) entrance.

Distribution

Central Afghanistan: Koh-i-Baba Mts. See Fig. 750.

Notes

Denis (1958) estimated the carapace length in the collected females as ranging from 10 to 14 mm. The measured actual length of the carapace in these females is somewhat shorter, as noted above.

Raveniola alajensis sp. nov.

[urn:lsid:zoobank.org:act:2D34C44A-A596-4F8D-9CF2-6B2BDBF3E908](https://doi.org/10.21203/rs.3.rs-1234567/v1)

Figs 4, 38, 65, 85, 112, 139, 168, 205, 231, 261, 291, 311, 325–327, 352, 385–387, 491–493, 560–562, 627, 628, 751

Diagnosis

The new species shares with *Raveniola afghana* sp. nov., *R. hirta* sp. nov. and *R. karategensis* sp. nov. the presence of modified long hairs on the female tibia and metatarsus IV (see Figs 310–311, 314–317).

Among these species, females of *R. alajensis* sp. nov. are distinguishable due to their well-developed chevron-like marks on the dorsal abdomen (which are absent or poorly discernible in other noted species; Fig. 38 cf. Figs 37, 42, 44). In females of the new species, the inner spermathecal branch is shorter, narrower and impartible, while in females of the other above-mentioned species, it is longer, wider, multilobate, or serpentine (Figs 491–493 cf. Figs 489–490, 504–508, 510–512). In the structure of the embolus, males of *R. alajensis* resemble those of *R. cucullata* sp. nov. and *R. insolita* sp. nov., but may be distinguished from them in having a noticeably wider basal section of the embolus, additionally provided with a larger embolic keel (Figs 385–387 cf. Figs 389–396 and 409–411).

Etymology

The specific epithet is a toponym referring to the type locality: Alay Valley, Alay and Trans-Alay Mts. The majority of zoologists, who have described species under this name, clearly preferred to use the much more common spelling ‘*alajensis*’ rather than ‘*alayensis*’ (according to the Google search engine, the use frequency ratio between the former and the latter is about 110 to 1). I just follow herein this historical practice.

Material examined

Holotype

KYRGYZSTAN • ♂; Trans-Alay Mts (northern slope), Berksu Gorge; 39°28' N, 72°01' E; 2650 m a.s.l.; 11 Jul. 1995; S. Zonstein leg.; SMNH.

Paratypes (2 ♂, 27 ♀♀)

KYRGYZSTAN • 1 ♂, 21 ♀♀; same locality as for preceding; 2600–3200 m a.s.l.; 9–12 Jul. 1995; S. Zonstein and S.V. Ovchinnikov leg.; SMNH • 2 ♀♀; same locality as for preceding; 9 Jul. 1995; S. Zonstein leg.; ZMUM • 2 ♀♀; Alay Mts (southern slope), Oksu Gorge; 2800 m a.s.l.; 15 Jul. 1998; S.V. Ovchinnikov leg.; SMNH • 2 ♀♀; same collection data as for preceding; Tekelik Gorge; 39°35' N, 71°57' E; 2700 m a.s.l.; 17 Jul. 1998; D.A. Milko leg.; SMNH • 1 ♂; Alay Mts (southern slope), Kaindy Canyon near Kaindy Pass (“Dare-Kaindy”, as labelled); 39°38' N, 72°03' E; 3300–3400 m a.s.l.; 11 Jul. 1903; S. Arens leg.; ZISP 82-905.

Additional material

TAJIKISTAN • 1 ♀; Alay Mts, southern slope W of Karamyk Pass; 39°27' N, 71°46' E; 2500 m a.s.l.; 25 Jul. 1998; A. Panfilov leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 4.

MEASUREMENTS. TBL 13.85, CL 6.73, CW 5.88, LL 0.45, LW 0.92, SL 3.27, SW 2.98.

COLOUR. Carapace mostly brownish orange; cephalic area, thoracic grooves and chelicerae slightly darker, medium reddish brown, eye tubercle blackened, palps and legs dorsally brownish orange; sternum, labium, maxillae, palps and legs ventrally light yellowish brown; abdomen dorsally medium greyish brown with darker brown pattern consisting of interrupted median strip and five pairs of short oblique lateral chevrons; ventral surface of abdomen light greyish brown, book-lungs and spinnerets pale yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 85. Clypeus and eye group as in Fig. 139. Eye diameters and interdistances: AME 0.15(0.21), ALE 0.25, PLE 0.15, PME 0.14; AME–AME 0.15(0.09), ALE–AME 0.09(0.06), ALE–PLE 0.13, PLE–PME 0.5, PME–PME 0.40. Chelicerae with weak

rastellum of ca 30 spikes located in front of fang base. Each cheliceral furrow with 9 promarginal teeth and 5–6 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 205. Maxillae with 49–51 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 261, 291. Scopula: distal on metatarsi I–II, entire on tarsi I–II, narrowly divided with setae on tarsus III, widely divided on tarsus IV. Trichobothria: 2 rows of 8 each on tibiae, 11–13 on metatarsi, 14–15 on tarsi, 10 on cymbium. PTC I–IV with 9–10 teeth on outer and 11 teeth on inner margin.

SPINATION. Palpal patella, patellae I–II and tarsi I–IV aspinose. Palp: femur d5(4), pd3, rd2; tibia d5, p3, r2, v6; cymbium d~40 spikes. Leg I: femur d4, pd3, rd3; tibia p3(2), pv2, r2, rv2+2M; metatarsus vp1. Leg II: femur d4, pd3, rd3; tibia p3, v8(7); metatarsus p1, v4(5). Leg III: femur d4, pd3, rd3; patella p2, r2; tibia d1, p3(2), r2, v7; metatarsus pd4, p3, rd3, v7. Leg IV: femur d4, pd3, rd2; patella r1; tibia d1, pd3, p3(4), r3, v6; metatarsus pd4, p3, r4, v8(7).

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 352. Embolus with long basal portion provided with low keel and short hooked apical part (Figs 385–387).

SPINNERETS. See Fig. 560. PMS: length 0.45, diameter 0.20. PLS: maximal diameter 0.53; length of basal, medial and apical segments 1.02, 0.65, 0.67; total length 2.34; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.55 (4.98)	2.47 (2.60)	3.95 (3.14)	–	0.92 (2.27)	11.78 (12.99)
Leg I	6.53 (6.52)	3.68 (4.05)	5.37 (4.53)	5.33 (3.90)	2.77 (2.48)	23.68 (21.48)
Leg II	6.07 (5.97)	3.20 (3.64)	4.53 (3.62)	4.45 (3.57)	2.72 (2.48)	20.97 (19.28)
Leg III	4.80 (4.95)	2.92 (2.93)	3.13 (2.85)	4.37 (3.85)	2.75 (2.44)	17.97 (17.02)
Leg IV	6.13 (7.93)	3.53 (3.77)	4.55 (5.02)	6.12 (6.43)	3.08 (3.10)	23.41 (26.25)

Female (paratype from Berkusu, SMNH)

HABITUS. See Figs 38, 65.

MEASUREMENTS. TBL 21.50, CL 8.65, CW 7.22, LL 0.73, LW 1.50, SL 4.60, SW 3.92.

COLOUR. Similar to that of male, but slightly lighter.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 112. Clypeus and eye group as in Fig. 168. Eye diameters and interdistances: AME 0.20(0.27), ALE 0.34, PLE 0.25, PME 0.22; AME–AME 0.21(0.14), ALE–AME 0.16(0.13), ALE–PLE 0.29, PLE–PME 0.09, PME–PME 0.60. Chelicerae with weak rastellum of ca 35–40 dense spikes located in front of fang base. Each cheliceral furrow with 9–10 promarginal teeth and 4–6 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 231. Maxillae with 44–46 cuspules each.

LEGS. Tibia, metatarsus and tarsus IV covered with extremely long and dense dorsal hairs, 3–4 times as long as maximal width of corresponding segment (Fig. 311). Scopula: entire on metatarsus I, distal 2/3 of metatarsus II, palpal tarsus and tarsus I, narrowly divided with setae on tarsus II, widely divided on tarsi III–IV. Trichobothria: 2 rows of 9–11 each on tibiae, ca 20 on metatarsi and tarsi. Trichobothria, their bases and tarsal organ of leg I as shown on Figs 325–327. Palpal claw with 6 teeth. PTC I–IV with 6–7 teeth on each margin.

SPINATION. Palpal femur and femora I–IV with 1 basodorsal spine and 3–5 dorsal bristles; patella I and tarsi I–IV aspinose. Palp: femur pd1; patella pd1; tibia p2(3), v7(5); tarsus v3. Leg I: femur pd1; tibia

v2(1); metatarsus v5(4). Leg II: femur pd1; patella p2; tibia p2, v5; metatarsus v6. Leg III: femur pd2, rd3; patella p1(2), r1; tibia d3, p2, r2, v8(7); metatarsus dp4, r3, v8(7). Leg IV: femur rd2; patella r2; tibia d1, r3, v7(8); metatarsus r3, v8(7).

SPERMATHECAE. See Fig. 491. Each paired spermatheca with low and wide conical base carrying two short club-like branches, with closely set proximal parts and widely divergent apices.

SPINNERETS. See Figs 561–562. PMS: length 0.68, diameter 0.35. PLS: maximal diameter 1.13; length of basal, medial and apical segments 1.27, 0.75, 0.78; total length 2.80; apical segment triangular.

Variation

Carapace length in males (n=3) ranges from 6.62 to 8.23, in females (n=9) it varies from 6.57 to 8.93. Spermathecae show a quite insignificant variation (Figs 491–493).

Ecology

The spiders occur in the highland zone of the Alay and Trans-Alay ridges where they inhabit subalpine and alpine grasslands in combination with a low open *Juniperus* woodland (Figs 627–628). All females were observed hiding inside their unprotected burrows 35–45 cm deep; the conspecific males were found hiding during the daytime under stones.

Distribution

Kyrgyzstan, Tajikistan. See Fig. 751.

Raveniola concolor Zonstein, 2000

Figs 86, 113, 140, 169, 206, 232, 262, 292, 353, 388, 494, 750

Raveniola concolor Zonstein, 2000a: 50, figs 4–6 (♂♀).

Brachythele virgata – Caporiacco 1934: 113, 160 (misidentified, not *Brachythele virgata* Simon, 1891).

Raveniola concolor – Siliwal *et al.* 2005: 2004. — Siliwal & Molur 2007: 2587. — Keswani *et al.* 2012: 5. — Dhali *et al.* 2016: 92. — Zonstein *et al.* 2018: figs 146, 168, 214 (♂♀).

Diagnosis

The only known pair of *Raveniola concolor* clearly differs from all other congeners belonging to the same species group by their uniformly dark brown body and legs (seen in dorsal aspect) vs an ornamented abdomen, or palps and legs lighter than the carapace. In having a similar body size and proportions of the male leg I (see Figs 262 and 271–272), this species resembles *P. pamira* sp. nov. However, the holotype male differs from males of the latter species in possessing a considerably longer and more sharply twisted distal section of the embolus (Fig. 388 cf. Figs 418–428), while the paratype female can be distinguished from females of *P. pamira* in having dissimilarly conformed spermathecae, with considerably higher and narrower bases (Fig. 494 cf. Figs 520–523).

Material examined

Holotype

INDIA • ♂; Jammu & Kashmir State, North-Western Himalayas, Dras Valley, Shimsha Kharbu (Shimsha Karboo, as labelled); 34°32' N, 75°59' E; 2800 m a.s.l.; 15 Apr. 1929; L. Caporiacco leg.; MCSN AR 18.

Paratype

INDIA • 1 ♀; Jammu & Kashmir State, North-Western Himalayas, Shingo Valley, Apis; 34°36' N, 76°02' E; 2900 m a.s.l.; 16 Apr. 1929; MCSN AR 19.

Description

Male (holotype)

MEASUREMENTS. TBL 15.10, CL 7.23, CW 6.27, LL 0.55, LW 1.00, SL 3.57, SW 2.97.

COLOUR. Carapace, chelicerae, palps and legs uniformly dark chestnut brown; eye tubercle blackish brown; sternum, labium, maxillae, book-lungs and spinnerets medium brown; abdomen almost uniformly dark brown without clear dorsal pattern.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 86. Clypeus and eye group as in Fig. 140. Eye diameters and interdistances: AME 0.12(0.16), ALE 0.22, PLE 0.17, PME 0.12; AME–AME 0.12(0.08), ALE–AME 0.06(0.04), ALE–PLE 0.04, PLE–PME 0.03, PME–PME 0.41. Anterior cheliceral edge only with slightly thickened setae; rastellum not developed. Each cheliceral furrow with 10 promarginal teeth and 4 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 206. Maxillae with 27–29 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 262, 292. Scopula: distal on metatarsi I–II; entire on tarsi I–II; narrowly divided with setae on tarsus III; sparse and widely divided on tarsus IV. Trichobothria: 2 rows of 9–10 on tibiae, 13–16 on metatarsi, 13–16 on tarsi, 11 on cymbium. PTC I–IV with 13 teeth on each margin.

SPINATION. Palp: femur d3, pd1, rd2; patella pd1; tibia d5, p6, 3(2), v5; cymbium d6. Leg I: femur d4, pd3, rd3(2); patella p1; tibia p2, r2, rv2+2M. Leg II: femur d4, pd3, rd1(0); patella p2; tibia p3, v7; metatarsus v3. Leg III: femur d3, pd2, rd2; patella p2, r1; tibia d3, pd3, p3, r3, v7; metatarsus d4, pd4, p4, r2, v9. Leg IV: femur d4, pd3, rd3; patella p3, r1; tibia d4, pd3, dr1, p5, r 3, v 7; metatarsus d1, pd5, p4, rd3, r3, v9. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 353. Embolus with long basal portion provided with low keel and short hooked apical part (Fig. 388).

SPINNERETS. PMS: length 0.15, diameter 0.07. PLS: maximal diameter 0.67; length of basal, medial and apical segments 0.55, 0.53, 0.53; total length 1.61; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.25 (3.80)	2.07 (2.73)	3.05 (3.40)	–	1.07 (3.00)	9.44 (12.93)
Leg I	6.53 (6.50)	3.57 (4.23)	5.25 (5.00)	6.13 (4.47)	2.95 (2.77)	24.44 (22.97)
Leg II	6.27 (6.20)	3.30 (3.95)	5.35 (5.00)	6.03 (4.53)	2.93 (2.90)	23.98 (22.58)
Leg III	5.85 (5.95)	2.57 (3.13)	3.93 (3.85)	5.93 (5.33)	2.85 (2.97)	21.13 (21.23)
Leg IV	6.27 (6.97)	3.17 (3.70)	5.90 (5.17)	7.77 (7.15)	3.00 (3.17)	26.61 (26.16)

Female (paratype)

MEASUREMENTS. TBL 21.00, CL 8.07, CW 6.80, LL 0.83, LW 1.70, SL 4.35, SW 3.37.

COLOUR. Similar to that of male, but chelicerae relatively darker, brownish-black.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 113. Clypeus and eye group as in Fig. 169. Eye diameters and interdistances: AME 0.14(0.20), ALE 0.31, PLE 0.21, PME 0.19; AME–AME 0.14(0.08), ALE–AME 0.07(0.04), ALE–PLE 0.06, PLE–PME 0.03, PME–PME 0.40. Cheliceral rastellum absent. Each cheliceral furrow with 10–11 promarginal teeth and 4 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 232. Maxillae with 38–41 cuspules each.

LEGS. Scopula: distal on metatarsi I–II; entire on palpal tarsus and tarsi I–II; sparse and widely divided by setae on tarsi III–IV. Trichobothria: 2 rows of 9–10 each on tibiae, 13–17 on metatarsi, 14–17 on tarsi. Palpal claw with 5 teeth. PTC I–IV with 12–14 teeth on inner and 10–11 teeth on outer margin.

SPINATION. All femora with one basodorsal spine and 3–4 median and/or apical bristles; palpal patella, patellae I–II and tarsi I–IV aspinose. Palp: femur pd1; tibia v7; tarsus v3(8). Leg I: femur pd1; tibia v5; metatarsus v5. Leg II: femur pd1; tibia p2, v5; metatarsus v6. Leg III: femur pd1, rd2; patella p2, r1; tibia d1, p2, r2, v7; metatarsus p6, r3, v7. Leg IV: femur rd1; patella p1, r1; tibia d1, p2, r2, v7; metatarsus p5, r3, v7.

SPERMATHECAE. Each of paired spermathecae U-shaped with relatively short and wide base carrying two equally thick, long and weakly diverging branches (Fig. 494).

SPINNERETS. PMS: length 0.25, diameter 0.11. PLS: length of basal, medial and apical segments 0.65, 0.60, 0.53; total length 1.78; apical segment triangular.

Ecology

According to the label data, the holotype and the paratype were collected in a subalpine steppe zone. Other details remain unknown.

Distribution

India: Northwestern Himalayas. See Fig. 750.

Raveniola cucullata sp. nov.

[urn:lsid:zoobank.org:act:D8D03F0B-4F23-4ACF-ACBE-226049F93660](https://zoobank.org/urn:lsid:zoobank.org:act:D8D03F0B-4F23-4ACF-ACBE-226049F93660)

Figs 5–6, 39–40, 66, 69–70, 87–88, 114–115, 141–142, 170–171, 197, 207, 233–234, 263–264, 293–294, 312, 328–333, 354–355, 389–396, 469–470, 482–484, 495–499, 563–567, 629–646, 751

Diagnosis

Males of *Raveniola cucullata* sp. nov. differ from males of the four habitually similar species, *R. dolosa* sp. nov., *R. ignobilis* sp. nov., *R. ornatula* sp. nov. and *R. pamira* sp. nov., by noticeably shorter legs I–IV, and by metatarsi I–II, which are provided with denser and shorter scopula (Figs 263–264 cf. Figs 265, 267, 270–272). The structure of the tibia and metatarsus I and the conformation of the embolus in *R. cucullata* most closely resemble those in *R. insolita* sp. nov., but the latter species differs from *R. cucullata* in possessing a considerably longer male palpal tibia (Figs 354–355 cf. Fig. 360). Females of *R. cucullata* differ from females of *R. dolosa* and *R. ornatula* in having much larger PMS (which are strictly reduced in size in the two latter species (Figs 554, 556 cf. Figs 569–570, 582–583)). Nevertheless, females of *R. cucullata* can be reliably distinguished from those of *R. ignobilis* and *R. pamira* only in the specific conformation of the spermathecal branches (which are either more widely set to each other, compared with *R. dolosa*, or longer, thinner and not dilated apically, compared with *R. pamira* (Figs 495–499 cf. Figs 520–523)).

Etymology

The specific epithet is a Latin adjective referring to a clearly darkened cephalic portion of the carapace in this species (a character better developed in the conspecific males), that resembles in shape a hood (Latin: ‘*cucullus*’) folded back; the gender is feminine.

Material examined

Holotype

TAJIKISTAN • ♂; Vahsh Mts, Mullokoni Canyon, Shikildara Gorge; 38°39' N, 70°01' E; 1800 m a.s.l.; 29 Apr. 1990; S. Zonstein leg.; SMNH.

Paratypes (9 ♂♂, 12 ♀♀)

TAJIKISTAN • 6 ♂♂, 4 ♀♀; same collection data as for holotype; 1600–1900 m a.s.l.; SMNH • 2 ♂♂, 2 ♀♀; Hazratisho Mts, Yahsu Canyon, Kapar (Sangdara) Gorge, near Sangdara Village; 38°21.8' N, 70°09.9' E; 1450–1800 m a.s.l.; 15 Oct. 1987; S. Zonstein leg.; SMNH • 2 ♀♀; same collection data as for preceding, Lokunj Gorge; 38°23' N, 70°09' E; 1700 m a.s.l.; 18 May 2002; S. Zonstein leg.; SMNH • 1 ♂, 2 ♀♀; Peter I Mts, Childara Canyon, Shahobdara Gorge, 4 km NNW of Shahob Village; 38°51' N, 70°18' E; 1900–2100 m a.s.l.; 12 Jul. 1988; S. Zonstein leg.; SMNH • 2 ♀♀; same collection data as for preceding, 2.5 km N of Shahob Village; 38°50' N, 70°19' E; 1800 m a.s.l.; 8 Jul. 2019; S. Zonstein leg.; SMNH.

Additional material (1 ♂, 2 ♀♀, 1 ♀ subad., 1 juv.)

TAJIKISTAN • 1 ♀, 1 juv.; Vahsh Mts, Shuro Gorge; 38°31' N, 69°46' E; 1700 m a.s.l.; 20 Oct. 1968; E.M. Andreeva leg.; MIZW • 1 ♂, 1 ♀ subad.; Darvaz Mts (northern slope), environs of Miyonadu Village; [38°50' N, 70°53' E]; 3200 m a.s.l.; 1–30 Jun. 1968; V.I. Chikatunov leg.; MIZW • 1 ♀; Western Pamir, Darvaz Mts (southern slope), Obiviskharvi Canyon, surroundings of Ubagan Village; 38°32' N, 71°03' E; 1950–2100 m a.s.l.; 15 Jul. 1988; S. Zonstein leg.; SMNH.

Description

Male (holotype)

HABITUS. See Figs 5, 70.

MEASUREMENTS. TBL 13.80, CL 6.13, CW 5.05, LL 0.43, LW 0.98, SL 3.23, SW 2.67.

COLOUR. Carapace laterally, palpal femur, entire leg I and femora II–IV tangerine orange, chelicerae, most part of cephalic portion, thoracic fovea and radial grooves of carapace darker reddish brown; other segments of palp and legs II–IV yellowish orange; eye tubercle blackish brown; sternum, labium and maxillae light brownish orange; abdomen yellowish brown, with darker brown chevron-like dorsal pattern; spinnerets pale yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 87. Clypeus and eye group as in Fig. 141. Eye diameters and interdistances: AME 0.16(0.22), ALE 0.29, PLE 0.22, PME 0.18; AME–AME 0.16(0.10), ALE–AME 0.13(0.10), ALE–PLE 0.16, PLE–PME 0.03, PME–PME 0.37. Anterior cheliceral edge only with slightly thickened setae; rastellum not developed. Intercheliceral tumescence present as a small pallid area with diffuse and weakly discernible borders (as in Fig. 197). Each cheliceral furrow with 9 promarginal teeth and 4–5 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 207. Maxillae with 27–28 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 263, 293. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided with setae on tarsus II; widely divided on tarsus III; sparse, mixed with setae and widely divided on tarsus IV. Trichobothria: 2 rows of 8–9 on tibiae, 13–18 on metatarsi, 11–15 on tarsi, 9–10 on cymbium. PTC I–IV with 10–12 teeth on each margin.

SPINATION. Palp: femur d3(2), pd2, rd1; patella p1; tibia d3, p2, rd2, v6; cymbium d12(15). Leg I: femur d4, pd2, rd4(2); patella p2; tibia p2, pv1, r2(1), rv2+2M; metatarsus v1a. Leg II: femur d4, pd3, rd4(3); patella p3; tibia p3, v8; metatarsus p1, v6. Leg III: femur d4, pd3, rd2; patella p2, r1; tibia d3, p2, r3, v7; metatarsus d4(2), p4, r3, v7. Leg IV: femur d4, pd3, rd3; patella p2, r2; tibia p3, pd1, r3, v9(7); metatarsus d2(1), p4, r3, v8. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 354. Embolus with long basal portion provided with low keel and short hooked apical part (Figs 389–391).

SPINNERETS. See Fig. 563. PMS: length 0.44, diameter 0.17. PLS: maximal diameter 0.52; length of basal, medial and apical segments 1.02, 0.61, 0.52; total length 2.15; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.76 (3.73)	1.69 (2.09)	2.96 (2.39)	–	1.02 (2.06)	10.43 (9.23)
Leg I	5.73 (4.83)	2.84 (2.86)	3.97 (3.25)	4.28 (2.69)	2.49 (1.78)	19.31 (15.41)
Leg II	5.12 (4.66)	2.47 (2.53)	3.61 (3.09)	3.89 (2.62)	2.49 (1.84)	17.58 (14.74)
Leg III	4.27 (3.84)	1.98 (2.23)	2.87 (2.44)	3.77 (3.12)	2.40 (2.11)	15.29 (13.74)
Leg IV	5.57 (5.01)	2.51 (2.58)	4.23 (3.51)	5.84 (4.45)	2.83 (2.47)	20.98 (18.02)

Female (paratype from Mullokoni Canyon)

HABITUS. See Figs 39, 69.

MEASUREMENTS. TBL 16.10, CL 6.82, CW 5.94, LL 0.61, LW 1.34, SL 3.54, SW 3.18.

COLOUR. Similar to that of male, but cephalic portion of carapace only slightly darkened.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 114. Clypeus and eye group as in Fig. 170. Eye diameters and interdistances: AME 0.14(0.20), ALE 0.32, PLE 0.20, PME 0.17; AME-AME 0.17(0.11), ALE-AME 0.13(0.10), ALE-PLE 0.11, PLE-PME 0.05, PME-PME 0.52. Cheliceral rastellum underdeveloped as in male. Each cheliceral furrow with 9 promarginal teeth and 6–7 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 233. Labium with 1 cuspule. Maxillae with 38–41 cuspules each.

LEGS. Tibia and metatarsus IV without modified hairs (Fig. 312). Scopula: distal on metatarsi I–II; entire on palpal tarsus and tarsus I; widely divided with setae on tarsus II; sparse and widely divided by setae on tarsus III; vestigial on tarsus IV. Trichobothria: 2 rows of 8–10 each on tibiae, 13–16 on metatarsi; 12–15 on tarsi. Palpal claw with 4 promarginal teeth. PTC I–IV with 6–8 teeth on each margin.

SPINATION. All femora with one basodorsal spine and 2–3 median and/or apical bristles; palpal patella, patellae I–II, and tarsi I–IV aspinose. Palp: femur pd2; tibia v5; tarsus v2. Leg I: femur pd2; tibia v3; metatarsus v6(5). Leg II: femur pd3; tibia p1, v3; metatarsus v6. Leg III: femur pd3, rd3(2); patella p2, r2; tibia d1, p2, r2, v7(6); metatarsus p3(2), pd2, r3(2), v7. Leg IV: femur pd1(0), rd1; patella r1; tibia p2, r3, v7; metatarsus p3, r4, v8.

SPERMATHECAE. Each of paired spermathecae U-shaped with very low triangular base carrying two branches, unequal to each other: thicker and straight or slightly curved inner branch, and slender and fairly twisted outer one (Fig. 494).

SPINNERETS. See Fig. 564. PMS: length 0.69, diameter 0.28. PLS: length of basal, medial and apical segments 1.06, 0.56, 0.32; total length 1.94; apical segment triangular.

Variation

Carapace length in males (n=10) varies from 4.97 to 6.20, in females (n=10) from 5.67 to 8.48. The corresponding variations are shown for: the habitus and colouration – in Figs 6, 40, 66; the carapace, eye group and sternum – in Figs 88, 115, 142, 171, 234; the male tibia and metatarsus I – in Figs 264 and 294; the trichobothria, tarsal organ and claws of female tarsus I – in Figs 328–333; the male palp and copulatory bulb – in Figs 355, 392–396, 469–470; the spinnerets – in Figs 482–484, 565–567; the spermathecae – in Figs 495–499.

Ecology

The species generally occurs in the midland montane zone, where it inhabits small riverside and slope woodlands (dominated by *Juglans regia* L., *Juniperus seravschanica* Kom., *Acer* spp. and *Populus* spp.) which are generally interspersed with a tall shrubland. Along the valleys of mountain streams, the spiders can penetrate into the subalpine and alpine zones. These spiders were observed hiding under rocks in the most humid microhabitats. *Raveniola cucullata* sp. nov. sympatrically shares the same biotopes together with *R. dolosa* sp. nov. and *R. pamira* sp. nov. in Peter I Mts and Darvaz Mts, and together with *R. ignobilis* sp. nov. and *R. ornatula* sp. nov. in Hozratisho Mts. See Figs 629–646.

Distribution

Tajikistan: Vahsh Mts, Hazretisho Mts, Peter I Mts and Darvaz Mts, the northwestern and western branches of the Pamirs mountain system. See Fig. 651.

Raveniola dolosa sp. nov.

[urn:lsid:zoobank.org:act:7EC137C9-9E8D-4B2C-8309-358072F8FF08](https://zoobank.org/act:7EC137C9-9E8D-4B2C-8309-358072F8FF08)

Figs 7, 41, 71, 89, 116, 143, 172, 208, 235, 265, 295, 356, 379–399, 500–503, 568–570, 643–650, 751

Diagnosis

In the structure of the embolus and the spermathecae, *Raveniola dolosa* sp. nov. resembles *R. ignobilis* sp. nov.; it can be distinguished from the latter in having the embolus lacking a raised keel and in possessing noticeably shorter spermathecae (vs a clearly keeled embolus and longer branches of the spermathecae in *R. ignobilis*; Figs 397–399, 500–503 cf. Figs 403–408, 509). Additionally, *R. dolosa* differs from *R. ignobilis* in having the posterior medium spinnerets strictly reduced in size (vs considerably larger PMS in the latter species; Figs 568–570 cf. Figs 573–574).

Etymology

The specific epithet is a Latin adjective ‘*dolosus/-a/-um*’ (= deceptive) referring to a general similarity of this new species to the closest congeners, *Raveniola ignobilis* sp. nov. and *R. sororcula* sp. nov.; the gender is feminine.

Material examined

Holotype

TAJIKISTAN • ♂; Peter I Mts, Childara Canyon, Shahobdara Gorge, 4 km NNW of Shahob Village; 38°51' N, 70°18' E; 1900 m a.s.l.; 12 Jul. 1988; S. Zonstein leg.; SMNH.

Paratypes (13 ♀♀)

TAJIKISTAN • 11 ♀♀; same locality as for holotype; 1900–2100 m a.s.l.; 12–13 Jul. 1988; S. Zonstein and S.V. Ovchinnikov leg.; SMNH • 2 ♀♀; same locality as for holotype, 2.5 km N of Shahob Village; 38°50' N, 70°19' E; 1800 m a.s.l.; 8 Jul. 2019; S. Zonstein leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 7.

MEASUREMENTS. TBL 12.55, CL 5.24, CW 4.97, LL 0.50, LW 0.87, SL 2.51, SW 2.41.

COLOUR. Carapace, chelicerae and leg I dull reddish brown; palps and legs II–IV lighter reddish brown; eye tubercle dark brown; sternum, labium and maxillae light yellowish brown; abdomen tan brown, with

dark brown dorsal chevron-like pattern and a few small brown marks on ventral side; book-lungs and spinnerets pale yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 89. Clypeus and eye group as in Fig. 143. Eye diameters and interdistances: AME 0.14(0.20), ALE 0.26, PLE 0.16, PME 0.12; AME–AME 0.10(0.05), ALE–AME 0.11(0.08), ALE–PLE 0.10, PLE–PME 0.06, PME–PME 0.37. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 9 promarginal teeth and 3–4 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 208. Maxillae with 36–39 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 265, 295. Scopula: entire and distal on metatarsi I–II; entire on tarsi I–II; narrowly divided by setae on tarsus III; widely divided on tarsus IV. Trichobothria: 2 rows of 8–9 each on tibiae, 12–14 on metatarsi, 10–11 on tarsi, 7–8 on cymbium. PTC I–IV with 9–10 and 7–8 teeth on inner and outer margins, respectively.

SPINATION. All femora with 1–2 basodorsal spines and 3–4 dorsal bristles; metatarsus I and tarsi I–IV aspinose. Palp: femur pd2, rd1; patella pd1; tibia d1, p2, r3, v5; cymbium d4(5)+12–15 spikes. Leg I: femur pd3, rd3; patella p1; tibia p2, pv1, r2, rv2+2M. Leg II: femur pd3; patella p2; tibia p3, v7; metatarsus v5(4). Leg III: femur pd3, rd2; patella p2, r1; tibia d2(1), p4, r3, v7; metatarsus d3, p4, r3, v8. Leg IV: femur pd3(2), rd2(1); patella p1, r1; tibia d1, p3, r3, v9(7); metatarsus d3, p4(3), r5(4), v9.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 356. Embolus with moderately long basal portion provided with very low keel and short, hooked apical part (Figs 397–399).

SPINNERETS. See Fig. 568. PMS: length 0.36, diameter 0.16. PLS: maximal diameter 0.49; length of basal, medial and apical segments 0.75, 0.43, 0.38; total length 1.56; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.13 (2.79)	1.61 (1.58)	2.49 (1.89)	–	0.83 (1.92)	8.06 (8.18)
Leg I	5.65 (3.70)	2.94 (2.43)	4.32 (2.88)	4.07 (2.21)	2.43 (1.71)	19.41 (12.93)
Leg II	5.26 (3.36)	2.58 (2.16)	3.94 (2.56)	3.93 (2.20)	2.29 (1.79)	18.02 (12.07)
Leg III	4.35 (3.09)	2.07 (1.81)	2.96 (2.04)	4.14 (2.72)	2.14 (1.87)	15.66 (11.53)
Leg IV	5.46 (3.98)	2.46 (2.18)	4.08 (3.31)	5.82 (3.66)	2.78 (2.04)	20.60 (15.17)

Female (paratype)

HABITUS. See Fig. 41.

MEASUREMENTS. TBL 15.60, CL 5.26, CW 4.53, LL 0.87, LW 1.11, SL 2.76, SW 2.48.

COLOUR. Similar to that of male, but carapace and legs slightly paler.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 116. Clypeus and eye group as in Fig. 172. Eye diameters and interdistances: AME 0.13(0.18), ALE 0.25, PLE 0.18, PME 0.16; AME–AME 0.12(0.07), ALE–AME 0.10(0.07), ALE–PLE 0.09, PLE–PME 0.05, PME–PME 0.35. Cheliceral rastellum absent. Each cheliceral furrow with 9 promarginal teeth and 9–10 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 235. Maxillae with ca 70 cuspules each.

LEGS. Scopula: distal on metatarsi I–II; entire on palpal tarsus and tarsus I; widely divided by setae on tarsus II; rudimentary on tarsi III–IV. Trichobothria: 2 rows of 11–12 each on tibiae, 16–18 on metatarsi;

13–15 on tarsi; 11 on palpal tarsus. Palpal claw with 5 promarginal teeth. PTC I–II and III–IV with 4–5 and 5–7 teeth on each margin, respectively.

SPINATION. All femora with one basodorsal spine and 3 dorsal bristles; palpal patella, patellae I–II, and tarsi I–IV aspinose. Palp: femur pd1; tibia p1, v7; tarsus v3. Leg I: femur pd1; tibia v6; metatarsus v6. Leg II: femur pd1; tibia p2, v6; metatarsus v6. Leg III: femur pd2, rd2; patella p2, r1; tibia d1, p2, r2(1), v7; metatarsus d3(2), p3, r3, v9(8). Leg IV: femur rd1; patella r1; tibia p2, r2, v7; metatarsus p3, r3, v8(7).

SPERMATHECAE. Each of paired spermathecae V-shaped with relatively low and wide base carrying two densely located, short and weakly diverging branches (Fig. 500).

SPINNERETS. See Figs 569–570. PMS: length 0.47, diameter 0.15. PLS: maximal diameter 0.57; length of basal, medial and apical segments 0.98, 0.42, 0.43; total length 1.83; apical segment triangular.

Variation

Carapace length varies in females (n=9) from 4.30 to 6.17. Variations in the habitus and structure of the spermathecae as shown in Figs 71, 501–503.

Ecology

All spiders were found hiding in soil cavities under stones in riverside woodlands, dominated by *Juniperus seravschanica*, *Juglans regia* and *Populus* sp. (Figs 643–650).

Distribution

Known only from the type locality. See Fig. 751.

Raveniola hirta sp. nov.

[urn:lsid:zoobank.org:act:A86FF08F-F3AD-4AB3-B399-7ACC509D3548](https://zoobank.org/urn:lsid:zoobank.org:act:A86FF08F-F3AD-4AB3-B399-7ACC509D3548)

Figs 8, 42, 67–68, 90, 117, 144, 173–174, 209, 236, 266, 296, 313–314, 357, 400–402, 504–508, 571–572, 651–658, 752

Diagnosis

Within the *concolor* species group of *Raveniola*, the holotype male of *R. hirta* sp. nov. is well distinguishable, because it possesses the shortest embolus, compared to other species (Figs 400–402 cf. Figs 385–399, 403–428); it also has long modified hairs on the tibia and metatarsus IV, as shown in Fig. 313 (vs their presence in those species, where these hairs are known, only in females). Considering the last character, this new species shares with *R. afghana* sp. nov., *R. alajensis* sp. nov. and *R. karategensis* sp. nov. the presence of long modified hairs on the female tibia and metatarsus IV. Females of *R. hirta* can be distinguished from those of *R. alajensis* and *R. karategensis* by having a uniformly coloured (vs fairly ornamented) abdomen (Figs 42, 67–68 cf. Figs 38, 44, 65), and from those of *R. afghana* sp. nov. in possessing much shorter spermathecae provided with clearly wider inner branches (Figs 504–508 cf. Figs 489–490).

Etymology

The specific epithet is an adjective referring to a hirsute (Latin: ‘*hirt-us/-a/-um*’) leg IV in this species, densely covered with elongated fine hairs in females and to a lesser extent in males; the gender is feminine.

Material examined

Holotype

TAJIKISTAN • ♂; Darvaz Mts (northern slope), upper part of Zidadara Canyon, 2.5 km NNE of Haburabot Pass; 38°38.8' N, 70°43.6' E; 2900 m a.s.l.; 13 Jul. 1988; S. Zonstein leg.; SMNH.

Paratypes (28 ♀♀)

TAJIKISTAN • 7 ♀♀; same collection data as for holotype; 2900–3300 m a.s.l.; SMNH • 6 ♀♀; same locality as for holotype; 2850 m a.s.l.; 11 Jul. 2019; S. Zonstein and A. Hakimov leg.; SMNH • 7 ♀♀; Darvaz Mts (top watershed zone), Haburabot Pass; 38°37.229' N, 70°43.135' E; 3300 m a.s.l.; subalpine meadow-steppe; 26–27 Jul. 2023; A.A. Fomichev leg.; ISEA • 6 ♀♀; same collection data as for preceding; ZMMU • 2 ♀♀; Darvaz Mts (southern slope), Obiviskharvi Canyon; 38°34' N, 71°03' E; 3000–3300 m a.s.l.; 14 Jul. 1988; S. Zonstein leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 8.

MEASUREMENTS. TBL 17.40, CL 6.83, CW 6.27, LL 0.55, LW 1.00, SL 3.57, SW 2.97.

COLOUR. Carapace laterally and posteriorly, palpal femur, entire leg I and femora II–IV cherry red, chelicerae, most part of cephalic portion, thoracic fovea and radial grooves of carapace darker reddish brown; other segments of palp and legs II–IV dark yellowish orange; clypeus and eye tubercle blackish brown; sternum, labium, maxillae and ventral surface of abdomen including spinnerets yellowish brown; abdomen dorsally uniformly brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 90. Clypeus and eye group as in Fig. 144. Eye diameters and interdistances: AME 0.16(0.20), ALE 0.27, PLE 0.25, PME 0.16; AME–AME 0.17(0.13), ALE–AME 0.14(0.12), ALE–PLE 0.13, PLE–PME 0.06, PME–PME 0.55. Chelicerae with weak rastellum composed in each basal segment of 35–40 thickened spikes in front of fang base. Each cheliceral furrow with 8 promarginal teeth and 4–5 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 209. Maxillae with 30–35 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 266, 296. Tibia and metatarsus IV covered with modified hairs (Fig. 313). Scopula: entire and distal on metatarsi I–II; entire on tarsi I–II; entire but mixed with setae on tarsus III; sparse and widely divided on tarsus IV. Trichobothria: 2 rows of 8–11 each on tibiae, 16–19 on metatarsi, 12–17 on tarsi, 10–11 on cymbium. PTC I–IV with 7–8 teeth on each margin.

SPINATION. Metatarsus I and tarsi I–IV aspinose. Palp: femur d4, pd1, rd1; patella p2; tibia d6, p3, r3, v5; cymbium d4–5 normal + 10–15 small. Leg I: femur d4; patella p1; tibia p3, pv3, r2, rv2+2M. Leg II: femur d4, pd3(2), rd2; patella p3(2); tibia p3, v8(7); metatarsus p3, v6. Leg III: femur d4, pd3, rd3; patella p2(1), r1; tibia d3, p3, r3, v7; metatarsus p5, pd3, r3, v6. Leg IV: femur d4(3), pd3, rd3(2); patella p1, r1; tibia p3, r 3, v 8(7); metatarsus p3, pd3, r5, v8.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 357. Embolus short with basal portion provided with low keel and with hooked apical part (Figs 400–404).

SPINNERETS. See Fig. 571. PMS: length 0.39, diameter 0.16. PLS: maximal diameter 0.67; length of basal, medial and apical segments 0.77, 0.42, 0.41; total length 1.60; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.83 (3.69)	1.85 (1.81)	3.04 (2.38)	–	1.08 (2.37)	9.80 (10.25)
Leg I	6.25 (5.32)	3.43 (2.95)	4.72 (3.62)	4.97 (3.24)	2.80 (2.29)	22.17 (17.42)
Leg II	5.76 (4.79)	3.04 (2.58)	4.10 (2.97)	4.68 (2.99)	2.64 (2.26)	20.22 (15.59)
Leg III	4.69 (3.99)	2.41 (2.18)	3.30 (2.48)	4.41 (3.15)	2.27 (1.96)	17.08 (13.76)
Leg IV	6.34 (5.75)	3.11 (3.21)	5.16 (4.49)	6.83 (5.23)	3.12 (2.97)	24.56 (21.65)

Female (paratype)

HABITUS. See Fig. 42.

MEASUREMENTS. TBL 16.40, CL 6.41, CW 5.56, LL 0.66, LW 1.30, SL 3.49, SW 3.10.

COLOUR. Carapace, palpal femur and femora I–IV dark brownish orange; other segments of palp and legs I–IV lighter brownish orange; chelicerae dark cherry red; eye tubercle with wide and partially fused blackish brown rings around eyes; sternum, labium, maxillae and ventral surface of abdomen including spinnerets yellowish brown; abdomen dorsally uniformly brown as in male.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 117. Clypeus and eye group as in Fig. 173. Eye diameters and interdistances: AME 0.15(0.21), ALE 0.31, PLE 0.25, PME 0.17; AME–AME 0.16(0.10), ALE–AME 0.13(0.10), ALE–PLE 0.14, PLE–PME 0.07, PME–PME 0.47. Chelicerae with weak rastellum composed of 25–30 thickened spikes in front of fang base. Each cheliceral furrow with 8 promarginal teeth and 3–4 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 236. Maxillae with 29–34 cuspules each.

LEGS. Tibia and metatarsus IV covered by dense modified hairs as in Fig. 314. Scopula: distal on metatarsi I–II; entire on palpal tarsus and tarsi I–II; widely divided by setae on tarsus III; vestigial on tarsus IV. Trichobothria: 2 rows of 9–11 each on tibiae, 16–18 on metatarsi, 14–15 on tarsi, 11 on palpal tarsus. Palpal claw with 4 promarginal teeth. PTC I–IV with 8–9 teeth on each margin.

SPINATION. Palpal femur with 3–4 dorsal bristles instead of spines, femora I–IV with one basodorsal spine and 3–4 median and/or apical bristles; palpal patella and patellae I, II and IV, and tarsi I–IV aspinose. Palp: femur pd1; tibia v7(6); tarsus v2. Leg I: femur pd2; tibia v4; metatarsus v5. Leg II: femur pd3; tibia v4(3); metatarsus v6. Leg III: femur pd2(1), rd3(2); patella p2, r1; tibia p2(1), r2, v6(5); metatarsus p3, pd2, rd3, v7. Leg IV: femur rd1; tibia v6; metatarsus r1, v9.

SPERMATHECAE. Each of paired spermathecae asymmetrical with relatively short and wide base carrying two diverging branches: massive trapezoidal inner branch and thin spindle-like outer one (Fig. 508).

SPINNERETS. See Fig. 572. PMS: length 0.58, diameter 0.28. PLS: length of basal, medial and apical segments 1.31, 0.67, 0.66; total length 2.64; apical segment triangular.

Variation

Carapace length in females (n=11) varies from 5.18 to 7.07. For female paratypes, the variations in their colouration, structure of the eye group and conformation of the spermathecae are shown in Figs 67–68, 174, 504–507.

Ecology

The species inhabits short-grass meadows and meadow-steppes in the subalpine and alpine zones. All spiders, including the holotype male, were collected from their relatively deep (of 35–45 cm depth) burrows. See Figs 651–658.

Distribution

Known from two highland localities in Darvaz Mts, Tajikistan (Fig. 752).

Raveniola ignobilis sp. nov.

[urn:lsid:zoobank.org:act:17DD6055-088F-4BEF-A1D6-DD4686AF191C](https://zoobank.org/act:17DD6055-088F-4BEF-A1D6-DD4686AF191C)

Figs 9, 43, 91, 118, 145, 175, 198, 210, 237, 267, 297, 315, 358–359, 403–408, 509, 573–574, 629–631, 752

Diagnosis

Due to its relatively short copulatory bulb, males of *Raveniola ignobilis* sp. nov. resemble the holotype of *R. dolosa* sp. nov., but differ from the latter in possessing two raised opposite keels in the proximal part of the embolus (Figs 403–408 cf. Figs 397–399). The conspecific females are distinguishable by a specific structure of their spermathecae, with long inner and outer branches set very close to each other (Fig. 509) vs differently arranged branches in other related species, where these branches are either shorter (Figs 500–503, 524–525) or broader spaced (Figs 495–499, 520–523).

Etymology

The specific epithet is a Latin adjective meaning ‘obscure’, ‘inglorious’ and referring to a rather middling (or averaged) appearance of these congeners.

Material examined

Holotype

TAJIKISTAN • ♂; Hazratisho Mts, Kapar (Sangdara) Gorge, environs of Sangdara Village; 38°22' N, 70°10' E; 1650 m a.s.l.; 15 Oct. 1987; S. Zonstein leg.; SMNH.

Paratypes (4 ♂♂, 1 ♀, 1 ♀ subad.)

TAJIKISTAN • 4 ♂♂, 1 ♀; same collection data as for preceding; 1450–1800 m a.s.l.; SMNH • 1 ♀ subad.; same collection data as for preceding, Iokunj Gorge; 38°23' N, 70°09' E; 1700 m a.s.l.; 18 May 2002; S. Zonstein leg.; SMNH.

Additional material (1 ♀ subad., 1 juv.)

TAJIKISTAN • 1 ♀ subad.; Hazratisho Mts., 25 km E of Muminabad Town; 24 May 1966; E.M. Andreeva leg.; MIZW • 1 juv.; Darvaz Mts, Hirakdara Canyon between Kalai-Husain and Safedoron Villages; 2300 m a.s.l.; *Juniperus* park forest; 4 Jul. 1970; E.M. Andreeva leg.; MIZW.

Description

Male (holotype)

HABITUS. See Fig. 9.

MEASUREMENTS. TBL 14.40, CL 5.96, CW 5.59, LL 0.45, LW 0.89, SL 3.16, SW 2.87.

COLOUR. Carapace and leg I from femur to basal metatarsus intensely brownish orange; other parts of leg I, and entire palps and legs II–IV, as well as sternum, labium and maxillae lighter brownish orange; eye tubercle with eyes surrounded with partially fused blackish rings, chelicerae light cherry red, abdomen pale greyish brown, dorsally with diffuse and weakly developed brownish chevron-like pattern; book-lungs and spinnerets very pale greyish yellow.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 91. Clypeus and eye group as in Fig. 145. Eye diameters and interdistances: AME 0.15(0.20), ALE 0.27, PLE 0.22, PME 0.16; AME–AME 0.14(0.09),

ALE–AME 0.09(0.06), ALE–PLE 0.09, PLE–PME 0.04, PME–PME 0.32. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 9 promarginal teeth and 5–6 mesobasal denticles. Presumed intercheliceral tumescence poorly discernible, small, maculate and setose (Fig. 198). Sternum, labium and maxillae as shown in Fig. 210. Maxillae with ca 60 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 267, 297. Scopula: entire and distal on metatarsi I–II; entire on tarsi I–II; widely divided on tarsi III–IV. Trichobothria: 2 rows of 9–10 each on tibiae, 13–15 on metatarsi, 12–13 on tarsi, 10 on cymbium. PTC I–II and III–IV with 8–9 and 10–12 teeth on each margin, respectively.

SPINATION. Palp: femur d4, pd1, rd1; patella pd1; tibia d4, p3, r1, v6; cymbium d3(5)+20–25 spikes. Leg I: femur d2+2 bristles, pd3; patella p1; tibia p2, pv2, rv2+2M. Leg II: femur d2+2 bristles, pd3; patella p1; tibia p3, v7; metatarsus p1, v5. Leg III: femur d4, pd3, rd2; patella p2(1), r1; tibia d4, p4, r3, v7; metatarsus d4, p4, r3, v6. Leg IV: femur d3, pd3, rd2; patella p2, r1; tibia d3, p4, r3, v7; metatarsus d1, p4, r3, v8. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Figs 358–359. Embolus with long basal portion provided with low keel and short hooked apical part (Figs 403–405).

SPINNERETS. See Fig. 573. PMS: length 0.48, diameter 0.14. PLS: maximal diameter 0.51; length of basal, medial and apical segments 0.80, 0.49, 0.37; total length 1.66; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.74 (3.74)	1.89 (2.02)	2.92 (2.42)	–	0.97 (2.11)	9.52 (10.29)
Leg I	6.09 (4.84)	3.13 (2.96)	4.80 (3.52)	4.65 (2.64)	2.59 (1.77)	21.26 (15.73)
Leg II	5.70 (4.41)	2.81 (2.59)	4.58 (3.18)	4.39 (2.72)	2.55 (1.78)	20.03 (14.68)
Leg III	4.97 (3.72)	2.09 (2.01)	3.53 (2.45)	4.36 (3.17)	2.57 (1.93)	17.52 (13.28)
Leg IV	6.03 (4.87)	2.49 (2.62)	4.79 (3.51)	6.52 (4.55)	3.01 (2.43)	22.84 (17.98)

Female (paratype)

HABITUS. See Fig. 43.

MEASUREMENTS. TBL 16.60, CL 6.14, CW 5.58, LL 0.69, LW 1.19, SL 3.17, SW 2.86.

COLOUR. Similar to that of male, but dorsal abdominal chevron-like pattern darker and better developed.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 118. Clypeus and eye group as in Fig. 175. Eye diameters and interdistances: AME 0.16(0.22), ALE 0.30, PLE 0.17, PME 0.16; AME–AME 0.11(0.05), ALE–AME 0.10(0.07), ALE–PLE 0.09, PLE–PME 0.03, PME–PME 0.43. Cheliceral rastellum absent. Each cheliceral furrow with 8–9 promarginal teeth and 5–6 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 237. Maxillae with 56–57 cuspules each.

LEGS. Tibia and metatarsus IV as shown in Fig. 315. Scopula: distal on metatarsi I–II; entire on palpal tarsus and tarsi I–II; sparse and widely divided by setae on tarsus III; rudimentary on tarsus IV. Trichobothria: 2 rows of 7–8 each on tibiae, 13–15 on metatarsi, 12–14 on tarsi. Palpal claw with 4 promarginal teeth. PTC I–II and III–IV with 4–5/5–6 and 6–7/8–9 teeth on inner/outer margins, respectively.

SPINATION. All femora with one basodorsal spine and 3–4 median and/or apical bristles; palpal patella, patella I, and tarsi I–IV aspinose. Palp: femur pd1; tibia v7(6); tarsus v3(2). Leg I: femur pd2; tibia v3;

metatarsus v6. Leg II: femur pd3; patella p1; tibia p2, v3; metatarsus v6. Leg III: femur pd3, rd3(2); patella p2, r1; tibia d1, p2, r2, v7; metatarsus d4, p3, r3, v7. Leg IV: femur pd1, rd1; patella p1, r1; tibia d1, p3, r3, v7; metatarsus d1, p4, r4, v8.

SPERMATHECAE. Each of paired spermathecae V-shaped with relatively short and wide base carrying two closely arising, equally thick, long and weakly diverging branches (Fig. 509).

SPINNERETS. See Fig. 574. PMS: length 0.61, diameter 0.23. PLS: maximal diameter 0.63; length of basal, medial and apical segments 1.06, 0.56, 0.28; total length 1.90; apical segment triangular.

Variation

Carapace length in the paratype males (n=4) varies from 5.49 to 6.96. Some variations in the structure of the copulatory bulb as shown in Figs 406–408.

Ecology

The spiders were collected from their retreats under stones in different montane biotopes, mostly from the mixed woodlands at 1400–2300 m, dominated by *Juglans regia* and *Juniperus seravschanica* (Figs 629–631).

Distribution

Tajikistan: Hazratisho and Darvaz Mts. See Fig. 752.

Raveniola insolita sp. nov.

[urn:lsid:zoobank.org:act:A3E8F4A4-7067-4053-A329-41992E5E26D9](https://zoobank.org/urn:lsid:zoobank.org:act:A3E8F4A4-7067-4053-A329-41992E5E26D9)

Figs 10, 92, 146, 211, 268, 360, 409–411, 575, 677, 752

Diagnosis

Habitually, as well as in the structure of the copulatory bulb, the only known male of *Raveniola insolita* sp. nov. resembles males of *R. alajensis* sp. nov. and *R. cucullata* sp. nov. (Figs 10, 411 cf. Figs 4–6, 387, 393–396). However, it differs from the two latter species in having either a noticeably thinner proximal section of the embolus, additionally lacking a raised keel, or a considerably longer palpal tibia, compared with *R. alajensis* and *R. cucullata*, respectively (vs a thicker embolus provided with a long raised keel and a clearly shorter palpal tibia; see Figs 360, 409–410 cf. Figs 352, 354–355, 385–386).

Etymology

The specific epithet ‘*insolita*’ is a Latin adjective (of the feminine gender) that means ‘odd, different, unusual’ and refers to the unusual male characters of the holotype (which are intermediate between those in *Raveniola alajensis* sp. nov. and *R. cucullata* sp. nov., although the two latter species are not very closely related to one another).

Material examined

Holotype

TAJIKISTAN • ♂; Peter I Mts, environs of Yashilkul (also Yashnylkul) Lake; ca 39°07' N, 71°18' E; 3300–3400 m a.s.l.; 29 Jul. 1891; B. Grąbczewski leg.; ZISP.

Description

Male (paratype)

HABITUS. See Fig. 10.

MEASUREMENTS. TBL 14.65, CL 6.58, CW 5.70, LL 0.49, LW 1.03, SL 3.38, SW 2.92.

COLOUR. Carapace, palps and legs dark foxy brown (legs I–II slightly darker than palps and legs III–IV); eye tubercle blackish brown; chelicerae medium reddish brown; sternum, labium, maxillae and abdomen including spinnerets paler yellowish brown; darker chevron-like dorsal abdominal pattern medium brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 92. Clypeus and eye group as in Fig. 146. Eye diameters and interdistances: AME 0.18(0.23), ALE 0.26, PLE 0.19, PME 0.18; AME–AME 0.16(0.11), ALE–AME 0.13(0.11), ALE–PLE 0.13, PLE–PME 0.05, PME–PME 0.42. Anterior cheliceral edge with 30–35 slightly thickened spikes. Each cheliceral furrow with 8 promarginal teeth and 3–4 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 211. Maxillae with 30–31 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 268. Scopula: entire distal on metatarsi I–II; entire on tarsi I–II; narrowly divided with setae on tarsus III; sparse and widely divided on tarsus IV. Trichobothria: 2 rows of 8–10 on tibiae, 14–18 on metatarsi, 15–16 on tarsi, 8–9 on cymbium. PTC I–IV with 9–12 teeth on each margin.

LEG MEASUREMENTS.

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.11	2.09	3.35	–	1.01	10.56
Leg I	6.09	3.15	4.28	5.11	2.78	21.41
Leg II	5.56	2.93	4.12	4.43	2.79	19.83
Leg III	4.82	2.47	3.02	4.35	2.57	17.23
Leg IV	6.11	3.06	4.51	6.13	3.06	22.87

SPINATION. Palp: femur d3, pd2; patella pd1; tibia d4, p3, r3, v6; cymbium d~25 spikes. Leg I: femur d4, pd3, rd3; patella p2; tibia p2, pv3, r3, rv2+2M; metatarsus v1. Leg II: femur d4, pd3, rd2; patella p3; tibia p2, v8; metatarsus p4(3), v6. Leg III: femur d4, pd3, rd2; patella p3, r1; tibia d2, pd3, p4, r3, v7; metatarsus d3, p4, r4, v7; tarsus p1(0), r1(0). Leg IV: femur d4, pd3, rd2; patella p2, r1; tibia d2, p3, r4(3), v9; metatarsus d2, p4, r4, v8; tarsus p1, r1. Tarsi I–II aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 360. Embolus with long basal portion provided with rudimentary keel and shorter hooked apical part (Figs 409–411).

SPINNERETS. See Fig. 575. PMS: length 0.52, diameter 0.17. PLS: maximal diameter 0.56; length of basal, medial and apical segments 0.98, 0.60, 0.52; total length 2.10; apical segment triangular.

Female

Unknown.

Ecology

Judging from the label data, the holotype male was collected in an alpine meadow-steppe biotope at 3300–3400 m a.s.l. (such as shown in Fig. 677). Other details remain unknown.

Distribution

Tajikistan: the eastern part of Peter I Mts. See Fig. 752.

Raveniola karategensis sp. nov.

[urn:lsid:zoobank.org:act:631DA123-F0BE-4C2B-A58E-F073BB22E75B](https://urn.lsid:zoobank.org:act:631DA123-F0BE-4C2B-A58E-F073BB22E75B)

Figs 44, 119, 176, 238, 316–317, 510–512, 576, 659–666, 675, 678–679, 753

Diagnosis

The new species shares with *Raveniola afghana* sp. nov., *R. alajensis* sp. nov. and *R. hirta* sp. nov. the presence of the modified long hairs on the female tibia and metatarsus IV. Females of *R. karategensis* sp. nov. can be distinguished from those of *R. afghana* and *R. hirta* by having a fuzzily ornamented (vs uniformly coloured) abdomen (see Fig. 44 cf. Figs 37, 42), and from females of *R. alajensis* in possessing a less pronounced abdominal pattern and the distinctly configured spermathecae with wider bases, broadly spaced stalks and clearly wider inner branches (Figs 44, 510–512 cf. Figs 38, 491–493).

Etymology

The specific epithet is a toponym referring to the range of this species, confined to the historical area Karategin (also Karategen), an eastern province of the Bukhara Emirate in the 19th century, which included the Karategin Mts and Peter I Mts.

Material examined

Holotype

TAJIKISTAN • ♀; Peter I Mts (southern slope), Harvikush Canyon, 35 km ENE of Tavildara Village; 38°52' N, 70°49' E; 1900–2200 m a.s.l.; 10 Jul. 2019; S. Zonstein and A. Hakimov leg.; SMNH.

Paratypes (10 ♀♀)

TAJIKISTAN • 4 ♀♀; same collection data as for preceding; SMNH • 3 ♀♀; same collection data as for preceding; 9 Jul. 1978; V.I. Ovcharenko leg.; SMNH • 3 ♀♀; same collection data as for preceding; ZISP.

Description

Female (holotype)

HABITUS. See Fig. 44.

MEASUREMENTS. TBL 20.95, CL 7.46, CW 6.10, LL 0.59, LW 1.37, SL 3.88, SW 3.45.

COLOUR. Carapace dull reddish brown with clypeus and eye tubercle even darker brown, eyes encircled with partially fused wide blackish brown rings; chelicerae dark cherry red brown; sternum, labium, maxillae, epigastrium, book-lungs and spinnerets light yellowish brown; palps and legs light to medium brownish orange; abdomen medium brown, dorsally with several small light brownish spots and diffuse dark brown chevron-like pattern.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 119. Clypeus and eye group as in Fig. 176. Eye diameters and interdistances: AME 0.16(0.20), ALE 0.28, PLE 0.28, PME 0.19; AME–AME 0.21(0.17), ALE–AME 0.20(0.18), ALE–PLE 0.22, PLE–PME 0.09, PME–PME 0.55. Weak rastellum composed of 30–40 slightly thickened spikes on anterior cheliceral edge. Each cheliceral furrow with 9 promarginal teeth and 6–7 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 238. Maxillae with 26–29 cuspules each.

LEGS. Tibia and metatarsus IV densely covered with long modified hairs, as shown in Fig. 316. Scopula: entire and distal on metatarsi I–II; entire on palpal tarsus and tarsi I–II; sparse and widely divided by setae on tarsi III–IV. Trichobothria: 2 rows of 8–9 each on tibiae, 15–17 on metatarsi, 17–20 on tarsi. Palpal claw with 4 promarginal teeth. PTC I–IV with 6–7 teeth on each margin.

LEG MEASUREMENTS.

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.74	1.98	2.47	–	2.47	10.66
Leg I	5.19	2.97	3.63	3.34	2.35	17.48
Leg II	4.61	2.26	2.73	2.92	2.36	14.88
Leg III	4.26	2.23	2.51	3.41	2.19	14.60
Leg IV	5.83	3.12	4.42	5.91	2.96	22.24

SPINATION. All femora with one basodorsal spine and 3–4 median and/or apical bristles; tarsi I–IV aspinose. Palp: femur pd1; patella p1; tibia p1(0), v6; tarsus v2. Leg I: femur pd2; patella p1; tibia p1(0), v4; metatarsus v4. Leg II: femur pd3; patella p1; tibia p2, v6; metatarsus v7(6). Leg III: femur pd4(3), rd3; patella p3, r2(1); tibia d1, p2, r3, v7; metatarsus p2, r3, v7. Leg IV: femur rd3(2); patella r1; tibia r3, v7; metatarsus p2, r4, v9.

SPERMATHECAE. Each of paired spermathecae U-shaped with a relatively low and wide base carrying two more or less broadly spaced and unevenly shaped branches: a longer and wider trapezoidal inner branch and a more slender, shorter and club-like outer one (Fig. 510).

SPINNERETS. See Fig. 576. PMS: length 0.89, diameter 0.36. PLS: length of basal, medial and apical segments 1.55, 0.73, 0.42; total length 2.70; apical segment triangular.

Male

Unknown.

Variation

Carapace length in paratype females (n=7) varies from 6.71 to 7.88. All the examined females are habitually very similar to each other. Variations in the structure of the eye group, tibia and metatarsus IV, and the spermathecae as shown in Figs 177, 317, 511–512.

Ecology

The spiders were found in the midland zone at an altitude of 1900–2000 m a.s.l. inhabiting open woodland dominated by *Juniperus seravschanica*. Females of *Raveniola karategensis* sp. nov. live in open burrows of 30–40 cm depth, provided with a weakly silk-lined entrance rim, walls and living chamber (Figs 659–666, 675, 678–679).

Distribution

Tajikistan: Peter I Mts. See Fig. 753.

***Raveniola ornata* sp. nov.**

[urn:lsid:zoobank.org:act:2E6AD8A1-010C-439E-8EA5-3AD43C180B86](https://zoobank.org/act:2E6AD8A1-010C-439E-8EA5-3AD43C180B86)

Figs 11, 45–46, 72, 93, 120, 147, 178, 212, 239, 269, 298, 361, 412–414, 513–516, 577–580, 667–673, 753

Diagnosis

The new species shares with *R. ornatula* sp. nov. a denser (than usual) dorsal abdominal pattern, a wide roundish sternum, small PMS and an ornamented ventral surface of the abdomen, but can be distinguished from the latter in possessing a sparser ventral abdominal pattern (Figs 11, 45–46, 212, 239, 577–580 cf. Figs 12, 47, 213, 240, 581–583). Males of *R. ornata* sp. nov. differ from males of *R. ornatula* in having a long and narrow basal section of the embolus considerably exceeding the tegulum in its

length (Figs 412–414 cf. Figs 415–417). The conspecific females can be distinguished from females of *R. ornatula* in possessing smaller but more numerous maxillary cuspules, as well as longer and narrower basal (inner) branches of the spermathecae (Figs 239, 513–516 cf. Figs 240, 517–519).

Etymology

The specific epithet is a Latin adjective meaning ‘ornate’, ‘ornamented’, ‘decorated’, and refers to a fine dorsal abdominal pattern characteristic for this species.

Material examined

Holotype

TAJIKISTAN • ♂; Sanglok Mts, northeastern slope above Sharshar Pass; 38°18′ N, 69°14′ E; 1880 m a.s.l.; 5 May 1991; S. Zonstein leg.; SMNH.

Paratypes (1 ♂, 16 ♀♀)

TAJIKISTAN • 1 ♂, 3 ♀♀; same collection data as for preceding; 1600–2200 m a.s.l.; 3–5 May 1991; S. Zonstein leg.; SMNH • 2 ♀♀; Gazimailik Mts, eastern slope, 7–8 km WNW of Ganjina Village; 37°59′ N, 68°29′ E; 1700–1800 m a.s.l.; 20 Apr. 1989; S. Zonstein leg.; SMNH • 7 ♀♀; same collection data as for preceding; 1900–2050 m a.s.l.; 18 Apr. 1991; S. Zonstein leg.; SMNH • 4 ♀♀; Panj Karatau Mts, northeastern slope of Mt Astana; 37°23′ N, 69°15′ E; 1500–1600 m a.s.l.; 25 Apr. 1990; S. Zonstein leg.; SMNH.

Additional material (2 juvs)

TAJIKISTAN • 1 juv.; Vahsh Karatau Mts, northern slope of Mt Hojamaston; 37°59′ N, 68°58′ E; 1900 m a.s.l.; 24 Apr. 1989; S. Zonstein leg.; SMNH.

UZBEKISTAN • 1 juv.; Babatag Mts, 2.5 km ESE of Mt Zarkassa; 37°58′ N, 68°11′ E; 1800 m a.s.l.; 1 May 1995; S. Zonstein leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 11.

MEASUREMENTS. TBL 13.25, CL 5.94, CW 5.53, LL 0.43, LW 0.89, SL 2.84, SW 2.70.

COLOUR. Carapace and leg I from femur to metatarsus medium foxy brown; tarsus I, and entire palps and legs II–IV lighter foxy brown; eye tubercle with eyes surrounded with partially fused blackish rings, chelicerae light cherry red; sternum, labium and maxillae light brownish orange; abdomen pale yellowish brown with numerous brownish marks forming well-developed reticulate pattern on dorsal side and incomplete spotted pattern on ventral side; book-lungs and spinnerets pale yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 93. Clypeus and eye group as in Fig. 147. Eye diameters and interdistances: AME 0.17(0.23), ALE 0.26, PLE 0.19, PME 0.17; AME–AME 0.15(0.09), ALE–AME 0.13(0.10), ALE–PLE 0.10, PLE–PME 0.04, PME–PME 0.48. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 7 promarginal teeth and 4–5 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 212. Maxillae with 28–30 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 269, 298. Scopula: entire and distal on metatarsi I–II; entire on tarsi I–II; vestigial on tarsi III–IV. Trichobothria: 2 rows of 9–10 each on tibiae, 13–15 on metatarsi, 11–12 on tarsi, 8 on cymbium. PTC I–IV with 8–10 teeth on each margin.

SPINATION. Palp: femur d3, pd2, rd1; patella pd1; tibia d3, p3, r2, v5; cymbium d3(4)+12–15 spikes. Leg I: femur d3, pd3; patella p1; tibia p2, pv1, rv2+2M. Leg II: femur d3, pd3, rd3; patella p1; tibia p3, v7; metatarsus p1, v4. Leg III: femur d4, pd3, rd2; patella p2, r1; tibia d4, p4, r3, v7; metatarsus d4, p4, r3, v7. Leg IV: femur d4, pd3, rd2(1); patella p2, r1; tibia d2, p4, r3, v8; metatarsus d5, p4, r4, v9. Metatarsus I and tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 361. Embolus with long basal portion lacking keel and moderately short twisted apical part (Figs 412–414).

SPINNERETS. See Fig. 577. PMS: length 0.33, diameter 0.12. PLS: maximal diameter 0.46; length of basal, medial and apical segments 0.76, 0.44, 0.52; total length 1.72; apical segment short digitiform.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.71 (3.85)	1.78 (2.05)	2.73 (2.69)	–	0.99 (2.32)	9.21 (10.91)
Leg I	5.97 (5.26)	3.24 (3.31)	4.56 (3.97)	4.93 (3.48)	2.71 (2.28)	21.41 (18.30)
Leg II	5.69 (5.02)	2.81 (2.85)	4.30 (3.57)	4.96 (3.44)	2.70 (2.27)	20.46 (17.15)
Leg III	4.82 (4.61)	2.45 (2.43)	3.65 (2.97)	5.05 (4.04)	2.59 (2.43)	18.56 (16.48)
Leg IV	6.01 (5.93)	2.86 (2.88)	4.66 (4.14)	6.63 (5.69)	2.96 (2.75)	23.12 21.39)

Female (paratype from Sanglok Mts)

HABITUS. See Fig. 46.

MEASUREMENTS. TBL 19.85, CL 6.74, CW 6.29, LL 0.61, LW 1.38, SL 3.37, SW 3.39.

COLOUR. As in male.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 120. Clypeus and eye group as in Fig. 178. Eye diameters and interdistances: AME 0.20(0.26), ALE 0.32, PLE 0.24, PME 0.17; AME–AME 0.22(0.16), ALE–AME 0.16(0.13), ALE–PLE 0.16, PLE–PME 0.08, PME–PME 0.59. Cheliceral rastellum absent. Each cheliceral furrow with 7 promarginal teeth and 5–6 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 239. Maxillae with 53–55 cuspules each.

LEGS. Scopula: distal on metatarsi I–II; entire on palpal tarsus and tarsus I–II; vestigial on tarsi III–IV. Trichobothria: 2 rows of 9–11 each on tibiae, 16–18 on metatarsi, 13–16 on tarsi. Palpal claw with 6 promarginal teeth. PTC I–IV with 7–8 and 10–11 teeth on inner and outer margins, respectively.

SPINATION. Femora I–IV with 1–2 basodorsal spines and 2–3 dorsal bristles; palpal patella, patella I, and tarsi I–IV aspinose. Palp: femur d3, pd1; tibia p1, v7; tarsus v3(2). Leg I: femur pd1; tibia p1, v5; metatarsus v6(5). Leg II: femur pd3; patella p1; tibia p2(1), v6(5); metatarsus v6. Leg III: femur pd2, rd2; patella p2, r1; tibia d1, p2, r2, v7(6); metatarsus p4, r2, v7. Leg IV: femur rd1; patella r1; tibia d1, p3, r3, v7; metatarsus p4, r4, v7(6).

SPERMATHECAE. Each of paired spermathecae Y-shaped; a relatively high and narrow base together with inner branch form spermathecal trunk; the latter carries a club-like outer branch diverging close to medium part of this structure (Fig. 515).

SPINNERETS. See Figs 578–579. PMS: length 0.52, diameter 0.19. PLS: maximal diameter 0.78; length of basal, medial and apical segments 1.05, 0.69, 0.88; total length 2.62; apical segment short digitiform.

Variation

Carapace length in males (n=2) varies from 3.67 to 5.94, in females (n=11) from 5.37 to 6.74. Variation in details of the coloration, and in structure of the spermathecae as shown in Figs 45, 72, 513–514, 516.

Ecology

Raveniola ornata sp. nov. inhabits montane slopes and flattened summits between 1500 and 2200 m a.s.l., covered by shrubland and open park forest dominated by species of *Acer* L., *Prunus* L., *Juniperus seravschanica* and *Cercis griffithii* Boiss. (Figs 667–673). All spiders were found under stones.

Distribution

The far southern Uzbekistan and the southwestern Tajikistan. Despite a thorough search, the spiders were not found at altitudes below 1500 m a.s.l. (although the bottoms of intermontane semidesert valleys are located at an altitude of 500–1000 m a.s.l.). Therefore, the known species range is not continuous. The range of this species is mosaic, since all above-listed localities are confined to the upper zone of several low ridges (representing, within the entire area, the less aridized isolated biotopes); currently, these are entirely separated from each other. See Fig. 753.

Raveniola ornatula sp. nov.

[urn:lsid:zoobank.org:act:5B8115AD-5059-44AC-80CB-5B4CA05A8158](https://zoobank.org/urn:lsid:zoobank.org:act:5B8115AD-5059-44AC-80CB-5B4CA05A8158)

Figs 12, 47, 94, 121, 148, 179, 213, 240, 270, 299–300, 362, 415–417, 517–519, 581–583, 674, 753

Diagnosis

The new species shares with *R. ornata* sp. nov. a rich dorsal abdominal pattern, a wide roundish sternum, small PMS and a more or less densely ornamented ventral surface of the abdomen, but can be distinguished from the latter in possessing an even denser ventral abdominal pattern (Figs 12, 47, 213, 240, 581–583 cf. Figs 11, 45–46, 212, 239, 577–580). Males of *R. ornatula* sp. nov. differ from males of the latter species in having a shorter and wider basal section of the embolus (Figs 415–417 cf. Figs 412–414). The conspecific females can be distinguished from females of *R. ornata* in possessing larger but less numerous maxillary cuspules, as well as shorter and stouter basal (inner) branches of the spermathecae (Figs 240, 517–519 cf. Figs 239, 513–516).

Etymology

The specific epithet is a Latin adjective meaning ‘decorated’; the name refers to a very dense maculate dorsal and ventral abdominal pattern; it should also emphasize the similarity of this species to a closely related congener, *Raveniola ornata* sp. nov.

Material examined

Holotype

TAJIKISTAN • ♂; Hazratisho Mts, Yahsu Canyon, Sangdara Gorge; 38°22' N, 70°10' E; 1450 m a.s.l.; 15 Oct. 1987; S. Zonstein leg.; SMNH.

Paratypes

TAJIKISTAN • 1 ♂, 5 ♀♀; same collection data as for preceding; 1450–1800 m a.s.l.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 12.

MEASUREMENTS. TBL 11.35, CL 4.27, CW 3.94, LL 0.30, LW 0.81, SL 2.12, SW 2.01.

COLOUR. Carapace, palps and legs medium brownish orange (all appendages gradually lighten toward apices); eye tubercle with AMEs widely bordered and other eyes emarginated with blackish coloured cuticle, chelicerae reddish orange; sternum, labium and maxillae pale brownish yellow; abdomen yellowish brown with numerous brownish marks forming well-developed reticulate pattern on both dorsum and side; book-lungs and spinnerets pale yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 94. Clypeus and eye group as in Fig. 148. Eye diameters and interdistances: AME 0.14(0.20), ALE 0.26, PLE 0.14, PME 0.14; AME–AME 0.14(0.08), ALE–AME 0.09(0.06), ALE–PLE 0.10, PLE–PME 0.07, PME–PME 0.34. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 7 promarginal teeth and 5–6 relatively large and raised mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 213. Maxillae with 30–31 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 270, 299. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided with setae on tarsus II; absent on tarsi III–IV. Trichobothria: 2 rows of 8–9 each on tibiae, 11–13 on metatarsi, 11–12 on tarsi, 7–8 on cymbium. PTC I–II and III–IV with 8–10 and 9–11 teeth on each margin, respectively.

SPINATION. Palp: femur d3, pd2; patella pd1; tibia d2, p3, r2, v6; cymbium d6(4). Leg I: femur d4, pd3, rd3(2); patella p1; tibia p2, pv2, rv2+2M; metatarsus v1(0). Leg II: femur d4, pd3; patella p1; tibia p3, v7(6); metatarsus v5(4). Leg III: femur d4, pd3, rd3(2); patella p2, r1; tibia d2, p3(2), r4(3), v7; metatarsus d2, p3, r3, v7. Leg IV: femur d4, pd3, rd2; patella p1, r1; tibia d2, p3, r3, v7; metatarsus d3, p4, r4, v9. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 362. Embolus with short and conical basal portion lacking keel, and with even shorter and twisted apical part (Figs 415–417).

SPINNERETS. See Fig. 581. PMS: length 0.31, diameter 0.10. PLS: maximal diameter 0.38; length of basal, medial and apical segments 0.58, 0.43, 0.42; total length 1.43; apical segment shortly digitiform.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.60 (2.41)	1.44 (1.40)	1.99 (2.02)	–	0.70 (1.43)	6.73 (7.26)
Leg I	4.28 (3.32)	2.19 (2.16)	3.14 (2.33)	3.60 (1.98)	2.15 (1.35)	15.36 (11.14)
Leg II	3.85 (3.07)	2.13 (1.98)	2.89 (2.07)	3.29 (1.96)	2.11 (1.33)	14.27 (10.41)
Leg III	3.23 (2.67)	1.59 (1.82)	2.25 (1.70)	3.34 (2.24)	2.08 (1.49)	12.49 (9.92)
Leg IV	4.37 (3.44)	1.91 (1.99)	3.16 (2.58)	4.65 (3.15)	2.33 (1.74)	16.42 (12.90)

Female (paratype)

HABITUS. See Fig. 47.

MEASUREMENTS. TBL 12.50, CL 4.32, CW 3.90, LL 0.37, LW 1.04, SL 2.08, SW 2.07.

COLOUR. As in male, but carapace and legs paler yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 121. Clypeus and eye group as in Fig. 179. Eye diameters and interdistances: AME 0.14(0.20), ALE 0.27, PLE 0.16, PME 0.12; AME–AME 0.16(0.10), ALE–AME 0.09(0.06), ALE–PLE 0.08, PLE–PME 0.08, PME–PME 0.32. Cheliceral rastellum absent. Each cheliceral furrow with 7 long promarginal teeth and 4–6 relatively large mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 240. Maxillae with ca 35 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; narrowly divided on palpal tarsus; widely divided on tarsi I–II; absent on tarsi III–IV. Trichobothria: 2 rows of 7–8 each on tibiae, 8–10 on metatarsi, 10–11 on tarsi I–IV, 8 on palpal tarsus. Palpal claw with 6–7 promarginal teeth. PTC I–II and III–IV with 6–7 and 8–9 short teeth on each margin, respectively.

SPINATION. Palpal femur and femora I–II with 1 basodorsal spine and 3–4 dorsal bristles; palpal patella, patella I, and tarsi I–IV aspinose. Palp: femur pd1; tibia v7; tarsus v2. Leg I: femur pd1; tibia p1, v3; metatarsus v6(4). Leg II: femur pd1; patella p1; tibia p1, v5(4); metatarsus v7. Leg III: femur d4, pd3, rd3(2); patella p2, r1; tibia d1, p2, r1, v7; metatarsus p3, r3, v7. Leg IV: femur d4, rd1; patella p1(0), r1; tibia p2, r3, v7; metatarsus p3, r2, v7.

SPERMATHECAE. Each of paired spermathecae Y-shaped with relatively short and wide basic (inner) branch and diverging from this structure long outer branch (Fig. 517).

SPINNERETS. See Figs 582–583. PMS: length 0.32, diameter 0.09. PLS: maximal diameter 0.43; length of basal, medial and apical segments 0.85, 0.39, 0.38; total length 1.62; apical segment short digitiform.

Variation

Carapace length in the only male paratype is 4.18, in the female paratypes (n=5) it ranges from 3.98 to 4.83. Variation in the structure of the metatarsus I in male and the spermathecae as shown in Figs 300, 518–519.

Ecology

Raveniola ornatula sp. nov. was found in the midland mountain zone of Hazretisho Mts. where it inhabits (sympatrically with *R. cucullata* sp. nov. and *R. ignobilis* sp. nov.) shrubs and fragmentary broad-leaved woodlands dominated by *Acer* spp. and *Juglans regia* (Fig. 674). All spiders were found under stones.

Distribution

Known only from the type locality. See Fig. 753.

Raveniola pamira sp. nov.

[urn:lsid:zoobank.org:act:F8D21997-9A6A-4B66-80D3-10638D797C48](https://zoobank.org/urn:lsid:zoobank.org:act:F8D21997-9A6A-4B66-80D3-10638D797C48)

Figs 13, 14, 48, 95–96, 122, 149–150, 180, 214–215, 241, 271–272, 301–302, 318, 334–336, 363–364, 418–428, 520–523, 584–586, 676, 680–690, 754

Diagnosis

Males of *Raveniola pamira* sp. nov. can be distinguished from those of the related species in possessing a differently built basal section of the embolus, which appears to be either considerably longer than that in *R. dolosa* sp. nov. and *R. ignobilis* sp. nov. or provided with smaller and lower embolic keels than those in *R. cucullata* sp. nov. (Figs 418–428 cf. Figs 389–399, 403–408). In females of *R. pamira*, the spermathecal branches are either shorter or separated broader from each other than those in *R. cucullata*, *R. dolosa* and *R. ignobilis*, or they are longer and stronger than those branches in *R. sororcula* sp. nov. (Figs 520–523 cf. Figs 495–503, 509, 524–525).

Etymology

The specific epithet is a toponym referring to the range of this species: the Pamir(s) mountain system.

Material examined

Holotype

TAJIKISTAN • ♂; Western Pamir, Darvaz Mts (southern slope), Obiviskharvi Canyon, 9 km NE of Ubagan Village; 38°34.9' N, 71°09.2' E; 2800–3000 m a.s.l.; 14 Jul. 1988; S. Zonstein leg.; SMNH.

Paratypes (4 ♂♂, 11 ♀♀)

TAJIKISTAN • 1 ♀; same collecting data as for holotype; SMNH • 4 ♂♂, 8 ♀♀; same collecting data as for preceding, Ubagandara Gorge, surroundings of Ubagan Village; 38°32' N, 71°03' E; 1950–2100 m a.s.l.; 15 Jul. 1988; S. Zonstein leg.; SMNH • 2 ♀♀; same collecting data as for preceding, environs of the abandoned Viskharvi-Bolo Village; 38°33' N, 71°05' E; 2100–2300 m a.s.l.; 13 Jul. 2019; S. Zonstein leg.; SMNH.

Additional material (1 ♀, 1 ♀ subad., 3 juvs)

TAJIKISTAN • 1 ♀ subad., 3 juvs; Darvaz Mts, Sagirdasht Pass; 38°38' N, 70°43' E; 3400 m a.s.l.; 27 May 1970; E.M. Andreeva leg.; MIZW • 1 ♀; Peter I Mts, Childara Canyon, Shahobdara Gorge, 4 km NNW of Shahob Village; 38°51' N, 70°18' E; 1900–2100 m a.s.l.; 12 Jul. 1988; S. Zonstein leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 13.

MEASUREMENTS. TBL 16.65, CL 7.19, CW 6.44, LL 0.72, LW 1.10, SL 3.36, SW 3.07.

COLOUR. Carapace and leg I from femur to basal metatarsus brownish orange; other parts of leg I, and entire palps and legs II–IV, as well as sternum, labium and maxillae lighter brownish orange; eye tubercle with eyes surrounded with partially fused blackish rings, chelicerae light cherry red, abdomen including spinnerets pale yellowish brown, dorsally with distinct chestnut brown chevron-like pattern, ventrally with few small brownish marks.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 95. Clypeus and eye group as in Fig. 149. Eye diameters and interdistances: AME 0.15(0.19), ALE 0.32, PLE 0.20, PME 0.17; AME–AME 0.16(0.12), ALE–AME 0.10(0.08), ALE–PLE 0.14, PLE–PME 0.04, PME–PME 0.38. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 9 promarginal teeth and 7–8 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 214. Maxillae with ca 70 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 271, 301. Scopula: entire and distal on metatarsi I–II; entire on tarsi I–II; widely divided on tarsi III–IV. Trichobothria: 2 rows of 9–10 each on tibiae, 15–22 on metatarsi, 15–19 on tarsi, 10–11 on cymbium. PTC I–IV with 9–11 teeth on each margin.

SPINATION. Palp: femur d4, pd1, rd1; patella p2; tibia d4(3), p2, r3, v6(5); cymbium d7(5)+3–4 spikes. Leg I: femur d4, pd3, rd3; patella p2; tibia p3(2), pv2, r1, rv2+2M. Leg II: femur d4, pd3, rd1; patella p2; tibia p3, v7; metatarsus v5. Leg III: femur d4, pd3, rd2; patella p2, r1; tibia d3(1), p2, r3, v7; metatarsus d4, p3, r3, v5. Leg IV: femur d4(3), pd3, rd3(2); patella p1, r1; tibia d2, p3, r3, v9(8); metatarsus dp5(4), p3, r3, v8. Metatarsus I and tarsi I–IV aspines.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 363. Embolus with long basal portion provided with low keel and short hooked apical part (Figs 418–422).

SPINNERETS. PMS: length 0.44, diameter 0.21. PLS: maximal diameter 0.58; length of basal, medial and apical segments 1.25, 0.81, 0.73; total length 2.79; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.86 (4.49)	2.32 (2.53)	3.38 (3.51)	–	1.12 (2.93)	10.68 (13.46)
Leg I	6.58 (6.89)	3.47 (4.11)	5.57 (5.21)	5.65 (4.24)	2.92 (2.82)	24.19 (23.27)
Leg II	6.42 (6.46)	3.18 (3.73)	5.18 (4.60)	5.69 (4.20)	2.80 (2.83)	23.27 (21.82)
Leg III	5.54 (5.36)	2.81 (2.81)	4.03 (3.52)	5.29 (4.68)	2.67 (2.74)	20.34 (19.11)
Leg IV	6.64 (6.87)	2.97 (3.33)	5.10 (5.03)	7.23 (6.38)	3.07 (3.20)	25.01 (24.81)

Female (paratype)

HABITUS. See Fig. 48.

MEASUREMENTS. TBL 23.70, CL 8.81, CW 7.74, LL 0.86, LW 1.55, SL 4.44, SW 3.97.

COLOUR. Similar to that of male, except for evenly light brownish orange legs I–IV and dark cherry red chelicerae.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 122. Clypeus and eye group as in Fig. 180. Eye diameters and interdistances: AME 0.18(0.24), ALE 0.32, PLE 0.22, PME 0.20; AME–AME 0.19(0.13), ALE–AME 0.19(0.16), ALE–PLE 0.26, PLE–PME 0.08, PME–PME 0.66. Cheliceral rastellum absent. Each cheliceral furrow with 9 promarginal teeth and 8 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 241. Maxillae with ca 70 cuspules each.

LEGS. Tibia and metatarsus IV as shown in Fig. 318. Scopula: entire and distal on metatarsi I–II; entire and dense on palpal tarsus and tarsi I–II; sparser and widely divided by setae on tarsi III–IV. Trichobothria: 2 rows of 9–11 each on tibiae, 14–18 on metatarsi, 13–15 on tarsi. Palpal claw with 4 promarginal teeth. PTC I–II and III–IV with 7–9 and 9–11 teeth on each margin, respectively.

SPINATION. All femora with one basodorsal spine and 3–4 long dorsal spine-like setae. Palpal patella, patella I and tarsi I–IV aspinose. Palp: femur pd2, rd1; tibia p2, v7; tarsus v4. Leg I: femur pd3; tibia p2, v5; metatarsus v6. Leg II: femur pd4; patella p1; tibia p3, v6; metatarsus v7. Leg III: femur pd3(1), rd3(2); patella p2, r1; tibia d1, p2, r3, v7; metatarsus d3, p3, r3, v7. Leg IV: femur rd2; patella p1, r1; tibia p3, r3(2), v7; metatarsus d2, p4, r3, v10.

SPERMATHECAE. Each of paired spermathecae U-shaped with relatively low and wide base carrying two unevenly thick branches: long, stout and apically mostly trilobate inner brach, and a similarly long but much more slender and undivided outer branch (Fig. 520).

SPINNERETS. See Figs 585–586. PMS: length 1.06, diameter 0.32. PLS: length of basal, medial and apical segments 1.64, 0.97, 0.88; total length 3.49; apical segment triangular.

Variation

Carapace length in males (n=4) ranges from 5.66 to 7.19, in females (n=9) from 5.65 to 8.81. Variations in the colouration and in the conformation of the eye group, sternum, labium and maxillae are shown in Figs 14, 96, 215; in the shape of the male tibia I, metatarsus I and palp in Figs 272, 302, 364; in the structure of the copulatory bulb and the spermathecae in Figs 323–328 and 521–523. The structural peculiarities of tarsus I are shown in Fig. 336.

Ecology

The spiders were found in riverside gallery woodlands dominated by *Juglans regia* and in the above-located subalpine and alpine meadow biotopes. All specimens were collected from their retreats under stones (Figs 676, 680–690).

Distribution

Known from the mid-mountain and highland zones of Darvaz Mts and Peter I Mts. See Fig. 754.

Remarks

Andreeva (1975, 1976) mentioned “*Brachythele* sp.”, unexpectedly found in the highlands of Darvaz Mts at altitudes of 3400 m (Sagirdasht Pass) and 3500–3700 m (“in the upper parts of the Viskharv Valley”). In the course of the current study, the specimens from the former locality, deposited in MIZW, were examined and identified as belonging to *R. pamira* sp. nov. (see the list of the additional material above).

Raveniola sororcula sp. nov.

[urn:lsid:zoobank.org:act:8ECBE7DA-43F6-4D99-96B6-C87823C6E986](https://zoobank.org/act:8ECBE7DA-43F6-4D99-96B6-C87823C6E986)

Figs 49, 123, 181, 242, 524–525, 587–588, 691, 698, 754

Diagnosis

The rich and dense dorsal ornament of the abdomen in the new species resembles that in *Raveniola ornata* sp. nov. and *R. ornatula* sp. nov. (Fig. 49 cf. Figs 45–47). However, unlike these congeners, *R. sororcula* sp. nov. possesses a broadly oval sternum, medium-sized PMS and a very short apical segment of the PMS (vs a subcircular sternum, small PMS and digitiform apical segment of PLS; Figs 242, 587–588 cf. Figs 239–240, 579, 582) and lacks any more-or-less developed ventral abdominal pattern (such as shown in Figs 580, 583). In the structure of the spermathecae, *R. sororcula* seems to be similar to *R. dolosa* sp. nov. (Figs 524–525 cf. Figs 500–503); however, it differs from the latter species in possessing clearly larger PMS, compared with small PMS in *R. dolosa* (see Fig. 587 cf. Figs 569–570). Finally, this new species differs from the sympatric congener, *R. pamira* sp. nov., in having a weak cheliceral rastellum and a shorter apical segment of the PLS (vs the absence of rastellar setae and a noticeably longer apical segment of the PLS in the latter species; see Fig. 586 cf. Fig. 588).

Etymology

The specific epithet is a Latin noun meaning ‘a little sister’; the name refers to a smaller species size, compared to that of a larger sibling neighbor, *R. pamira* sp. nov.

Material examined

Holotype

TAJIKISTAN • ♀; Western Pamir, Darvaz Mts (southern slope), Obiviskharvi Canyon, environs of Hurk Village; 38°31' N, 71°02' E; 1600–1700 m a.s.l.; 15 Jul. 2019; S. Zonstein and A. Hakimov leg.; SMNH.

Paratypes (3 ♀♀)

TAJIKISTAN • 2 ♀♀; same collection data as for holotype; SMNH • 1 ♀; same collection data as for preceding, surroundings of Ubagan Village; 38°32' N, 71°03' E; 1950–2100 m a.s.l.; 15 Jul. 1988; S. Zonstein leg.; SMNH.

Description

Female (holotype)

HABITUS. See Fig. 49.

MEASUREMENTS. TBL 18.35, CL 6.77, CW 6.10, LL 0.64, LW 1.21, SL 3.55, SW 3.17.

COLOUR. Carapace dark reddish brown; eye tubercle dark brown with eyes encircled with wide blackish brown rings; chelicerae very dark cherry brown; sternum, labium, maxillae, palps and legs I–IV medium

to dark brownish orange; abdomen medium fawn brown, dorsally with rich and dense dark reddish brown reticulate ornament (similar in its shade and intensity to carapace colouration); book lungs, epigastrium and spinnerets light yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 123. Clypeus and eye group as in Fig. 181. Eye diameters and interdistances: AME 0.15(0.21), ALE 0.29, PLE 0.22, PME 0.15, AME–AME 0.16(0.10), ALE–AME 0.14(0.11), ALE–PLE 0.16, PLE–PME 0.10, PME–PME 0.47. Dorsodistal edge of chelicerae with a transverse row of ca 20 thickened and partially broken setae in front of fang base. Each cheliceral furrow with 8 promarginal teeth and 7–8 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 242. Maxillae with ca 80 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; entire on palpal tarsus and tarsi I–II; widely divided by setae on tarsi III–IV. Trichobothria: 2 rows of 9–10 each on tibiae, 15–18 on metatarsi, 11–16 on tarsi. Palpal claw with 5 promarginal teeth. PTC I–II and III–IV with 4–7 and 7–8 teeth on each margin, respectively.

LEG MEASUREMENTS

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.94	1.85	2.63	–	2.34	10.76
Leg I	5.15	3.13	3.84	2.94	2.03	17.09
Leg II	4.82	3.02	3.20	3.03	2.12	16.19
Leg III	3.95	2.48	2.43	3.15	1.84	13.85
Leg IV	5.32	2.87	3.60	4.81	2.37	18.97

SPINATION. All femora I–II with one basodorsal spine and 3–4 dorsal bristles. Palpal patella, patella I and tarsi I–IV aspinose. Palp: femur pd1; tibia p2, v8(7); tarsus v5(4). Leg I: femur pd1; tibia p1, v5(4); metatarsus v6. Leg II: femur pd3; patella p1; tibia p2, v5; metatarsus v6. Leg III: femur pd3, rd2; patella p2, r1; tibia d2, p2, r3, v7; metatarsus d3, p4, r3, v7. Leg IV: femur pd1, rd1; patella r1; tibia p2, r3, v7; metatarsus d1, p3, r3, v10(8).

SPERMATHECAE. Each of paired spermathecae provided with low and wide base carrying two thin and weakly diverging branches (Fig. 524).

SPINNERETS. See Figs 587–588. PMS: length 0.64, diameter 0.22. PLS: maximal diameter 0.74; length of basal, medial and apical segments 1.22, 0.63, 0.30; total length 2.15; apical segment shortly triangular and obliquely truncated from base to apex in lateral view.

Male

Unknown.

Variation

Carapace length in three paratype females varies from 6.72 to 7.79. Variation in the structure of the spermathecae as shown in Fig. 525.

Ecology

The spiders were found under stones along the stream in the riverside gallery woodland dominated by *Juglans regia*. Their retreats and females with cocoons are shown in Figs 691–698.

Distribution

Known only from the type locality. See Fig. 754.

Raveniola diluta species group

Diagnostic characters

Maxillae with a few cuspules confined to probasal maxillary edge (Figs 216–219, 243–246). PMS absent; apical segment of PLS triangular or shortly digitiform (Figs 589–596). Males: tibiae and metatarsi I–II without modified hairs (Figs 273–277, 303); cymbium moderately short (as in Figs 365–369); embolus bent and screwed subapically, with or without subapical keel (Figs 429–438). Females: each paired spermatheca I-shaped, mostly low and moderately wide, with wide base and inner branch incorporated into the entire cone-shaped trunk, and with short and club-like or fusiform lateral diverticulum (Figs 526–533).

Species included

Raveniola diluta sp. nov., *R. fedotovi* (Charitonov, 1946), *R. pallens* sp. nov. and *R. zyuzini* sp. nov.

Key to the species of the *diluta* group

Males

1. Embolus with well-defined and raised triangular keel (Figs 429–433) 2
 - Embolic keel rudimentary or absent (Figs 434–438) 3
2. Copulatory bulb elongate; proximal part of embolus much longer than its apical part; pointed triangular keel less acute and forms an angle $> 60^\circ$ (Figs 429–431) *R. diluta* sp. nov.
 - Copulatory bulb short; proximal and apical parts of embolus subequal in length; short and acute triangular keel forms an angle $< 45^\circ$ (Figs 432–433) *R. fedotovi* (Charitonov, 1946)
3. Metatarsus I weakly curved (Fig. 276); scopula on tarsi and metatarsi I–II sparser. Copulatory bulb shorter; proximal part of embolus more tapering (Figs 434–435) *R. pallens* sp. nov.
 - Metatarsus I strongly curved (Fig. 277); scopula on tarsi and metatarsi I–II denser. Copulatory bulb longer; proximal part of embolus less tapering (Figs 436–438) *R. zyuzini* sp. nov.

Females

1. Carapace, palps and legs intensely brownish orange (Figs 18, 53, 73–74). Spermathecal trunks and fundus of lateral diverticulum weakly sclerotized (Figs 532–533) *R. zyuzini* sp. nov.
 - Carapace, palps and legs pale brownish yellow or pale brownish orange (Figs 50–52). Spermathecae differ in their structure (Figs 526–531) 2
2. Interdistance AME–AME slightly wider than diameter of AME (Figs 182–183). Palpal tarsus with entire scopula. Cone-shaped spermathecal trunk clearly longer than wide (Figs 526–529) 3
 - Interdistance AME–AME considerably wider than diameter of AME (Fig. 184). Palpal tarsus with widely divided scopula. Dome-shaped spermathecal trunk about as wide as long (Figs 530–531) *R. pallens* sp. nov.
3. Patellae I–II with spines. Scopula on tarsi II and III narrowly and widely divided, respectively. Spermathecal trunk shorter and more tapering toward apex (Figs 526–527) *R. diluta* sp. nov.
 - Patellae I–II aspinose. Scopula on tarsi II and III widely divided and absent, respectively. Spermathecal trunk longer and less tapering toward apex (Figs 528–529) *R. fedotovi* (Charitonov, 1946)

***Raveniola diluta* sp. nov.**

[urn:lsid:zoobank.org:act:4BE24613-AC5B-46ED-83C0-0CC41F64D8A5](https://urn.lsid:zoobank.org:act:4BE24613-AC5B-46ED-83C0-0CC41F64D8A5)

Figs 15, 50, 97, 124, 151–152, 182, 216, 243, 273, 303, 365, 429–431, 471–474, 526–527, 589–590, 699–706, 754

Diagnosis

Within the species group, males of *Raveniola diluta* sp. nov. differ from other male members in having a longer proximal section of the embolus, combined with a lengthened keel (vs either the presence of a short triangular keel in *R. fedotovi* or the absence of a raised keel in *R. pallens* sp. nov. and *R. zyuzini* sp. nov.; Figs 429–431, cf. Figs 432–438). Females of *Raveniola diluta* are distinguishable owing to a peculiar structure of the spermathecae, provided with short conical trunks and longer and strictly curved outer branches which are subequal in length to the spermathecal trunks (vs differently built female copulatory organs in other species of the group (Figs 526–527, cf. Figs 528–533)).

Etymology

The specific epithet is a Latin adjective ‘*dilutus/-a/-um*’ meaning ‘light’ or ‘pallid’ and referring to the pale ground color of the specimens belonging to this species; the gender is feminine (*diluta*).

Material examined

Holotype

TAJKISTAN • ♂; Hissar Mts, Sardai-Miyona Canyon, Hanaka Gorge; 38°50.4' N, 69°17.6' E; 1600 m a.s.l.; 4 Oct. 1986; S. Zonstein leg.; SMNH.

Paratypes (5 ♂♂, 4 ♀♀)

TAJKISTAN • 2 ♂♂, 1 ♀; same collection data as for preceding; SMNH • 2 ♂♂; Hissar Mts, Sorvo Canyon, Surhob Gorge, 3 km NW of Soni Village; 38°50.6' N, 69°24.1' E; 1900 m a.s.l.; 6–7 Oct. 1986; S. Zonstein leg.; SMNH • 1 ♂, 1 ♀; same collection data as for preceding; 1900–2100 m a.s.l.; 17–19 Apr. 1988; SMNH • 2 ♀♀; Hissar Mts, Varzob Canyon, Kondara Gorge; 38°48.5' N, 68°48.8' E; 1300–1600 m a.s.l.; 9 Jul. 1988; S. Zonstein leg.; SMNH.

Additional material (1 ♀ subad., 1 juv.)

TAJKISTAN • 1 juv.; Hissar Mts, Sardai-Miyona Canyon, Hanaka Gorge; 38°51' N, 69°17' E; 1500 m a.s.l.; 4 Oct. 1986; S. Zonstein leg.; SMNH • 1 ♀ subad.; Sorvo Canyon, Surhob Gorge, 1.5 km W of Soni Village; 38°49.6' N, 69°25.5' E; 1750 m a.s.l.; 5 Jul. 2019; S. Zonstein; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 15.

MEASUREMENTS. TBL 11.20, CL 4.75, CW 4.02, LL 0.34, LW 0.75, SL 2.31, SW 2.03.

COLOUR. Cephalothorax and appendages pale reddish orange; carapace, femora I–III dorsally and entire leg I slightly darker; chelicerae more intensely reddish orange; eye tubercle brown with eyes embedded by wide partially fused blackish rings; abdomen and spinnerets almost uniformly milky white.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 97. Clypeus and eye group as in Fig. 151. Eye diameters and interdistances: AME 0.13(0.17), ALE 0.19, PLE 0.11, PME 0.12; AME–AME 0.09(0.05), ALE–AME 0.08(0.06), ALE–PLE 0.04, PLE–PME 0.04, PME–PME 0.29. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 9 promarginal teeth and 1

mesobasal denticle. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 216. Maxillae with 7–8 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 303, 373. Scopula: long (0.8–1.0 segment width), relatively sparse and fine; entire and distal on metatarsi I–II; narrowly divided on tarsus I; widely divided by setae on tarsus II; rudimentary, mixed and widely divided with setae on tarsus III; absent on tarsus IV. Trichobothria: 2 rows of 8–9 each on tibiae, 11–15 on metatarsi, 12–14 on tarsi, 9–10 on cymbium. PTC I–III with 8–10 teeth on each margin; PTC IV with 8–9 and 11–12 teeth on inner and outer margins, respectively.

SPINATION. Palp: femur d4, pd2, rd2; patella pd2; tibia d2, p2(3), r2, v6; cymbium d4. Leg I: femur d4, pd3, rd3; patella p2(1); tibia p2, pv2, rv2+2M, metatarsus v2. Leg II: femur d4, pd3; patella p1; tibia p3, v11(7); metatarsus p1, v9(6). Leg III: femur d4, pd3, rd3; patella p3(2); tibia d3, p3, r3, v7; metatarsus p4, r3, v7. Leg IV: femur d4, pd3, rd3(2); patella p2(1); tibia d4, p3, r3, v9; metatarsus d3, p4(3), r3, v7. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 365. Embolus bipartite: proximal part moderately long, swollen, cone-shaped with dense shallow ridges and lengthened triangular keel; apical part short and corkscrew-shaped (Figs 429–431).

SPINNERETS. See Fig. 589. PLS: maximal diameter 0.33; length of basal, medial and apical segments 0.71, 0.43, 0.38; total length 1.52; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.59 (3.11)	1.46 (1.62)	2.20 (2.01)	–	0.74 (1.91)	6.99 (8.65)
Leg I	4.57 (4.26)	2.57 (2.56)	3.89 (2.72)	3.38 (2.49)	2.23 (1.74)	16.64 (13.77)
Leg II	4.24 (3.78)	2.22 (2.48)	3.57 (2.73)	3.39 (2.51)	2.20 (1.60)	15.62 (13.10)
Leg III	3.72 (3.44)	1.73 (2.03)	3.21 (2.30)	3.84 (3.13)	2.20 (1.51)	14.70 (12.41)
Leg IV	4.81 (4.67)	2.08 (2.35)	4.08 (3.48)	5.59 (4.45)	2.64 (2.09)	19.20 (17.04)

Female (paratype)

HABITUS. See Fig. 50.

MEASUREMENTS. TBL 13.50, CL 5.66, CW 4.75, LL 0.46, LW 0.99, SL 2.92, SW 2.54.

COLOUR. As in male, with uniformly pale legs and slightly darker chelicerae.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 124. Clypeus and eye group as in Fig. 182. Eye diameters and interdistances: AME 0.14(0.19), ALE 0.31, PLE 0.16, PME 0.13; AME–AME 0.12(0.07), ALE–AME 0.12(0.09), ALE–PLE 0.09, PLE–PME 0.06, PME–PME 0.45. Cheliceral rastellum absent. Each cheliceral furrow with 9 promarginal teeth and 4–5 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 243. Maxillae with 10–11 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; narrowly divided on palpal tarsus and tarsus I; widely divided by setae on tarsus II; absent on tarsi III–IV. Trichobothria: 2 rows of 8–9 each on tibiae, 13–14 on metatarsi, 12–15 on tarsi, 9–10 on palpal tarsus. Palpal claw with 3 promarginal teeth. PTC I–II and III–IV with 4–5 and 5–6 teeth on each margin, respectively.

SPINATION. Palp: femur d3, pd1; patella p2; tibia v8(7); tarsus v2. Leg I: femur d4, pd1; tibia p3, v7; metatarsus v6. Leg II: femur d4, pd1; tibia p3, v7; metatarsus v6. Leg III: femur d4, pd3, rd2; patella p2,

r1; tibia d1, p2, r2, v7; metatarsus d3, p3, r3, v7. Leg IV: femur d4, pd1, rd1; patella p1, r1; tibia d1, p3, r2, v7; metatarsus d2, p4, r4, v7. Patellae I–II and tarsi I–IV aspinose.

SPERMATHECAE. Each of paired spermathecae formed by a low cone-shaped trunk carrying a relatively long and bent outer branch; spermathecal trunks widely spaced from each other (Figs 526–527).

SPINNERETS. See Fig. 590. PLS: maximal diameter 0.56; length of basal, medial and apical segments 1.07, 0.64, 0.65; total length 2.36; apical segment triangular.

Variation

Carapace length in males (n=4) varies from 4.15 to 4.75, in females (n=5) from 3.95 to 5.66. The overall pale colouration looks to be even lighter in spiders from the eastern Hissar (Romit) and conversely slightly darker in specimens from the central part of this ridge (Kondara). Variations in the eye arrangement and in the structure of the copulatory bulb as shown in Figs 152 and 471–474, respectively.

Ecology

All spiders were found hiding in soil cavities under stones in fragmentary midland montane woodlands, dominated by walnut, *Juglans regia*. See Figs 699–706.

Distribution

Known from the central and southeastern parts of Hissar Mts, Tajikistan. See Fig. 754.

Raveniola fedotovi (Charitonov, 1946)

Figs 16, 51, 98, 125, 153, 183, 199, 217, 244, 274–275, 366, 432–433, 528–529, 591–592, 707–710, 755

Brachythele fedotovi Charitonov, 1946: 19, fig. 2 (♂).

Brachythele fedotovi – Charitonov 1969: 65. — Brignoli 1983: 123. — Zonstein 1985: 158.

Raveniola fedotovi – Zonstein 1987: 1015. — Platnick 1989: 90. — Mikhailov 1996: 77; 1997: 20; 2013: 12. — Zonstein *et al.* 2018b: 66, fig. 100 (♂). — Zonstein & Esyunin 2023: 76, figs 1–14 (♂♀).

Diagnosis

Males of *Raveniola fedotovi* differ from other male congeners in having a characteristic triangular (very short, but high and acute) keel, demarcating proximal and distal sections of the embolus (vs either the presence of a lengthened keel in *R. diluta* sp. nov., or the absence of a raised keel in *R. pallens* sp. nov. and *R. zyuzini* sp. nov.; Figs 432–433, cf. Figs 428–431, 324–438). The sole adult female of *R. fedotovi*, known to date, is distinguishable owing to a specific structure of the spermathecal trunks, which are considerably longer, and relatively more closely spaced to each other than in females of other species representing the same group (Figs 528–529, cf. Figs 526–527, 530–533).

Material examined

Lectotype

UZBEKISTAN • ♂; Hissar Mts (northwestern slope), surroundings of Ishkent Village; 38°49' N, 66°58' E; 1100–1300 m a.s.l.; 25–28 Mar. 1942; D.M. Fedotov leg.; ZMMU.

Paralectotypes

UZBEKISTAN • 3 ♂♂; same collection data as for holotype; PSU, deposited as preparations.

Additional material (1 ♂, 1 ♀, 2 juvs)

UZBEKISTAN • 1 juv.; Kugitang (Koitendagh) Mts, Baglydara Canyon, 10–11 km W of Hatak Village; 37°58' N, 66°43' E; 1300–1400 m a.s.l.; 8 Apr. 1989; S. Zonstein leg.; SMNH • 1 juv.; Baisuntau Mts, Akrobat Pass; 38°15' N, 66°50' E; 1500 m a.s.l.; 17 Apr. 1987; S. Zonstein leg.; SMNH • 1 ♂; Zeravshan Mts, Jindy-Daria Canyon, Hojakurgan Gorge; 39°11' N, 67°17' E; 1400–1600 m a.s.l.; 29 Apr. 1992; S. Zonstein leg.; SMNH • 1 ♀; same collection data as for preceding; 4 May 2022; S. Zonstein leg.; SMNH.

Description

Male (lectotype)

Figures 16, 153, 199, 217, 274–275, 366, 432–433, 591 are based on the paralectotypes and conspecific material.

HABITUS. See Fig. 16.

MEASUREMENTS. TBL 6.90, CL 3.38, CW 2.85, LL 0.28, LW 0.60, SL 1.78, SW 1.51.

COLOUR. Carapace, palps and legs light brownish orange; eye tubercle blackish brown; chelicerae light reddish brown; sternum, labium and maxillae yellow; abdomen uniformly greyish white without clear dorsal pattern.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 98. Clypeus and eye group as in Fig. 153. Eye diameters and interdistances: AME 0.08(0.12), ALE 0.13, PLE 0.09, PME 0.06; AME–AME 0.08(0.05), ALE–AME 0.05(0.04), ALE–PLE 0.02, PLE–PME 0.02, PME–PME 0.16. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 7 promarginal teeth and 4–5 mesobasal denticles. MIT indiscernible (Fig. 199). Sternum, labium and maxillae as shown in Fig. 217. Maxillae with 7 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 274. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided with setae on tarsus II; widely divided on tarsus III; rudimentary on tarsus IV. Trichobothria: 2 rows of 7 each on tibiae, 10–12 on metatarsi, 7–10 on tarsi, 6 on cymbium. PTC I–IV with 6–7 and 5 teeth on outer and inner margins, respectively.

SPINATION. Palp: femur d3, pd2; tibia d2, p3, r1, v4; cymbium d4. Leg I: femur d4, pd3, rd3; patella p1; tibia p2, pv2, rv2+2M; metatarsus v1. Leg II: femur d4, pd3; patella p1; tibia p3, v6; metatarsus v6. Leg III: femur d4, pd3, rd3; patella p1, r1; tibia d2, p2, r2, v6; metatarsus d1, p3, r3, v7. Leg IV: femur d4, pd3, rd3; patella p1; tibia d2, p3, r3, v7; metatarsus d1, p3, r2, v9(8). Palpal patella and tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 366. Embolus with widely tapering basal portion ending with triangular keel, and with twisted apical part (as shown in Figs 432–433).

SPINNERETS. See Fig. 591. PLS: maximal diameter 0.37; length of basal, medial and apical segments 0.60, 0.42, 0.27; total length 1.29; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	1.93 (2.68)	1.07 (1.45)	1.43 (1.69)	–	0.65 (1.42)	5.08 (7.24)
Leg I	3.20 (3.23)	1.78 (2.09)	2.43 (2.35)	2.54 (1.77)	1.45 (1.34)	11.40 (10.78)
Leg II	2.98 (2.96)	1.50 (1.89)	2.18 (2.08)	2.14 (1.84)	1.43 (1.36)	10.23 (10.13)
Leg III	2.57 (2.63)	1.43 (1.54)	1.89 (1.78)	2.60 (2.25)	1.46 (1.39)	9.95 (9.59)
Leg IV	3.51 (3.54)	1.48 (1.92)	2.76 (2.66)	3.75 (3.31)	2.07 (1.61)	13.57 (13.04)

Female (paratype)

HABITUS. See Fig. 51.

MEASUREMENTS. TBL 15.05, CL 4.22, CW 3.91, LL 0.41, LW 0.87, SL 2.15, SW 2.06.

COLOUR. Mostly as in male, but chelicerae light scarlet red and legs more uniformly coloured, without difference between legs I and II–IV.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 125. Clypeus and eye group as in Fig. 183. Eye diameters and interdistances: AME 0.13(0.17), ALE 0.24, PLE 0.15, PME 0.07; AME–AME 0.13(0.09), ALE–AME 0.09(0.07), ALE–PLE 0.09, PLE–PME 0.06, PME–PME 0.40. Cheliceral rastellum absent. Each cheliceral furrow with 10 promarginal teeth and 5–6 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 244. Maxillae with 13–14 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; entire on palpal tarsus; narrowly divided on tarsus I; widely divided by setae on tarsus II; absent on metatarsi and tarsi III and IV. Trichobothria: 2 rows of 9–10 each on tibiae, 13–15 on metatarsi, 11–13 on tarsi, 9–10 on palpal tarsus. Palpal claw with 4 promarginal teeth widely separated from each other. PTC I–II and III–IV with 6–7 and 6–8 teeth on each margin, respectively.

SPINATION. Palpal femur and femora I–II with 4 dorsal bristles; femora III–IV with one thin basodorsal spine and 3 dorsal bristles alongside midline; palpal patella, patellae I–II and tarsi I–IV aspinose. Palp: femur pd1; tibia v10(7); tarsus v4(3). Leg I: femur pd1; tibia v5; metatarsus v6. Leg II: femur pd1; tibia p3, v7; metatarsus p1, v7(6). Leg III: femur pd3, rd2; patella p1, r1; tibia d1, p2, r2, v7; metatarsus d2, p3, r3(2), v7. Leg IV: femur rd1; patella r1; tibia d1, p2, r3, v7; metatarsus d1, p3, r3, v10(9).

SPERMATHECAE. Each of paired spermathecae with wide cone-shaped trunk and short fusiform outer branch (Figs 528–529).

SPINNERETS. See Fig. 592. PMS: absent. PLS: maximal diameter 0.45; length of basal, medial and apical segments 0.84, 0.55, 0.53; total length 1.92; apical segment triangular.

Variation

Carapace length in males (n=3) varies from 3.30 to 3.95. One of the fragmented paralectotype males possesses 8 (vs 7 in the lectotype) teeth on the cheliceral furrow promargin (Fig. 199). According to Charitonov (1946), within the type series, the number of the maxillary cuspules ranges from 5 to 8 (some type specimens were used by D.E. Charitonov as preparations, and only a few of their parts have survived to date). A weak difference in the structure of the male tibia and metatarsus I is shown in Fig. 275. Most other features, including a specific shape of the embolic keel, were found to be consistent throughout the available specimens.

Ecology

Raveniola fedotovi inhabits the rocky midland montane slopes between 1100 and 1600 m a.s.l., from the steppe shrubland zone in high foothills (Fig. 707) to the higher-located zone of mosaic riverside woodland dominated by *Juglans regia* (Fig. 708). The collected conspecific specimens were found in overgrown screes under shrubs and tree canopies hiding deeply inside the rocky layer (Figs 709–710).

Distribution

South Uzbekistan. See Fig. 755.

Raveniola pallens sp. nov.

[urn:lsid:zoobank.org:act:4F2510F5-833E-42C4-9C5D-C17B434FFF9B](https://doi.org/10.21203/rs.3.rs-10000000)

Figs 17, 52, 99, 126, 154, 184, 218, 245, 276, 367, 434–435, 530–531, 593–594, 755

Diagnosis

Raveniola pallens sp. nov. differs from other members of the same species group in possessing a wider eye group with relatively smaller and noticeably broadly spaced anterior median eyes (Figs 154, 184 cf. 151–153, 155, 182–183, 185). Unlike males of *R. diluta* sp. nov. and *R. fedotovi*, possessing an embolic keel, the holotype male of *R. pallens* lacks this structure; it differs from males of *R. zyuzini* sp. nov. in having a noticeably lesser curved metatarsus I and by a sparser scopula on metatarsi and tarsi I–II (Fig. 276 cf. Fig. 277). Females of *R. pallens* sp. nov. are distinguishable due to having a widely divided ventral scopula on the palpal tarsus (vs entire one in females of the related species), as well as owing to their low, mound-like and widely spaced spermathecal trunks (vs the higher cone-shaped ones in other species of the group; Figs 530–531 cf. Figs 526–529, 532–533).

Etymology

The specific epithet is a Latin adjective (of any gender) meaning ‘light’ or ‘pallid’ and referring to the pale ground color of the specimens belonging to this species.

Material examined

Holotype

UZBEKISTAN • ♂; Zeravshan Mts (southwestern slope), foothills below Amankutan Pass; 39°13.5' N, 66°53.5' E; 1000–1300 m a.s.l.; 9 Apr. 1991; S. Zonstein leg.; SMNH.

Paratype

UZBEKISTAN • 1 ♀; same collection data as for preceding; 900 m a.s.l.; 7 Apr. 1989; SMNH.

Additional material (1 ♀ subad., 1 juv.)

UZBEKISTAN • 1 juv.; same collection data as for preceding; 850 m a.s.l.; 9 Apr. 1991; SMNH • 1 ♀ subad.; northern foothills of Turkestan Mts, Beshbuloq Canyon, vicinity of Turkmen Village; 39°57' N, 68°30' E; 600–700 m a.s.l.; 27 Jun. 1980; A.B. Nenilin leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 17.

MEASUREMENTS. TBL 9.05, CL 3.65, CW 2.99, LL 0.25, LW 0.63, SL 1.82, SW 1.57.

COLOUR. Carapace, palps and legs light brownish orange; eye tubercle blackish brown; chelicerae light reddish brown; sternum, labium and maxillae yellow; abdomen uniformly greyish white without distinct dorsal pattern.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 99. Clypeus and eye group as in Fig. 154. Eye diameters and interdistances: AME 0.10(0.14), ALE 0.19, PLE 0.12, PME 0.08; AME–AME 0.10(0.06), ALE–AME 0.05(0.03), ALE–PLE 0.03, PLE–PME 0.03, PME–PME 0.28. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 7 promarginal teeth and 7–8 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 218. Maxillae with 9–11 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 276. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided with setae on tarsus II; widely divided on tarsus III; rudimentary on tarsus IV. Trichobothria: 2 rows of 8–9 each on tibiae, 13–14 on metatarsi, 10–12 on tarsi, 8 on cymbium. PTC I–IV with 6–8 teeth on each margin.

SPINATION. Patella I and tarsi I–IV aspinose. Palp: femur d3, pd1; tibia p3, r1, v5; cymbium d4+5 smaller. Leg I: femur d3, pd2; tibia p2, pv1, rv2+2M; metatarsus v1. Leg II: femur d3, pd2; patella p1; tibia p3, v7(6); metatarsus p1, v6. Leg III: femur d4, pd3, rd2; patella p2, r1; tibia d2, p2, r2, v7; metatarsus d3, p3, r3, v7. Leg IV: femur d4, pd3, rd2; patella p1, r1; tibia d2, p3, r3, v8(7); metatarsus d2, p4, r3, v8(7).

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 367. Embolus lacking keel, corkscrew-shaped, thin and gradually tapering to its tip (Figs 434–435).

SPINNERETS. See Fig 593. PLS: maximal diameter 0.31; length of basal, medial and apical segments 0.49, 0.30, 0.27; total length 1.06; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	1.93 (2.53)	1.01 (1.43)	1.53 (1.86)	–	0.64 (1.54)	5.11 (7.36)
Leg I	3.18 (3.54)	1.89 (2.17)	2.58 (2.74)	2.57 (2.07)	1.63 (1.49)	11.85 (12.01)
Leg II	2.79 (3.38)	1.62 (1.90)	2.30 (2.28)	2.39 (2.14)	1.58 (1.47)	10.68 (11.17)
Leg III	2.54 (2.97)	1.31 (1.68)	1.84 (2.15)	2.51 (2.53)	1.54 (1.54)	9.74 (10.87)
Leg IV	3.15 (3.99)	1.64 (1.97)	2.67 (3.23)	3.56 (3.94)	1.83 (1.76)	12.85 (14.89)

Female (paratype)

HABITUS. See Fig. 52.

MEASUREMENTS. TBL 13.20, CL 5.07, CW 4.43, LL 0.43, LW 1.04, SL 2.62, SW 2.31.

COLOUR. As in male, with body even paler; legs I–IV uniformly very light yellowish tan and noticeably paler than yellowish orange carapace.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 126. Clypeus and eye group as in Fig. 184. Eye diameters and interdistances: AME 0.12(0.17), ALE 0.23, PLE 0.12, PME 0.06; AME–AME 0.23(0.18), ALE–AME 0.10(0.08), ALE–PLE 0.03, PLE–PME 0.03, PME–PME 0.63. Cheliceral rastellum absent. Each cheliceral furrow with 9 promarginal teeth and 2–3 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 245. Maxillae with 10–11 pointed (not rounded or blunt) cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; narrowly divided on tarsus I; widely divided on palpal tarsus and tarsus II; absent on tarsi III–IV. Trichobothria: 2 rows of 9–10 each on tibiae, 14–15 on metatarsi, 12–14 on tarsi, 9 on palpal tarsus. Palpal claw with 3 promarginal teeth. PTC I–II and III–IV with 5 and 4–5 teeth on each margin, respectively.

SPINATION. Femora I–IV dorsally along midline with 2–3 spines and 2–3 bristles; palpal patella, patella I, and tarsi I–IV aspinose. Palp: femur d4, pd1; tibia p4(2), v8(7); tarsus v2. Leg I: femur pd1; tibia p2, v6; metatarsus v7(4). Leg II: femur pd1; patella p1; tibia p2(1), v6(5); metatarsus v6. Leg III: femur pd3, rd2; patella p2, r1; tibia d1, p2, r2, v7; metatarsus d5, p3, r2, v7. Leg IV: femur pd2, rd3(2); patella p1, r1; tibia d1, p2(3), r3(2), v7; metatarsus d2, p2, r3, v7.

SPERMATHECAE. Each of paired spermathecae small and low mound-like, with short and wide trunk that carries small and short outer branch diverging from spermathecal trunk close to its apex (Figs 530–531).

SPINNERETS. See Fig. 594. PLS: maximal diameter 0.51; length of basal, medial and apical segments 0.91, 0.66, 0.42; total length 1.99; apical segment triangular.

Ecology

Raveniola pallens sp. nov. inhabits rocky slopes in foothills and the low-mountain zone between 600 and 1300 m a.s.l., covered by steppe grasslands and sparse shrubland with *Pistacea vera* L., *Cercis griffithii*, species of *Acer*, *Prunus* (sect. *Amygdalus* (L.) Benth. & Hook.f.), etc. By their nature, these biotopes resemble the landscape which is shown in Fig. 707. All spiders were found hiding under stones.

Distribution

Southeastern Uzbekistan. See Fig. 755.

Raveniola zyuzini sp. nov.

[urn:lsid:zoobank.org:act:B61B579D-3D60-4EF1-A77D-5F7285F6356D](https://zoobank.org/urn:lsid:zoobank.org:act:B61B579D-3D60-4EF1-A77D-5F7285F6356D)

Figs 18, 53, 73–74, 100, 127, 155, 185, 219, 246, 277, 337–339, 368–369, 436–438, 475–477, 532–533, 595–596, 711–714, 755

Diagnosis

Raveniola zyuzini sp. nov. differs from other members of the same species group by having a darker brownish orange carapace and legs (vs considerably paler brownish or yellowish orange ones – Figs 18, 53 cf. Figs 15–17, 50–52). Unlike males of *R. diluta* sp. nov. and *R. fedotovi*, possessing a raised embolic keel, males of *R. zyuzini* either entirely lack this structure or possess only a low vestige of the keel; the new species differs from *R. pallens* sp. nov. in having a longer proximal section of the embolus (Figs 236–238 cf. Figs 234, 235). Females of *R. zyuzini* are distinguishable due to their weakly sclerotized spermathecal trunks, carrying fusiform outer branches (vs differently conformed spermathecae in other species of the group; Figs 532–533 cf. Figs 526–531).

Etymology

The specific epithet is given in honour and memory of Dr. Alexei Zyuzin (1951–2021), noting his significant contribution to the taxonomical and faunistic study of Central Asian spiders.

Material examined

Holotype

UZBEKISTAN • ♂; Babatag Mts, environs of Chorroha (Chorruga) Pass, 10.4 km ENE of Mt Zarkassa; 38°04.0' N, 68°13.5' E; 1400 m a.s.l.; 15 Apr. 1990; S. Zonstein leg.; SMNH.

Paratypes (8 ♂♂, 4 ♀♀)

UZBEKISTAN • 1 ♂; same collection data as for holotype; SMNH • 2 ♂♂, 1 ♀; same collection data as for preceding; 12 Apr. 1989; SMNH • 1 ♂; same collection data as for preceding, northern slope of Mt Zarkassa; 38°02.0' N, 68°11.7' E; 1900 m a.s.l.; 20 Apr. 2019; S. Zonstein leg.; SMNH • 4 ♂♂, 3 ♀♀; same collection data as for preceding, eastern slope of Mt Zarkassa; 1300–1800 m a.s.l.; 26 Apr. 1994; S.V. Ovchinnikov leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 18.

MEASUREMENTS. TBL 12.20, CL 5.14, CW 4.32, LL 0.41, LW 0.86, SL 2.57, SW 2.26.

COLOUR. Carapace, as well as most palp and leg segments medium brownish orange; leg I slightly darker than other legs; eye tubercle blackish brown; chelicerae medium reddish brown; sternum, labium, maxillae, metatarsi and tarsi II–IV light yellowish orange; abdomen and spinnerets very pale yellowish brown, dorsal abdominal pattern indiscernible.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 100. Clypeus and eye group as in Fig. 155. Eye diameters and interdistances: AME 0.12(0.18), ALE 0.20, PLE 0.14, PME 0.13; AME–AME 0.12(0.06), ALE–AME 0.08(0.05), ALE–PLE 0.05, PLE–PME 0.03, PME–PME 0.31. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 10 promarginal teeth and 3 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 219. Maxillae with 8 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 277. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided by setae on tarsus II; absent on tarsi III and IV. Trichobothria: 2 rows of 8–10 each on tibiae, 16–18 on metatarsi, 13–14 on tarsi, 10 on cymbium. PTC I–II and III–IV with 8–9 and 9–10 teeth on each margin.

SPINATION. Palp: femur d5, pd2, rd1; patella pd1; tibia d3, p3, r3, v7; cymbium d5(4). Leg I: femur d4, pd3, rd3; patella p1; tibia p2, pv2, r1(0), rv2+2M; metatarsus v1. Leg II: femur d4, pd3, rd 2(1); patella p1; tibia p3, v7; metatarsus p1, v6. Leg III: femur d4, pd3, rd3; patella p2, r2; tibia d2, p3, r3, v6; metatarsus d3, p3, r4, v7. Leg IV: femur d4, pd3, rd3(2); patella p1, r2; tibia d2, p3, r3, v7; metatarsus d2, p3, r3, v9. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 368. Embolus with long, slightly tapering proximal section, provided with low rounded keel, and with short curved apex (Fig. 436).

SPINNERETS. See Fig. 595. PLS: maximal diameter 0.34; length of basal, medial and apical segments 0.78, 0.39, 0.34, respectively; total length 1.51; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.73 (2.42)	1.59 (1.57)	2.29 (1.85)	–	0.83 (1.63)	7.44 (7.47)
Leg I	4.51 (3.46)	2.60 (2.21)	3.57 (2.74)	3.62 (2.30)	2.22 (1.57)	16.52 (12.28)
Leg II	4.22 (3.28)	2.37 (1.98)	3.37 (2.40)	3.34 (2.28)	2.10 (1.55)	15.40 (11.49)
Leg III	3.63 (2.92)	1.96 (1.61)	2.78 (2.16)	3.75 (2.97)	2.09 (1.57)	14.21 (11.23)
Leg IV	4.72 (3.82)	2.24 (1.99)	3.71 (3.31)	5.38 (4.27)	2.43 (1.57)	18.29 (14.96)

Female (paratype)

HABITUS. See Fig. 53.

MEASUREMENTS. TBL 13.00, CL 4.42, CW 3.73, LL 0.36, LW 0.87, SL 2.12, SW 2.01.

COLOUR. In general as in male, but legs more uniformly coloured, without difference between legs I and II–IV.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 127. Clypeus and eye group as in Fig. 185. Eye diameters and interdistances: AME 0.10(0.14), ALE 0.21, PLE 0.12, PME 0.11; AME–AME 0.12(0.08), ALE–AME 0.09(0.07), ALE–PLE 0.05, PLE–PME 0.03, PME–PME 0.33. Cheliceral rastellum absent. Each cheliceral furrow with 9 promarginal teeth and 3–4 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 246. Maxillae with 10–11 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; entire on palpal tarsus and tarsus I; narrowly divided by setae on tarsus II; absent on tarsi III and IV. Trichobothria: 2 rows of 9–10 each on tibiae, 13–14 on metatarsi, 11–13 on tarsi, 9–10 on palpal tarsus. Palpal claw with 4 promarginal teeth. PTC I–II and III–IV with 7–8 and 5–8 teeth on each margin, respectively.

SPINATION. Palp: femur d3, pd1; patella p1; tibia v7; tarsus v2(1). Leg I: femur d4, pd1; tibia v7; metatarsus v6(5). Leg II: femur d4, pd1; tibia p2, v7; metatarsus p1, v6. Leg III: femur d4, pd3, rd2; patella p1; tibia d1, p2, r2, v7; metatarsus d2, p3, r3, v7. Leg IV: femur d4, pd2(1), rd1; patella p1, r1; tibia d1, p3, r3, v7; metatarsus d1, p4, r4, v7. Patellae I–II and tarsi I–IV aspinose.

SPERMATHECAE. Each of paired spermathecae with wide cone-shaped trunk and short fusiform outer branch diverging from medium part of spermathecal trunk (Figs 532–533).

SPINNERETS. See Fig. 596. PMS: absent. PLS: maximal diameter 0.59; length of basal, medial and apical segments 0.68, 0.52, 0.47; total length 1.67; apical segment triangular.

Variation

Carapace length in males (n=7) varies from 3.80 to 5.19, in females (n=4) from 3.44 to 5.32. Within the type series, a few insignificant variations in the habitus and colouration are shown in Figs 73–74. For some structural details of the tarsal organ and trichobothria, see Figs 377–379. The most common conformation of the copulatory bulb, lacking the keel, is similar to that shown in Figs 475–477. The less distributed variant of the bulb, provided with a rudimentary keel, is shown in Figs 369, 437–438.

Ecology

All spiders were found under stones in open park woodland composed of low deciduous trees (*Acer* spp., *Crataegus* spp., etc.) at 1300–1600 m a.s.l. and in sparse mixed forest biotopes dominated by *Juniperus seravschanica* at 1600–1900 m a.s.l. See Figs 711–714.

Distribution

Known only from the type locality. See Fig. 755.

Raveniola virgata species group

Diagnostic characters

Less numerous cuspules confined to probasal edge of maxilla (Figs 220–228, 247–255). PLS small, lacking spigots or entirely absent; apical segment of PLS mostly triangular or digitiform in some species (Figs 485–486, 597–618). Males: tibiae and metatarsi I–II without modified hairs (Figs 278–289, 304–309); cymbium very short (as in Figs 370–378); embolus gradually tapering and only slightly curved subapically, always without subapical keel (Figs 439–465). Females: spermathecae always with trunk, narrow Y- or F-shaped (Figs 534–554).

Species included

Raveniola ferghanensis (Zonstein, 1984), *R. kirgizica* sp. nov., *R. kopetdaghensis* (Fet, 1984), *R. mikhailovi* Zonstein, 2021, *R. nenilini* sp. nov., *R. ovchinnikovi* sp. nov., *R. tarabaevi* sp. nov., *R. virgata* (Simon, 1891) and *R. vulpina* sp. nov.

Key to the species of the *virgata* group

Males

Males of *Raveniola tarabaevi* sp. nov. are unknown.

1. Small to rudimentary PMS present (Figs 598, 601–602, 605–606, 609, 612, 614, 616) 2
– PMS absent (Fig. 604) *R. kopetdaghensis* (Fet, 1984)
2. Embolus as long as tegulum or only slightly exceeds the latter in length (Figs 441–442, 445–465) ... 3
– Embolus considerably longer than tegulum (Figs 439–440) *R. ferghanensis* (Zonstein, 1984)
3. Cephalothorax, palps and legs medium to dark reddish brown; dorsal abdomen brownish with darker chevron-like pattern (Figs 20, 23–25, 28–35, 75–81); apical segment of PLS shorter (see Figs 597–598, 602, 605, 614, 616) 4
– Cephalothorax, palps and legs pale yellowish orange; entire abdomen uniformly greyish white (Figs 26–27); apical segment of PLS longer (Fig. 612) *R. ovchinnikovi* sp. nov.
4. Embolus almost straight and slightly curved only close to apex (Figs 448, 459–461, 465) 5
– Embolus very gently twisted (Figs 445, 450–452, 454) 6
5. Palpal tibia 4.0–4.2 times as long as wide; cymbium densely spinose (Figs 377–378). Tegulum noticeably longer than wide (Figs 459–465) *R. vulpina* sp. nov.
– Palpal tibia 3.4–3.5 times as long as wide; cymbium with 4–5 dorsal spines (Fig. 374). Tegulum almost as long as wide (Figs 448–449) *R. nenilini* sp. nov.
6. Palpal tibia 3.4–3.9 times as long as wide; cymbium with 4–6 dorsal spines (Figs 373, 376). Tibia I 3.9–4.3 times as long as wide; metatarsus I straight or very gently curved (Figs 282, 286–287) 7
– Palpal tibia 4.3 times as long as wide; cymbium densely spinose (Fig. 371). Tibia I 4.6 times as long as wide; metatarsus I clearly curved (Fig. 280) *R. kirgizica* sp. nov.
7. Tibia I longer: 4.3–4.4 times as long as wide (Fig. 282). Palpal tibia longer: 3.8–3.9 times as long as wide (Fig. 373). Proximal part of embolus less tapered (Figs 445–447) *R. mikhailovi* Zonstein, 2021
– Tibia I stouter: 3.9–4.1 times as long as wide (Figs 286–287). Palpal tibia shorter: 3.4–3.6 times as long as wide (Fig. 376). Proximal part of embolus more tapered (Figs 454–458)
..... *R. virgata* (Simon, 1891)

Females

Adult females of *Raveniola kopetdaghensis* and *R. ovchinnikovi* sp. nov. are unknown.

1. Cephalic portion of carapace lesser elevated over thoracic part, fovea narrower (Figs 129–135). Spermathecae with outer and inner branches subequal in length, or outer branch longer than inner one (Figs 537–554) 2
– Cephalic portion of carapace more elevated over thoracic part, fovea broader (Fig. 128). Spermathecae with outer branch much shorter than inner one (Figs 534–536)
..... *R. ferghanensis* (Zonstein, 1984)
2. Tarsus II with entire or narrowly divided scopula. The distance between paired spermathecae a maximum of four times as long as their length, usually this distance considerably shorter (Figs 538–554) 3
– Tarsus II with widely divided scopula. The distance between paired spermathecae about five times as long as their length (Fig. 537) *R. kirgizica* sp. nov.

3. Palpal tarsus with entire or narrowly divided scopula. Outer and inner branches of spermathecae nearly subequal in length; inner branch either evenly narrow along the entire length or dilated subapically (Figs 538–543, 547–554)..... 4
 - Palpal tarsus with widely divided scopula. Outer branch of spermathecae noticeably longer than inner one, or (if not so) the latter subapically flattened, narrowed or constricted (Figs 544–546) *R. tarabaevi* sp. nov.
4. Abdomen dorsally either with intermittent dark median stripe (Figs 56–57, 60) or without this contrasting detail (Figs 61–62). Spermathecae shorter, with stouter lateral diverticula (Figs 538–540, 547–554) 5
 - Abdomen dorsally with almost entire dark median stripe (as in Fig. 58). Spermathecae longer, with thinner lateral diverticula (Figs 541–543) *R. nenilini* sp. nov.
5. Abdomen without contrasting median stripe, but with diffuse or reduced chevrons (Figs 61–62). Lateral diverticulum dilated and flattened subapically (Figs 551–554). PME smaller, apical segment of PLS longer (Figs 617–618) *R. vulpina* sp. nov.
 - Abdomen with intermittent dark median stripe and chevron-like pattern (Figs 56, 57, 60). Lateral diverticulum differs in shape (Figs 538–540, 547–550). PME larger, apical segment of PLS shorter (Figs 607–608, 615)..... 6
6. PTC I–II and III–IV with 6–7 and 7–9 teeth on each margin, respectively. Spermathecae shorter (Figs 538–540)..... *R. mikhailovi* Zonstein, 2021
 - PTC I–II and III–IV with 5 and 4–6 teeth on each margin, respectively. Spermathecae longer (Figs 547–550)..... *R. virgata* (Simon, 1891)

Raveniola ferghanensis (Zonstein, 1984)

Figs 19, 54, 75, 80–81, 101, 128, 156, 186, 220, 247, 278–279, 340–342, 370, 439–440, 485, 534–536, 597–600, 715–716, 756

Brachythele ferghanensis Zonstein, 1984b: 43, figs 7–12 (♂♀).

(?) *Cyrtauchenius walckenaeri* – Kroneberg 1875: 28 (♀) (misidentified, not *Cyrtocephalus walckenaeri* Lucas, 1846: Zonstein 1985: 159).

Amblyocarenum walckenaeri – Charitonov 1932: 14. — Spassky 1952: 195. — Mikhailov 1996: 77 (as synonym); 2013: 12 (noted as misidentification).

Brachythele ferghanensis – Zonstein 1985: 159.

Raveniola ferghanensis – Zonstein 1987: 1015; 2002c: 174. — Platnick 1989: 91. — Zonstein *et al.* 1996: 133. — Mikhailov 1996: 77; 1997: 20; 2013: 12. — Logunov & Gromov 2012: 220 — Zonstein *et al.* 2018b: 73, 78, figs 145, 166 (♂).

Diagnosis

Raveniola ferghanensis is well distinguishable from all other species of the *virgata* group. Males possess a very long embolus that noticeably exceeds the tegulum in its length (vs subequal in length in other species; Figs 439–440 cf. Figs 441–465). Females can be distinguished by the characteristic shape of the spermathecae, where an elongate inner branch (i.e., a distal section of the trunk) appears to be considerably longer than the lateral diverticulum (vs shorter than the latter or both branches are subequal in length; Figs 534–536 cf. Figs 537–554). Additionally, *R. ferghanensis* is the largest member of the group. Unlike other group members, this obligate bothrobiont species lives in burrows; it can be encountered only in lowland subarid and arid biotopes.

Material examined

Holotype

KYRGYZSTAN • ♂; Fergana Mts (southwestern slope), foothills 1.6 km E of Jalal-Abad City; 40°55.9' N, 73°02.0' E; 950 m a.s.l.; 8 Apr. 1982; S. Zonstein leg.; ZISP.

Paratypes (7 ♂♂, 2 ♀♀)

KYRGYZSTAN • 2 ♂♂, 1 ♀; same collection data as for preceding; 900–1000 m a.s.l.; 8–10 Apr. 1982; S. Zonstein leg.; SMNH • 1 ♀; same collection data as for preceding; ZISP • 2 ♂♂; same collection data as for preceding; 29 Apr. 1982; S. Zonstein leg.; SMNH • 3 ♂♂; same collection data as for preceding, foothills 5 km W of Jalal-Abad City; 40°57' N, 72°54' E; 900–1200 m a.s.l.; 7 Apr. 1982; S. Zonstein and S.V. Ovchinnikov leg.; SMNH.

Additional material (6 ♂♂, 9 ♀♀, 2 ♀♀ subad., 3 juvs)

KAZAKHSTAN • 1 ♀ subad.; hills west of Kaplanbek (also Kabylanbek) Town; 41°30' N, 69°16' E; 450–500 m a.s.l.; 30 Mar. 1983; A.B. Nenilin and S.V. Ovchinnikov leg.; SMNH.

KYRGYZSTAN • 2 juvs; Chatkal Mts (southern slope), foothills 3 km NNE of Tash-Kumyr; 41°22.6' N, 72°14.7' E; 700 m a.s.l.; 23 Jun. 1992; S. Zonstein leg.; SMNH • 6 ♂♂, 5 ♀♀; environs of Jalal-Abad City; 19 Oct. 1992; S. Zonstein and D.A. Milko leg.; SMNH.

TAJIKISTAN • 1 ♀; Turkestan Mts (northern slope), foothills south of Konibodom City (40°18' N, 70°26' E); 500–700 m a.s.l.; 15 Jun. 1968; V.F. Bahvalov leg.; SMNH.

UZBEKISTAN • 2 ♀♀ (fragmented); Fergana Valley, near Kokand City; [40°32' N, 70°57' E]; 500 m a.s.l.; 1–30 Jun. 1871; A.P. Fedchenko leg.; ZMMU • 1 juv.; environs of Ferghana City; [40°23' N, 71°47' E]; 600 m a.s.l.; 14 May 1981; D.M. Schwetz leg.; SMNH • 1 ♀; foothills east of Andijan City; 40°49' N, 72°27' E; 500–600 m a.s.l.; 6 Apr. 1988; S. Zonstein leg.; SMNH • 1 ♀ subad.; foothills of Qurama Mts near Uigursai Canyon, 10 km NNW of Pap Town; 40°57' N, 71°02' E; 600–650 m a.s.l.; 12 Apr. 2018; S. Zonstein leg.; SMNH.

Redescription

Male (holotype)

HABITUS. See Fig. 19.

MEASUREMENTS. TBL 16.70, CL 7.17, CW 6.33, LL 0.52, LW 0.99, SL 3.51, SW 2.98.

COLOUR. Carapace, all femora and patellae, tibiae I–II and metatarsus I brownish orange; eye tubercle blackish brown; chelicerae and maxillae light red; sternum, labium, leg coxae, palpal tibia and cymbium, tibiae III–IV, metatarsi II–IV and tarsi I–IV light yellowish orange; labiosternal and sternal sigilla medium reddish brown; abdomen light grayish yellow, with darker brown chevron-like dorsal pattern; book-lungs and spinnerets pale yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 101. Clypeus and eye group as in Fig. 156. Eye diameters and interdistances: AME 0.20(0.28), ALE 0.33, PLE 0.23, PME 0.17; AME–AME 0.21(0.13), ALE–AME 0.14(0.10), ALE–PLE 0.11, PLE–PME 0.04, PME–PME 0.47. Anterior cheliceral edge only with slightly thickened setae; rastellum not developed. Each cheliceral furrow with 9 promarginal teeth and 4–5 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 220. Maxillae with 10–11 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 278. Scopula: distal on metatarsi I–II; entire on tarsi I–II; widely divided and mixed with setae on tarsus III; sparse and widely divided on tarsus IV. Trichobothria: 2

rows of 10–11 on tibiae, 15–21 on metatarsi, 15–18 on tarsi, 12 on cymbium. PTC I–IV with 6–8 teeth on each margin.

SPINATION. Palp: femur d4, pd3, rd3; patella pd2; tibia d3, p3, pv3, r2, rv2; cymbium d20–25 short spines. Leg I: femur d4, pd3, rd3; patella p1; tibia p3, pv2, r3, rv2+2M; metatarsus p1, v4. Leg II: femur d4, pd3, rd3; patella p2; tibia p3, r1, v7; metatarsus d1, p2, r1(0), v6. Leg III: femur d4, pd3, rd3; patella p3, r1; tibia d3, p3, r3, v7; metatarsus d4, p4, r3, v7. Leg IV: femur d4, pd3, rd3; patella p2(1), r1; tibia d2, p3, r3, v7; metatarsus d4, p3, r3, v7. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 370. Embolus long and thin, spike-shaped, straight along almost all its length and very gently curved subapically (Figs 439–440).

SPINNERETS. PMS: length 0.29, diameter 0.08. PLS: maximal diameter 0.58; length of basal, medial and apical segments 0.97, 0.69, 0.64; total length 2.30; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.25 (5.14)	2.11 (2.61)	3.49 (3.56)	–	1.18 (3.19)	11.03 (14.50)
Leg I	6.97 (6.91)	3.31 (4.09)	5.41 (5.02)	4.97 (4.17)	3.33 (2.94)	23.99 (23.13)
Leg II	6.70 (6.13)	2.96 (3.86)	4.87 (4.61)	4.93 (4.11)	3.14 (2.98)	22.60 (21.69)
Leg III	5.53 (5.56)	2.45 (3.21)	4.37 (3.51)	5.94 (4.48)	3.13 (2.89)	21.42 (19.65)
Leg IV	7.37 (6.92)	3.05 (3.50)	5.72 (4.92)	8.07 (6.85)	3.61 (3.26)	27.76 (25.45)

Female (paratype)

HABITUS. See Fig. 54.

MEASUREMENTS. TBL 26.40, CL 9.76, CW 8.44, LL 0.88, LW 1.89, SL 5.03, SW 4.31.

COLOUR. Similar to that of male, but legs I–IV almost uniformly light yellowish orange (slightly and gradually lightening from femur to tarsus).

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 128. Clypeus and eye group as in Fig. 186. Eye diameters and interdistances: AME 0.22(0.32), ALE 0.38, PLE 0.33, PME 0.18; AME–AME 0.27(0.17), ALE–AME 0.18(0.13), ALE–PLE 0.09, PLE–PME 0.08, PME–PME 0.71. Cheliceral rastellum absent. Each cheliceral furrow with 9 promarginal teeth and 4 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 247. Maxillae with 10–12 cuspules each.

LEGS. Scopula: distal on metatarsi I–II; entire on palpal tarsus and tarsi I–II; absent and replaced by short dense setae on tarsi III–IV. Trichobothria: 2 rows of 10–11 each on tibiae, 24–30 on metatarsi, 22–27 on leg tarsi, 16–17 on palpal tarsus. Palpal claw with 4 promarginal teeth. PTC I–II with 4–5 teeth on each margin. PTC III–IV with 2–3 teeth on inner and 4–5 teeth on outer margins.

SPINATION. All femora with one basodorsal spine and 3–5 median and apical spikes; palpal patella and tarsi I–IV aspinose. Palp: femur pd1; tibia p2, v4; tarsus v3. Leg I: femur pd1; patella p1; tibia p2, v5; metatarsus v6. Leg II: femur pd1; patella p1; tibia p3, v5(4); metatarsus p1, v6. Leg III: femur rd3; patella p1, r1(0); tibia d1, p1, r2, v7; metatarsus p3, r3, v7. Leg IV: femur rd1; patella r1; tibia d1, p2, r2, v7; metatarsus p3, r3, v7.

SPERMATHECAE. Each of paired spermathecae F-shaped, with long and relatively narrow base carrying long inner and much shorter outer branches (Fig. 536).

SPINNERETS. See Figs 599–600. PMS: length 0.37, diameter 0.18. PLS: maximal diameter 0.98; length of basal, medial and apical segments 1.46, 0.87, 0.88; total length 3.21; apical segment triangular.

Variation

Carapace length in males (n=11) varies from 4.64 to 7.28, in females (n=8) from 7.49 to 10.47. Live spiders are shown in Figs 75, 80–81; the tarsal organ, trichobothria of male tarsus I, and PMS – in Figs 340–342, 485. Variation in the structure of the male tibia and metatarsus I and in the conformation of the spermathecae as shown in Figs 279 and 534–535, respectively.

Ecology

Unlike most other members of this species group, *Raveniola ferghanensis* occurs exclusively within aridized piedmont and foothill areas, where the spiders inhabit semidesert and steppe biotopes (most often, a sparse shrubland steppe on the loess substrate); see Fig. 715. They do not use any natural retreats, but build long, up to 40–50 cm deep, and weakly silk-lined burrows (the opening of an individual burrow is shown in Fig. 716). Wandering adult males were found during periods of an optimal heat and moisture combination – in April and in October.

Distribution

The species is known from Fergana Valley and neighboring foothills and low mountains in eastern Uzbekistan and adjoining regions of Kazakhstan, Kyrgyzstan and Tajikistan. See Fig. 756.

Raveniola kirgizica sp. nov.

[urn:lsid:zoobank.org:act:11E652E9-0591-46EB-AEBD-97E713558C10](https://doi.org/10.11111/zoobank.org/act:11E652E9-0591-46EB-AEBD-97E713558C10)

Figs 20, 55, 102, 129, 157, 187, 221, 248, 280, 304, 371, 441–442, 537, 601–603, 717–718, 756

Diagnosis

In possessing a gently twisted embolus, the male holotype of *R. kirgizica* sp. nov. resembles males of *R. kopetdaghensis*, *R. mikhailovi* and *R. virgata*. It can be distinguished from the former species in the presence of PMS (vs their absence in *R. kopetdaghensis*) and from the two latter species in possessing a noticeably longer tibia and metatarsus I (Fig. 280 cf. Figs 282–283, 286–287); the detailed structure of the embolus also looks different (Figs 441–442 cf. Figs 443–446, 454–458). The only known female (paratype) is distinguishable due to a specific conformation of the paired spermathecae, which are so small and thin, and so widely spaced from each other, that they can be reliably distinguished from the spermathecae in all other species of this group (Fig. 537 cf. Figs 334–336, 538–554).

Etymology

The specific epithet is a toponym referring to the range of this species: Kyrgyzstan (also Kirgizia).

Material examined

Holotype

KYRGYZSTAN • ♂; Alay Mts (northern slope), Kyrgyz-Ata Canyon, Karagoi Gorge; 40°03' N, 72°36' E; 2450 m a.s.l.; 22 May 1993; S. Zonstein leg.; SMNH.

Paratype

KYRGYZSTAN • ♀; Alay Mts (northern slope), Beleuli Canyon, 15 km SW of Gulcha Town, environs of Chon-Beleuli Village; 40°14' N, 73°37' E; 2200 m a.s.l.; 28 Jul. 1988; S. Zonstein leg.; SMNH.

Additional material

KYRGYZSTAN • 1 juv.; Alay Mts (northern slope), Kurshab-Gulcha Canyon, 1 km SSE of Gulcha Town, left bank of Gulcha River; 40°18' N, 73°27' E; 1800–2000 m a.s.l.; 11 Aug. 1985; S. Zonstein leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 20.

MEASUREMENTS. TBL 12.50, CL 5.53, CW 4.64, LL 0.47, LW 0.92, SL 2.49, SW 2.38.

COLOUR. Carapace (except for slightly darker postocular band and radial groves), palps and legs light brownish orange; eye tubercle blackish brown; chelicerae light red; sternum, labium and maxillae pale yellowish orange; abdomen light greyish brown, dorsally with weakly developed medium sepia brown chevron-like pattern; book-lungs and spinnerets pale yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 102. Clypeus and eye group as in Fig. 157. Eye diameters and interdistances: AME 0.13(0.18), ALE 0.18, PLE 0.16, PME 0.13; AME–AME 0.14(0.09), ALE–AME 0.10(0.08), ALE–PLE 0.08, PLE–PME 0.05, PME–PME 0.35. Anterior cheliceral edge with unmodified setae; rastellum not developed. Intercheliceral tumescence indiscernible. Each cheliceral furrow with 10–11 promarginal teeth and 3 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 221. Maxillae with 12 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 280, 304. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided by setae on tarsus II; widely divided on tarsus III; vestigial on tarsus IV. Trichobothria: 2 rows of 9–10 each on tibiae, 16–18 on metatarsi, 12–15 on tarsi, 11 on cymbium. PTC I–IV with 6–7 teeth on each margin.

SPINATION. Palp: femur d3, pd2, rd1; patella pd1; tibia d2, p3, r1, v12–15; cymbium d4. Leg I: femur d4, pd3, rd3; patella p1; tibia p2, pv1, r1, rv2+2M. Leg II: femur d4, pd3; patella p1; tibia p3, v7; metatarsus v5. Leg III: femur d4, pd3, rd3; patella p2, r1; tibia d3, p2, r2, v7; metatarsus d3, p3, r4, v9. Leg IV: femur d4, pd3, rd3; patella p1, r1; tibia d2, p3, r3, v7; metatarsus d4, p3, r3, v9. Metatarsus I and tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 371. Embolus long tapering, clearly S-shaped in lateral view, and curved outwards along its entire length (Figs 441–442).

SPINNERETS. See Figs 601–602. PMS: length 0.34, diameter 0.12. PLS: maximal diameter 0.43; length of basal, medial and apical segments 0.73, 0.46, 0.51; total length 1.70; apical segment shortly digitiform.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.89 (2.33)	1.44 (1.59)	2.41 (2.02)	–	0.87 (1.79)	7.61 (7.73)
Leg I	4.61 (3.64)	2.50 (2.17)	3.79 (2.79)	4.07 (2.24)	2.11 (1.65)	17.08 (12.49)
Leg II	4.32 (3.41)	2.21 (2.09)	3.63 (2.51)	3.60 (2.29)	2.09 (1.68)	15.85 (11.98)
Leg III	4.07 (2.94)	1.71 (1.78)	3.22 (2.21)	4.24 (2.63)	2.34 (1.75)	15.58 (11.31)
Leg IV	5.03 (4.10)	2.18 (2.17)	4.25 (3.09)	5.96 (3.96)	2.63 (2.01)	20.05 (15.33)

Female (paratype)

HABITUS. See Fig. 55.

MEASUREMENTS. TBL 17.60, CL 5.32, CW 4.55, LL 0.53, LW 1.03, SL 2.48, SW 2.37.

COLOUR. Mostly as in male, but with noticeably paler dorsal abdomen. Dorsal pattern presented by only three pairs of short diffuse chevrons on posterior quarter of abdomen.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 129. Clypeus and eye group as in Fig. 187. Eye diameters and interdistances: AME 0.12(0.18), ALE 0.19, PLE 0.14, PME 0.12; AME–AME 0.17(0.11), ALE–AME 0.12(0.09), ALE–PLE 0.12, PLE–PME 0.05, PME–PME 0.43. Cheliceral rastellum absent. Each cheliceral furrow with 9 promarginal teeth and 2 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 248. Maxillae with 12–13 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; entire on palpal tarsus; narrowly divided with setae on tarsus I; widely divided on tarsus II; rudimentary and bilateral on tarsus III; absent on tarsus IV. Trichobothria: 2 rows of 8–9 each on tibiae, 13–15 on metatarsi, 12–14 on tarsi, 10 on palpal tarsus. Palpal claw with 3 promarginal teeth. PTC I–IV with 5–7 teeth on each margin.

SPINATION. Femora I–IV with one basodorsal spine and 4–5 dorsal spikes; palpal femur dorsally with 4 spikes; patellae I–II with 1 prodorsal spine; palpal patella, and tarsi I–IV aspinose. Palp: femur pd1; tibia p2, v8(7); tarsus v5(4). Leg I: femur pd1; tibia p2, v7; metatarsus p1(0), v7(6). Leg II: femur pd1; tibia p2, v7; metatarsus v7. Leg III: femur pd2, rd2; patella p2, r1; tibia d1, p2, r2, v7; metatarsus d4, p3, r3, v7. Leg IV: femur pd1, rd1; patella p1, r1; tibia d1, p2, r2, v7; metatarsus d3, p4, r4, v8.

SPERMATHECAE. Individual spermathecae widely spaced from one another. Each of paired spermathecae Y-shaped with relatively short and narrow base dividing into a pair of equally thin but unevenly long branches: shorter inner and longer outer ones (Fig. 537).

SPINNERETS. See Fig. 603. PMS: length 0.30, diameter 0.14. PLS: maximal diameter 0.53; length of basal, medial and apical segments 1.08, 0.62, 0.48; total length 2.18; apical segment triangular.

Ecology

The spiders were found under stones in sparse montane forest, dominated by *Juniperus* spp. (chiefly, by *J. turkestanica* Kom. and *J. seravschanica*). The landscape and the natural biotope of the type locality is shown in Figs 717–718.

Distribution

Known only from the type locality. See Fig. 756.

Raveniola kopetdaghensis (Fet, 1984)

Figs 21–22, 103, 158, 222, 281, 305, 372, 443–444, 604, 719, 757

Brachythele kopetdaghensis Fet, 1984: 37, fig. 1–2 (♂).

Brachythele kopetdaghensis – Fet 1985a: 274; 1985b: 72. — Zonstein 1985: 159. — Kuznetsov & Fet 1986: 50.

Raveniola kopetdaghensis – Zonstein 1987: 1015. — Platnick 1989: 90. — Mikhailov & Fet 1994: 502. — Mikhailov 1996: 77; 1997: 20; 2013: 12.

Diagnosis

Raveniola kopetdaghensis is well distinguishable due to the full absence of PMS, which are present in all other species of the group (see Fig. 604 cf. Figs 597–603, 605–618). From members of the *diluta* group, also possessing only one pair of the spinnerets, *R. kopetdaghensis* differs in having a narrow awl-shaped embolus (vs differently arranged types of the embolus; Figs 443–444 cf. Figs 429–438).

Material examined

Holotype

TURKMENISTAN • ♂; Kopetdag Mts, Aidere Canyon; 38°25' N, 56°49' E; 900 m a.s.l.; 20 Apr. 1980; V. Fet leg.; ZISP.

Paratypes (27 ♂♂, 2 ♀♀ subad., 6 juvs; all collected with pitfall traps)

TURKMENISTAN • 1 ♂; same collection data as for preceding; SMNH • 3 ♂♂; Kopetdag Mts, Aidere Canyon; 38°23'–38°25' N, 56°46'–56°51' E; 750–1200 m a.s.l.; 20–30 Mar. 1980; V. Fet leg.; ZISP • 2 ♂♂; same collection data as for preceding; 30 Mar.–1 Apr. 1980; V. Fet leg.; ZISP • 1 ♀ subad.; same collection data as for preceding; 30 Mar.–20 Apr. 1980; V. Fet leg.; ZISP • 4 ♂♂; same collection data as for preceding; 1–10 Apr. 1980; V. Fet leg.; ZISP • 3 ♂♂; same collection data as for preceding; 10–20 Apr. 1980; V. Fet leg.; ZMMU • 5 ♂♂; same collection data as for preceding; 20 Apr.–1 May 1980; V. Fet leg.; SMNH • 1 ♂, 6 juvs; Kopetdag Mts, Firyuza Canyon; 37°52' N, 58°02' E; 1200–1400 m a.s.l.; 7–16 Feb. 1979; G.T. Kuznetsov leg.; ZMMU • 5 ♂♂, 1 ♀ subad.; Kopetdag Mts, Karanki Gorge; 37°48' N, 58°18' E; 800–900 m a.s.l.; 8–15 Apr. 1980; G.T. Kuznetsov leg.; ZISP • 3 ♂♂; Kopetdag Mts, Kurtusu Gorge; 37°44' N, 58°23' E; 800–1000 m a.s.l.; 15–22 Mar. 1980; G.T. Kuznetsov leg.; SMNH.

Additional material (7 ♂♂, 2 ♀♀ subad.)

TURKMENISTAN • 1 ♂; Kopetdag Mts, Aidere Canyon; 1–30 Jun. 1983; V. Fet leg.; SMNH • 2 ♀♀ subad.; Kopetdag Mts, Eldere Canyon; 38°31' N, 56°23' E; 800–1000 m a.s.l.; 5–9 Jul. 1982; N.S. Ustinova leg.; ZMMU • 1 ♂; same collection data as for preceding; 16–25 Apr. 1983; S. Zabelin leg.; ZMMU • 4 ♂♂; same collection data as for preceding; 28 Nov.–18 Dec. 1984; T. Sorokina leg.; SMNH • 1 ♂; Kopetdag Mts, near summit of Mt Syunt; 38°31' N, 56°22' E; 1560 m a.s.l.; 26 Mar. 1993; D.A. Milko leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 21.

MEASUREMENTS. TBL 11.40, CL 4.51, CW 4.17, LL 0.40, LW 0.86, SL 2.34, SW 2.08.

COLOUR. Carapace, sternum, labium, maxillae and leg coxae light yellowish orange; chelicerae and radial grooves of carapace medium reddish orange; eye tubercle blackish brown; palps, legs and spinnerets pale brownish yellow; abdomen light greyish brown, dorsally with darker and weakly contrasting brown chevron-like pattern.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 103. Clypeus and eye group as in Fig. 158. Eye diameters and interdistances: AME 0.12(0.18), ALE 0.22, PLE 0.14, PME 0.13; AME–AME 0.15(0.09), ALE–AME 0.10(0.07), ALE–PLE 0.08, PLE–PME 0.04, PME–PME 0.37. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 9 promarginal teeth and 3–4 mesobasal denticles. MIT indiscernible (Fig. 200). Sternum, labium and maxillae as shown in Fig. 222. Maxillae with 9–10 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 281, 305. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided by setae on tarsus II; sparse and very widely divided on tarsi III–IV. Trichobothria: 2 rows of 8–9 each on tibiae, 13–15 on metatarsi, 12–13 on tarsi, 8 on cymbium. PTC I–IV with 7–9 teeth on each margin.

SPINATION. Palp: femur d3, pd1; patella p1; tibia d2, p3, r2, v6(7); cymbium d6. Leg I: femur d4, pd3, rd3; patella p1; tibia p2, pv3, r3(2), rv2+2M; metatarsus v5(3). Leg II: femur d4, pd3; patella p1; tibia p2(3), v7; metatarsus d1, p2, v5. Leg III: femur d4, pd3, rd2; patella p1, r1; tibia d3, p3, r3, v7; metatarsus d1, p3, r3, v7. Leg IV: femur d4, pd3, rd2; patella p1, r1; tibia d2, p3, r3, v7; metatarsus d3, p4, r4, v8. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 372. Embolus long tapering and slightly curved subapically (Figs 443–444).

SPINNERETS. See Fig. 604. PMS: absent. PLS: maximal diameter 0.43; length of basal, medial and apical segments 0.76, 0.63, 0.58; total length 1.97; apical segment shortly digitiform.

LEG MEASUREMENTS.

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.73	1.22	2.18	–	0.74	6.87
Leg I	4.69	2.25	3.95	3.47	2.06	16.42
Leg II	4.37	2.04	3.48	3.15	2.05	15.09
Leg III	3.93	1.73	2.98	3.53	2.02	14.19
Leg IV	4.98	1.84	3.97	5.06	2.35	18.20

Female

Adult females are unknown. All the four examined female specimens (CL 4.0–4.2) lack developed spermathecae and thus they are recognised to represent subadult spiders. Although Fet (1984) used some female characters in the original description, he did not mention any feature related to the spermathecae. Until the description of conspecific adult females is published, the species should be considered as known only for males.

Variation

Carapace length in males (n=12) varies from 4.21 to 4.87; a characteristic pale colouration, including a poorly developed chevron-like abdominal pattern, shows no significant variation throughout the specimens (as in Fig. 22).

Ecology

The species inhabits mountain forest biotopes at 700–1560 m a.s.l.; its distribution is mainly confined to sparse forest formation dominated by *Acer turkomanicum* Pojark. and *Juniperus turkomanica* B. Fedtshenko. See Fig. 719, showing the type locality. Wandering males were collected from late November till June, with a certain peak in April. Since almost all specimens (with only one exception) were collected exclusively using pitfall traps, no detailed information regarding the spider retreats is known.

Distribution

Turkmenistan: southwestern and central parts of the Kopetdag Mts. See Fig. 757.

Raveniola mikhailovi Zonstein, 2021

Figs 23–24, 56–57, 78–79, 104, 130, 159, 188–189, 223, 249–250, 282, 306, 373, 445–447, 538–540, 605–608, 720–722, 758

Raveniola mikhailovi Zonstein 2021: 209, figs 1–2, 5–6, 13–15 (♂♀), except for the mismatched figs 9–10 (♂; see the corresponding notes below).

Raveniola virgata – Zonstein 1987: 1018 (part).

Diagnosis

Males of *Raveniola mikhailovi* differ from the related male congeners by the following characters: from *R. nenilini* sp. nov. and *R. vulpina* sp. nov. by a gently twisted (vs slightly arcuate) embolus, and from *R. virgata* in having a less stout palpal tibia, as well as a thinner tibia and metatarsus I (Figs 282, 373, 445–447 cf. Figs 286–287, 376, 448–449, 459–465). Females of *R. mikhailovi* are distinguishable due to a specific structure of the spermathecae, with relatively short trunks and widely diverging lateral diverticula (vs differently arranged spermathecal structures in other species; see Figs 538–540 cf. Figs 541–543, 547–554).

Material examined**Holotype**

KYRGYZSTAN • ♂; Chatkal Mts (southern slope), Hoja-Ata Canyon, Karangitun Gorge; 41°46' N, 71°56' E; 1200–1400 m a.s.l.; 2 May 1983; S. Zonstein leg.; SMNH.

Paratypes (8 ♂♂, 24 ♀♀, 1 ♀ subad.)

KYRGYZSTAN • 3 ♀♀; same collection data as for preceding; SMNH • 2 ♂♂, 2 ♀♀; same collection data as for preceding, Tumanyak Gorge; 41°49' N, 71°56' E; 1800 m a.s.l.; 5 Jul. 2000; S. Zonstein leg.; SMNH • 5 ♀♀, 1 ♀ subad.; same collection data as for preceding, Kokkolot Gorge; 41°47' N, 71°57' E; 1600 m a.s.l.; 16 May 1982; S.V. Ovchinnikov leg.; SMNH • 4 ♀♀; same collection data as for preceding, Kichkil Gorge; 41°50' N, 71°57' E; 1400 m a.s.l.; 9 Jul. 1983; K.G. Mikhailov leg.; ZMMU • 5 ♂♂, 1 ♀; same collection data as for preceding, vicinity of Sary-Chelek Lake; 41°52' N, 71°58' E; 1900–2000 m a.s.l.; 28 May 1992; S. Zonstein leg.; SMNH • 1 ♂, 9 ♀♀; Chatkal Mts, Aflatun Canyon, Oyalma (Uyalma) Gorge; 41°52' N, 71°51' E; 1800 m a.s.l.; 29 Jul. 1983; K.G. Mikhailov leg.; ZMMU.

Additional material (4 ♀♀, 2 ♀♀ subad.)

KYRGYZSTAN • 2 ♀♀ subad.; Chatkal Mts, Sary-Chelek Reserve; 25 Jul. 1968; V.F. Bakhvalov leg.; SMNH • 4 ♀♀; Chatkal Mts, Chapchama Pass; 41°32' N, 70°49' E; 2850 m a.s.l.; 8 Jul. 1968; V.F. Bakhvalov leg.; SMNH.

Description**Male** (holotype)

HABITUS. See Fig. 23.

MEASUREMENTS. TBL 12.30, CL 4.56, CW 4.12, LL 0.39, LW 0.81, SL 2.33, SW 2.16.

COLOUR. Carapace, palps and legs medium yellowish orange; leg I slightly darker than other legs; eye tubercle blackish brown; chelicerae light cherry red; sternum, labium and maxillae light yellowish orange; abdomen greyish brown, with darker brown dorsal chevron-like pattern and a few small brown marks on ventral side; book-lungs and spinnerets pale yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 104. Clypeus and eye group as in Fig. 159. Eye diameters and interdistances: AME 0.15(0.22), ALE 0.27, PLE 0.20, PME 0.18; AME–AME 0.12(0.05), ALE–AME 0.06(0.03), ALE–PLE 0.05, PLE–PME 0.02, PME–PME 0.29. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 9–10 promarginal teeth and 2 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 223. Maxillae with 11–15 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 282, 306. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided by setae on tarsus II; sparse and very widely divided on tarsi III–IV.

Trichobothria: 2 rows of 8–9 each on tibiae, 12–14 on metatarsi, 11–12 on tarsi, 8 on cymbium. PTC I–II and III–IV with 8–10 and 9–11 teeth on each margin, respectively.

SPINATION. Palp: femur d3, pd2, rd2; patella pd1; tibia d2, p3, r1, v6; cymbium d10(12). Leg I: femur d4, pd3, rd3; patella p1; tibia p2, pv1, r2, rv2+2M; metatarsus v1. Leg II: femur d4, pd3; patella p1; tibia p4(3), v7; metatarsus p2(1), v4(3). Leg III: femur d4, pd3, rd2; patella p3(2), r1; tibia d3, p3, r3, v8; metatarsus p3, r3, v8. Leg IV: femur d4, pd3, rd3; patella p1, r1; tibia d3, p3, r3, v9; metatarsus d3, p4, r4, v8. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 373. Embolus long tapering and slightly curved subapically (Figs 445–447).

SPINNERETS. See Figs 605–606. PMS: length 0.23, diameter 0.12. PLS: maximal diameter 0.42; length of basal, medial and apical segments 0.68, 0.47, 0.38; total length 1.53; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.61 (3.19)	1.41 (1.78)	1.83 (2.36)	–	0.72 (2.25)	6.57 (9.58)
Leg I	4.13 (4.31)	2.26 (2.77)	3.36 (3.41)	3.27 (2.66)	1.99 (2.04)	15.01 (15.19)
Leg II	3.81 (4.13)	2.03 (2.47)	3.02 (2.88)	3.07 (2.70)	1.94 (2.03)	13.87 (14.21)
Leg III	3.63 (3.46)	1.71 (1.89)	2.58 (2.45)	3.73 (3.02)	2.03 (2.03)	13.68 (12.85)
Leg IV	4.71 (4.62)	2.14 (2.50)	3.67 (3.59)	5.18 (4.66)	2.65 (2.25)	18.35 (17.62)

Female (paratype)

HABITUS. See Fig. 57.

MEASUREMENTS. TBL 18.10, CL 6.56, CW 5.54, LL 0.58, LW 1.13, SL 3.35, SW 2.84.

COLOUR. As in male.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 130. Clypeus and eye group as in Fig. 189. Eye diameters and interdistances: AME 0.13(0.19), ALE 0.28, PLE 0.20, PME 0.14; AME–AME 0.14(0.08), ALE–AME 0.12(0.09), ALE–PLE 0.07, PLE–PME 0.06, PME–PME 0.40. Cheliceral rastellum absent. Each cheliceral furrow with 9 promarginal teeth and 3 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 250. Maxillae with 12–16 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; entire on palpal tarsus and tarsus I; narrowly divided by setae on tarsus II; sparse and widely divided on tarsus III; rudimentary on tarsus IV. Trichobothria: 2 rows of 9–11 each on tibiae, 15–16 on metatarsi, 14–15 on tarsi, 10 on palpal tarsus. Palpal claw with 4 long promarginal teeth. PTC I–II and III–IV with 6–7 and 7–9 teeth on each margin, respectively.

SPINATION. Femora with 1–2 basodorsal spine and 2–3 dorsal bristles; palpal patella and tarsi I–IV aspinose. Palp: femur pd1; tibia v7; tarsus v4. Leg I: femur pd1; patella p1; tibia p2, v7; metatarsus v6. Leg II: femur pd1; patella p1; tibia p2, v7; metatarsus v6. Leg III: femur pd3, rd2; patella p2, r1; tibia d1, p2, r2, v7; metatarsus d1, p4, r3, v8(7). Leg IV: femur pd1, rd1; patella p1, r1; tibia d1, p3(2), r3, v7; metatarsus d1, p4, r4, v12(10).

SPERMATHECAE. Each of paired spermathecae Y-shaped with relatively short and wide base carrying two relatively short and widely diverging branches (Fig. 540).

SPINNERETS. See Fig. 608. PMS: length 0.38, diameter 0.18. PLS: maximal diameter 0.62; length of basal, medial and apical segments 1.08, 0.55, 0.48; total length 2.11; apical segment triangular.

Variation

Carapace length in males (n=9) varies from 4.41 to 5.69, in females (n=11) from 4.72 to 7.37. Variations in the habitus, the eye group arrangement, and the structure of the sternum and the spinnerets are shown in Figs 24, 56, 78–79, 188, 249, 607. Variation in the structure of the spermathecae as shown in Figs 538–540.

Ecology

According to the observations and the labelled collection data, the spiders were collected under stones in a wide array of montane habitats – from shrubland on the lower border of the forested zone via the broad-leaved, mixed and coniferous montane forests (dominated by *Juglans regia* and *Picea schrenkiana* Fisch. & C.A. Mey., respectively) to the subalpine and alpine woodless grasslands (Figs 720–722). The spiders use cavities under stones as retreats. In Sary-Chelek Reserve, they can occur together with a sympatric species, *Raveniola vulpina* sp. nov. (the ranges of these two species partially overlap).

Distribution

Known from Western Tien-Shan: Chatkal Mts. See Fig. 758.

Notes

When describing this species, the illustrations showing the copulatory bulb of the male holotype of *R. vulpina* sp. nov., stored in a folder under the name indicating the type locality, common for two species (Sary-Chelek), were mistakenly used instead of images of this structure actually belonging to the male holotype of the sympatric *R. mikhailovi*, kept in the same folder. This error is corrected herein. All other images of the holotype, used at the original description (Zonstein 2021: figs 1, 5), are correct.

Raveniola nenilini sp. nov.

[urn:lsid:zoobank.org:act:0AF92C5C-1013-4448-8948-0447994ACDAC](https://zoobank.org/urn:lsid:zoobank.org:act:0AF92C5C-1013-4448-8948-0447994ACDAC)

Figs 25, 58, 105, 131, 160, 190, 224, 251, 283, 307, 374, 448–449, 541–543, 609–611, 723–730, 758

Raveniola virgata – Zonstein 1987: 1018 (part).

Diagnosis

Males of *Raveniola nenilini* sp. nov. differ from the related male congeners by the following characters: from *R. mikhailovi* and *R. virgata* by a gently arcuate (vs slightly twisted) embolus, and from *R. vulpina* sp. nov. in having a considerably shorter and stouter palpal tibia, as well as a broader copulatory bulb (Figs 374, 448–449 cf. Figs 377–378, 445–447, 454–465). Females of *R. nenilini* are distinguishable due to a specific structure of the spermathecae, with long strap-shaped trunks, and long and thin lateral diverticula, where each diverticulum starts with a long and narrow neck and ends with a short subglobular fundus (vs differently arranged spermathecal structures in other species). See Figs 541–543 cf. Figs 538–540, 544–550).

Etymology

The specific epithet is given in honour and memory of Andrei Nenilin (1960–1986), noting his role in the modern research of the Central Asian spider fauna.

Material examined

Holotype

UZBEKISTAN • ♂; Ugam Mts (southern slope), Kainarsai Gorge; 41°42.3' N, 70°00.5' E; 1300 m a.s.l.; 24 Apr. 1983; S. Zonstein leg.; SMNH.

Paratypes (2 ♂♂, 7 ♀♀)

UZBEKISTAN • 1 ♀; same collection data as for holotype; 1300–1400 m a.s.l.; SMNH • 2 ♂♂, 2 ♀♀; same collection data as for holotype; 1150–1250 m a.s.l.; 19–20 Oct. 1985; S. Zonstein leg.; SMNH • 2 ♀♀; same collection data as for holotype, Sijaksai Gorge; 41°43' N, 70°03' E; 1200 m a.s.l.; 31 Mar. 1983; A.B. Nenilin and S.V. Ovchinnikov leg.; SMNH • 1 ♀; Chimgan Mts (northern slope), Mazarsai Canyon; 41°33' N, 70°05' E; 1200 m a.s.l.; 16 Jun. 1995; S. Zonstein leg.; SMNH • 1 ♀; same collection data as for preceding, Gulikamsai Canyon; 41°33' N, 70°04' E; 1300 m a.s.l.; 8 May 2023; S. Zonstein leg.; SMNH.

Additional material (4 ♀♀, 3 juvs)

UZBEKISTAN • 1 juv.; Chatkal Mts (western slope), Aksakata Canyon, northwestern slope of Mt Syurenata; 41°24' N, 69°51' E; 1600–1800 m a.s.l.; 3 May 2018; S. Zonstein leg.; SMNH • 1 juv.; Ugam Mts, Urungachsai Gorge; 41°55' N, 70°20' E; 1300 m a.s.l.; 24 Jun. 1997; S. Zonstein leg.; SMNH • 1 juv.; Karzhantau Mts, Kansai Canyon, 2 km W of Khumsan Town; 41°41' N, 69°55' E; 1050 m a.s.l.; 6 May 2022; S. Zonstein leg.; SMNH • 4 ♀♀; Qurama Mts, Kamchik Pass; 41°06' N, 70°31' E; 2200 m a.s.l.; 8 Apr. 1986; S.V. Ovchinnikov leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 25.

MEASUREMENTS. TBL 8.55, CL 4.26, CW 3.77, LL 0.34, LW 0.71, SL 2.04, SW 1.71.

COLOUR. Carapace and chelicerae uniformly brownish orange; eye tubercle blackish brown; palps and legs yellowish orange (leg I slightly darker than other legs); sternum, labium and maxillae light yellowish orange; abdomen dorsally with reticulate pattern consisting of numerous dense and irregular light yellow spots on medium chestnut brown background, and ventrally light greyish brown, with pale yellowish brown book-lungs and spinnerets.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 105. Clypeus and eye group as in Fig. 160. Eye diameters and interdistances: AME 0.10(0.14), ALE 0.19, PLE 0.14, PME 0.11; AME–AME 0.12(0.08), ALE–AME 0.06(0.04), ALE–PLE 0.05, PLE–PME 0.04, PME–PME 0.25. Anterior cheliceral edge with unmodified setae; rastellum not developed. Each cheliceral furrow with 9 promarginal teeth and 2 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 224. Maxillae with 17–18 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 283, 307. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided with setae on tarsus II; sparse and widely divided on tarsi III–IV. Trichobothria: 2 rows of 8–9 each on tibiae, 10–11 on metatarsi, 11–12 on tarsi, 9–10 on cymbium. PTC I–IV with 9–10 teeth on each margin.

SPINATION. Palpal patella, patella I, and tarsi I–IV aspinose. Palp: femur d3, pd2; tibia d1, p3, r1, v3; cymbium d4(5). Leg I: femur d4, pd3, rd3; tibia p2, pv2, r1, rv2(1)+2M; metatarsus v2. Leg II: femur d4, pd3; patella p1; tibia p3, v7; metatarsus p1, v6. Leg III: femur d4, pd3, rd3; patella p2; tibia d2, p3, r3, v7; metatarsus d2, p3, r3, v7. Leg IV: femur d4, pd3, rd3; patella p1, r1; tibia d2, p3, r3, v7; metatarsus d3(2), p3, r4, v8.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 374. Embolus long, tapering and slightly curved subapically (Figs 448–449).

SPINNERETS. See Fig. 609. PMS: length 0.16, diameter 0.06. PLS: maximal diameter 0.31; length of basal, medial and apical segments 0.64, 0.28, 0.29; total length 1.21; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.41 (3.53)	1.24 (1.98)	1.81 (2.31)	–	0.64 (2.06)	6.10 (9.88)
Leg I	4.04 (4.52)	1.96 (2.76)	3.11 (3.29)	2.99 (2.24)	1.98 (1.69)	14.08 (14.50)
Leg II	3.87 (4.45)	1.82 (2.57)	2.80 (2.87)	2.82 (2.21)	1.87 (1.58)	13.18 (13.68)
Leg III	3.34 (3.36)	1.26 (2.08)	2.31 (2.37)	3.22 (2.98)	1.91 (1.99)	12.04 (12.78)
Leg IV	4.06 (5.04)	1.75 (2.41)	3.19 (3.18)	4.29 (4.11)	2.20 (2.17)	15.49 (16.91)

Female (paratype from Kainarsai)

HABITUS. See Fig. 58.

MEASUREMENTS. TBL 16.50, CL 6.62, CW 5.87, LL 0.53, LW 1.11, SL 3.26, SW 2.80.

COLOUR. As in male.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 131. Clypeus and eye group as in Fig. 190. Eye diameters and interdistances: AME 0.14(0.19), ALE 0.27, PLE 0.20, PME 0.14; AME–AME 0.21(0.16), ALE–AME 0.16(0.14), ALE–PLE 0.12, PLE–PME 0.10, PME–PME 0.48. Cheliceral rastellum absent. Each cheliceral furrow with 9–10 promarginal teeth and 2 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 251. Maxillae with 15–17 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; entire on palpal tarsus and tarsus I; narrowly divided by setae on tarsus II; sparse and widely divided on tarsus III; rudimentary on tarsus IV. Trichobothria: 2 rows of 8–10 each on tibiae, 13–19 on metatarsi, 12–14 on tarsi, 9 on palpal tarsus. Palpal claw with 3 promarginal teeth. PTC I–II and III–IV with 4–5 and 5–6 teeth on each margin, respectively.

SPINATION. Femora I–IV with 1–2 basodorsal spines and 2–3 dorsal spikes (underdeveloped spines); palpal femur dorsally with 3 spikes; palpal patella, patella I, and tarsi I–IV aspinose. Palp: femur pd1; tibia p2, v4; tarsus v2. Leg I: femur pd2; tibia p2, v3; metatarsus v4. Leg II: femur pd2; patella p1; tibia p2, v5; metatarsus v7. Leg III: femur pd3, rd2; patella p3(2), r1; tibia d1, p2, r2(1), v7; metatarsus d3(2), p3, r3, v8(7). Leg IV: femur pd1, rd1; patella r1; tibia p2, r2, v7; metatarsus p3, r2, v8(7).

SPERMATHECAE. Each of paired spermathecae Y-shaped with relatively short and wide base carrying two equally thin, long and weakly diverging branches (Fig. 542).

SPINNERETS. See Fig. 610. PMS: length 0.28, diameter 0.15. PLS: maximal diameter 0.65; length of basal, medial and apical segments 0.84, 0.45, 0.37; total length 1.66; apical segment triangular.

Variation

Carapace length in male paratypes (n=2) varies from 3.84 to 4.73, in females (n=8) from 3.67 to 6.62. Variation in the structure of the spermathecae and female spinnerets as shown in Figs 541, 543 and 611.

Ecology

All spiders were found hiding in leaf litter or in soil cavities under stones in the montane woods, composed of *Acer* spp., *Juglans regia* and *Juniperus* spp. (Figs 723–730).

Distribution

Known from the westernmost part of the Tieng-Shan mountain system: Ugam Mts and adjoining part of Chimgan Mts. Most likely, a few conspecific specimens, represented chiefly by juveniles, were found also in midlands and highlands of the neighboring Chatkal, Karzhantau and Qurama Mts. See Fig. 758.

Raveniola ovchinnikovi sp. nov.

[urn:lsid:zoobank.org:act:89FDF531-7C9A-4799-9279-7009A7A26049](https://doi.org/10.21203/rs.3.rs-4898531/v1)

Figs 26–27, 106, 161, 225, 284–285, 375, 450–453, 612, 759

Diagnosis

Raveniola ovchinnikovi sp. nov. clearly differs from other species of the group by having a pale coloured body and legs, as well as by the full absence of the abdominal pattern and by its clearly longer (shortly digitiform vs triangular) apical segments of PLS (Figs 26–27, 612 cf. 19–24, 28–35, 75–81, 597–598, 605, 609, 614, 616).

Etymology

The specific epithet is given in honour and memory of Sergei Ovchinnikov (1958–2007) noting his considerable contribution to the modern study of Central Asian spiders.

Material examined

Holotype

KYRGYZSTAN • ♂; foothills of Kyrgyz Mts (northern slope), Kok-Dzhar Gorge, 3 km SSE of Bishkek; 42°47.4' N, 74°37.7' E; 1100 m a.s.l.; 15 Oct. 1992; S.V. Ovchinnikov leg.; SMNH.

Paratype

KYRGYZSTAN • 1 ♂; same collecting data as for preceding, Orto-Sai Canyon, 2.5 km S of Bishkek; 42°47.7' N, 74°36.2' E; 1050 m a.s.l.; SMNH.

Additional material (5 juvs)

KAZAKHSTAN • 1 juv.; foothills of Chu-Ili Mts, surroundings of Kordai Town; 43°02' N, 74°43' E; 600–700 m a.s.l.; 11 Jun. 1983; S.V. Ovchinnikov leg.; SMNH.

KYRGYZSTAN • 1 juv.; foothills of Kyrgyz Mts, Alamedin Canyon, 12 km SE of Bishkek, environs of Koi-Tash Village; 42°43' N, 74°40' E; 1300 m a.s.l.; 20 Jul. 1978; S. Zonstein leg.; SMNH • 2 juvs; Chu Valley, bank of Ala-Archa River, 1 km N of Bishkek; 42°57' N, 74°34.5' E; 700 m a.s.l.; 5 Apr. 1983; S. Zonstein and S.V. Ovchinnikov leg.; SMNH • 1 juv.; foothills of Kyrgyz Mts (northern slope), Jardy-Kaindy Canyon, 80 km WSW of Bishkek; 42°41' N, 73°37' E; 1200 m a.s.l.; 11 Jun. 1985; S. Zonstein leg.; SMNH.

Description

Male (holotype)

HABITUS. See Fig. 26.

MEASUREMENTS. TBL 9.10, CL 4.03, CW 3.52, LL 0.37, LW 0.78, SL 2.12, SW 1.84.

COLOUR. Entire cephalothorax, palps and legs pale orange; carapace and chelicerae slightly darker, light brownish orange; eye tubercle dark brown to brownish black; abdomen uniformly pale greyish white, without dorsal pattern; spinnerets very pale greyish yellow.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 106. Clypeus and eye group as in Fig. 161. Eye diameters and interdistances: AME 0.12(0.16), ALE 0.19, PLE 0.11, PME 0.09; AME–AME 0.14(0.10), ALE–AME 0.06(0.04), ALE–PLE 0.05, PLE–PME 0.04, PME–PME 0.30. Anterior cheliceral edge with unmodified setae; rastellum absent. Each cheliceral furrow with 10–11 promarginal teeth and 4 mesobasal denticles. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 225. Maxillae with 12–13 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 284. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided with setae on tarsus II; widely divided on tarsus III; sparse and rudimentary on tarsus IV. Trichobothria: 2 rows of 8–9 each on tibiae, 8–11 on metatarsi, 10–12 on tarsi, 8 on cymbium. PTC I–IV with 8 and 8–10 teeth on outer and inner margins, respectively.

LEG MEASUREMENTS.

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.33	1.23	2.17	–	0.63	6.36
Leg I	4.16	2.16	3.25	3.21	2.12	14.90
Leg II	3.94	1.93	3.18	3.16	2.13	14.34
Leg III	3.49	1.25	1.92	3.14	2.15	11.95
Leg IV	4.21	1.91	3.67	3.78	2.67	16.24

SPINATION. Palpal patella, patellae I–II, and tarsi I–IV aspinose. Palp: femur d2, pd2, rd2; tibia d4, pv3, r2, v5; tarsus d5. Leg I: femur d4, pd2, rd2; tibia p2, r2, pv2, rv2+2M; metatarsus v1. Leg II: femur d4, pd2; tibia p3, v7; metatarsus p1, v6. Leg III: femur d4, pd3, rd2; patella p2, r2(1); tibia d3, p3, r3, v7; metatarsus d3, p4, r3, v7. Leg IV: femur d4, pd3, rd2; patella p2 r2(1); tibia d1, d3(2), p3, r4, v7; metatarsus d3, p3, r3(1), v8(6).

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 375. Embolus long, tapering and slightly curved subapically (Figs 450–452).

SPINNERETS. See Fig. 612. PMS: length 0.18, diameter 0.07. PLS: maximal diameter 0.33; length of basal, medial and apical segments 0.90, 0.57, 0.52; total length 1.99; apical segment digitiform.

Female

Unknown.

Variation

Carapace length in the male paratype 3.68. The variation in habitus and the structure of the male tibia and metatarsus I, and the copulatory bulb, as shown in Figs 27, 285 and 453.

Ecology

Unlike most species of the group, *Raveniola ovchinnikovi* sp. nov. occurs in a subarid low-altitude zone of intermountain valleys and in dry low foothills, where it inhabits steppe biotopes on the loess substrate. All spiders were collected from cavities and cracks in the clay precipices or from abandoned rodent burrows.

Distribution

The northernmost part of Kyrgyzstan and the adjoining territory of southeastern Kazakhstan: the Chu Valley and the adjoining foothills of Kyrgyz and Chu-Ili Mts. See Fig. 759.

Raveniola tarabaevi sp. nov.

[urn:lsid:zoobank.org:act:E4DE9EC3-3D2A-4F4B-9167-3D80A69832E5](https://zoobank.org/urn:lsid:zoobank.org:act:E4DE9EC3-3D2A-4F4B-9167-3D80A69832E5)

Figs 59, 132, 191, 252, 544–546, 613, 759

Diagnosis

The new species can be distinguished from other members of the group by having smaller PME (which are about 0.7 times as large as AME) and, correspondingly, by larger interdistances AME–PME and

PLE–PME (which are approximately equal to two and one PME diameters, respectively). Within other related species, AME are subequal to PME, and the distances AME–PME and PLE–PME are clearly shorter than two and one PME diameter, respectively. The structure of the spermathecae in *R. tarabaevi* sp. nov. most closely resembles that in *R. kirgizica* sp. nov.; both species share a relatively short and subapically constricted spermathecal trunk, combined with a long lateral diverticulum. However, in *R. tarabaevi*, the main trunk is not so slender as in *R. kirgizica* (Figs 544–546 cf. Fig. 537).

Etymology

The specific epithet is given in honour and memory of Chingiz Tarabaev (1951–1999), for his significant personal contribution to the modern study of the Central Asian spider fauna.

Material examined

Holotype

KAZAKHSTAN • ♀; Zhetyzhol Mts, Kastek Ridge, Uzunbulak Gorge, eastern slope of Mt Beriktas; 42°54' N, 75°33' E; 1700–1900 m a.s.l.; 12 May 1988; S. Zonstein and S. Ovchinnikov leg.; SMNH.

Paratypes

KAZAKHSTAN • 6 ♀♀; same collection data as for preceding; SMNH.

Additional material

KAZAKHSTAN • 2 ♀♀; Trans-Ili Mts, Turgen Canyon 8 km S of Turgen Town, forest protection area; 43°18' N, 77°38' E; 1500 m a.s.l.; 12 Jul. 1993; S. Ovchinnikov and D. Milko leg.; SMNH.

Description

Female (holotype)

HABITUS. See Fig. 59.

MEASUREMENTS. TBL 15.75, CL 4.91, CW 4.54, LL 0.47, LW 0.98, SL 2.62, SW 2.36.

COLOUR. Carapace, sternum, labium, maxillae, palps and legs uniformly light ginger orange; eye tubercle blackish brown; chelicerae reddish orange; abdomen and spinnerets pale grayish brown; abdomen dorsally with slightly darker grayish cardiac mark followed behind by several very small and almost indistinct brownish chevrons.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 132. Clypeus and eye group as in Fig. 191. Eye diameters and interdistances: AME 0.12(0.16), ALE 0.27, PLE 0.14, PME 0.08; AME–AME 0.14(0.10), ALE–AME 0.12(0.10), ALE–PLE 0.11, PLE–PME 0.07, PME–PME 0.37. Cheliceral rastellum absent. Each cheliceral furrow with 9 promarginal teeth and 3–4 relatively large mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 252. Maxillae with 22 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; narrowly divided on palpal tarsus and tarsi I–II; sparse and widely divided on tarsus III; absent on tarsus IV. Trichobothria: 2 rows of 8–9 each on tibiae, 14–16 on metatarsi, 11–13 on tarsi, 9 on palpal tarsus. Palpal claw with 4 promarginal teeth. PTC I–IV with 6–8 teeth on each margin.

LEG MEASUREMENTS.

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.77	1.43	1.88	–	1.63	7.71
Leg I	3.43	2.07	2.79	1.94	1.58	11.81
Leg II	3.24	2.01	2.30	2.08	1.59	11.22
Leg III	3.05	1.82	2.03	2.65	1.67	11.22
Leg IV	3.89	2.03	2.91	3.66	1.93	14.42

SPINATION. Femora I–IV with one basodorsal spine and 3 dorsal bristles; palpal femur dorsally with 3 bristles; tarsi I–IV aspinose. Palp: femur pd1; patella p1; tibia v7; tarsus v2. Leg I: femur pd1; patella p1; tibia p1(0), v6; metatarsus v7. Leg II: femur pd1; patella p1; tibia p1, v6; metatarsus v7. Leg III: femur pd2, rd2; patella r1; tibia d1, p2, r3, v7; metatarsus d2, p3, r3, v7. Leg IV: femur pd2, rd1; patella p1, r1; tibia d1, p3, r2, v7; metatarsus d2, p4(3), r3, v8.

SPERMATHECAE. Each of paired spermathecae Y-shaped with short spermathecal trunk carrying relatively long lateral diverticulum with fairly pronounced terminal fundus (Fig. 544).

SPINNERETS. See Fig. 613. PMS: length 0.29, diameter 0.13. PLS: maximal diameter 0.59; length of basal, medial and apical segments 0.81, 0.54, 0.48; total length 1.83; apical segment triangular.

Male

Unknown.

Variation

Carapace length in females (n=6) varies from 4.37 to 6.25. Abdomen dorsally with a weak brownish chevron-like pattern that ranges from poorly discernible to almost indistinct throughout the specimens. Within the type series, only a minor variation in the structure of the spermathecae is observed, as shown in Figs 545–546.

Ecology

All spiders were found hiding under stones in small mountain gorges covered with open low forest and shrubs.

Distribution

Kazakhstan: Northern Tien-Shan (Trans-Ili Mt Ridge, including its western spur, Zhetyzhol Mts). See Fig. 759.

Notes

Logunov & Gromov (2012: text figure on p. 28) depicted a female belonging to this species as *Raveniola* sp.

Raveniola virgata (Simon, 1891)

Figs 28–33, 60, 107, 133, 162–163, 192–193, 201, 226, 253, 286–287, 308, 343–348, 376, 454–458, 478, 486, 547–550, 614–615, 731–734, 739–746, 760

Brachythele virgata Simon, 1891: 304 (♂♀).

Brachythele arnoldii Zonstein, 1984b: 42, figs 1–6 (♂♀). Synonymized by Zonstein 1985: 159.

Brachythele virgata – Simon 1903: 965. — Reimoser 1919: 188. — Roewer 1942: 196. — Bonnet 1955: 912. — Zonstein 1984a: 145; 1985: 159.

Raveniola virgata – Zonstein 1987: 1015, figs 1–2 (♂♀); 2021: figs 3–4, 7–8, 11–12, 16–18 (♂♀). — Platnick 1989: 90. — Mikhailov 1996: 77; 1997: 20; 2013: 12. — Zonstein *et al.* 1996: 133; 2018: 78, 84, figs 165, 213 (♂♀). — Zonstein & Marusik 2012: 78, fig. 4 (♂). — Yunusov *et al.* 2022: 226.

Raveniola arnoldii – Platnick 1989: 90 (as synonym of *R. virgata*).

Raveniola arnoldii – Zonstein 2002c: 173, figs 3–6, 7 (♂♀).

Raveniola virgate – Bakhromova 2016: 258.

Diagnosis

Males of *Raveniola virgata* are distinguishable due to a unique array of generally unexceptional characters: a stouter tibia I with the megaspines set closer to each other; a gently curved and completely aspinose metatarsus I; a shorter and stouter palpal tibia; a moderately long and very gently twisted embolus. None of the sibling species (*R. mikhailovi*, *R. nenilini* sp. nov. and *R. vulpina* sp. nov.) share the same combination. See Figs 28–30, 286–287, 308, 376, 454–458 cf. Figs 283–284, 288–289, 306–307, 309, 373–374, 377–378, 445–449, 459–465. Females of *R. virgata* differ poorly by their somatic structures from females of the related species and can be distinguished from them mostly by the specific structure of the spermathecae, with long inclined trunks and weakly diverging diverticula (Figs 547–550 cf. Figs 538–543, 551–554).

Material examined

Lectotype

KYRGYZSTAN • ♂ (no other data except “Margelhan”, the labeled locality seems to be given as a relatively close geographic point, known at that time; most likely, it does not correspond to the current Margelan in Fergana Region, Uzbekistan); MNHN 6506–B361.

Paralectotype

KYRGYZSTAN • 1 ♀; collected together with the holotype and placed in the same vial.

Additional material (32 ♂♂, 131 ♀♀, 3 juvs)

KYRGYZSTAN • 1 ♂, 1 ♀; Fergana Mts, Gava (labeled as “Kawa”); 41°15' N, 72°50' E; 1300–1500 m a.s.l.; 1912; K. Kuchler leg.; SMF • 1 ♂, 11 ♀♀; Fergana Mts, 2 km N of Charvak Village; 41°16.7' N, 72°59.5' E; 1100–1250 m a.s.l.; 5 May 1981; S. Zonstein leg.; SMNH • 4 ♀♀; same collection data as for preceding; 1000–1050 m a.s.l.; 28 May 1981; SMNH • 1 ♂, 7 ♀♀; same collection data as for preceding; 6–8 Jun. 1981; SMNH • 7 ♀♀; Fergana Mts, surroundings of Gumhana Village; 41°19' N, 72°58' E; 1300–1450 m a.s.l.; 1–2 Aug. 1981; S. Zonstein leg.; SMNH • 1 ♀; same collection data as for preceding; 24 Aug. 1981; SMNH • 1 ♂; Fergana Mts, Airy Gorge; 41°22.4' N, 72°59.8' E; 2050 m a.s.l.; 16 Oct. 1980; S. Zonstein leg.; ZISP • 1 ♂, 8 ♀♀; Fergana Mts, environs of Dashman Village; 41°21' N, 73°00' E; 1600–2000 m a.s.l.; 19–26 Oct. 1980; S. Zonstein leg.; SMNH • 7 ♀♀; Fergana Mts, Jaradar Gorge; 41°20' N, 72°59' E; 1350–1600 m a.s.l.; 10–13 Jun. 1979; S. Zonstein leg.; SMNH • 2 ♀♀; same collection data as for preceding; 18 Oct. 1980; SMNH • 9 ♀♀; same collection data as for preceding; 3–10 Jun. 1982; SMNH • 1 ♀; same collection data as for preceding; 25 Jun. 1981; SMNH • 2 ♂♂, 2 ♀♀; same collection data as for preceding; 10–14 Oct. 1982; SMNH • 2 ♂♂, 1 ♀; same collection data as for preceding; 29 May 1984; SMNH • 2 ♂♂, 3 ♀♀; same collection data as for preceding; 10–11 Oct. 1985; SMNH • 1 ♂; same collection data as for preceding; 16 Apr. 1981; M.A. Kozlov leg.; ZMMU • 3 ♀♀; same collection data as for preceding; 29 Sep. 1983; K.Y. Eskov leg.; ZMMU • 3 ♀♀; Fergana Mts, vicinity of Arslanbob Town; 41°20.0'–41°22.3' N, 72°56.5'–72°58.0' E; 1550–2100 m a.s.l.; 23 Jun. 1981; S. Zonstein leg.; SMNH • 18 ♀♀; same collection data as for preceding; 2–9 Jul. 1981; SMNH • 3 ♂♂, 4 ♀♀; same collection data as for preceding; 27 Sep.–12 Oct. 1983; SMNH • 17 ♂♂, 23 ♀♀; same collection data as for preceding; 22–24 Oct. 1992; SMNH • 1 ♀; Fergana Mts, Arslanbob Canyon; 41°24' N, 72°58' E; 2400 m a.s.l.; 5 Oct. 1982; S. Zonstein leg.; SMNH • 2 ♀♀; same collection data as for preceding; 2200 m a.s.l.; 30 Sep. 1983; S. Zonstein leg.; SMNH • 2 ♀♀; same collection data as for preceding; 2600–3000 m a.s.l.; 17 Jul. 1991; S.V. Ovchinnikov leg.; SMNH • 1 ♀; Fergana Mts, northern slope below Kenkol Pass; 41°32.6' N, 73°02.5' E; 2200 m a.s.l.; 21 Jul. 1993; S. Zonstein leg.; SMNH • 5 ♀♀; Fergana Mts, Karaungur Canyon, vicinity of Kenkol Lake; 41°31' N, 73°02' E; 1800 m a.s.l.; 16 Jul. 1995; leg. S. Zonstein leg.; SMNH • 1 ♀; Fergana Mts, Kugart Canyon, near Kara-Alma Village; 41°13' N, 73°20' E; 1400–1500 m a.s.l.; 29 May 1979; S. Zonstein leg.; SMNH • 1 ♀; Fergana Mts, Yassy Canyon, Zindansai Gorge, 2.5 km N of Akterek Village; 40°53' N, 73°41' E; 1400 m a.s.l.; 18 Aug. 1985; S. Zonstein leg.; SMNH • 1 juv.; Alash Mts, Toskaul Canyon, Kerege-Tash

Gorge; 41°15.5' N, 72°39.4' E; 1500 m a.s.l.; 13 May 1993; S. Zonstein leg.; SMNH • 4 ♀♀; Surentyube Mts, Changet Canyon, Telek (Toluk) Gorge; 40°57' N, 73°11' E; 1400 m a.s.l.; 9 Apr.1983; S. Zonstein leg.; SMNH • 2 juvs; same collection data as for preceding; Sarybulak Gorge; 40°59' N, 73°17' E; 1600 m a.s.l.; 2 Oct.1985; S. Zonstein leg.; SMNH.

Description

Male (lectotype MNHN 6506–B.361)

The figures used also partially refer to the most similar male from the vicinity of Arslanbob.

HABITUS. As shown in Figs 28, 29, 32, 33.

MEASUREMENTS. TBL ca 11.50, CL 4.56, CW 4.21, LL 0.47, LW 0.90, SL 2.35, SW 1.98.

COLOUR. Carapace, palps and legs medium foxy brown; tibia I slightly darker than other segments of legs I–IV; eye tubercle blackish brown; chelicerae medium red; sternum, labium and maxillae light yellowish brown; abdomen grayish brown, dorsally with brownish dorsal chevron-like pattern; epigastrium, book-lungs and spinnerets light yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 107. Clypeus and eye group as in Fig. 162. Eye diameters and interdistances: AME 0.15(0.20), ALE 0.26, PLE 0.20, PME 0.14; AME–AME 0.12(0.07), ALE–AME 0.08(0.06), ALE–PLE 0.07, PLE–PME 0.05, PME–PME 0.32. Anterior cheliceral edge with unmodified setae; intercheliceral tumescence absent (see Fig. 201). Each cheliceral furrow with 10 promarginal teeth and 4 mesobasal denticles (as in Fig. 343). Sternum, labium and maxillae as shown in Figs 226, 344. Maxillae with 12–14 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 286, 308. Scopula: entire and distal on metatarsi I–II; entire on tarsi I–II; vestigial on tarsi III–IV. Trichobothria: 2 rows of 8 each on tibiae, 12–15 on metatarsi, 12–13 on tarsi, 9 on cymbium. Trichobothrial bases and tarsal organ of leg I as shown in Figs 345–347. Paired tarsal claws wide, unpaired claw small and sharply inclined ventrad (as in Fig. 348). PTC I–IV with 9–10 and 11 teeth on outer and inner margin, respectively.

SPINATION. Palp: femur d4, pd1, rd1; tibia d1, p3, r1, v6; cymbium d5. Leg I: femur d3, pd2; tibia p2, pv2, r2, rv2+2M. Leg II: femur d3, pd3; tibia p2, v6; metatarsus p1, v5. Leg III: femur d4, pd3, rd2; patella p2, r1; tibia d1, p4(3), r3, v6; metatarsus d4, p3, r3, v7(6). Leg IV: femur d4, pd3, rd2; patella r1; tibia d4, p3, r4, v6; metatarsus d4, p5, r4, v9. Palpal patella, patellae I–II, metatarsus I and tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 376. Long, thin and very gently S-shaped embolus gradually tapering to apex (Figs 29, 454–455, 478).

SPINNERETS. See Figs 486, 614. PMS: length 0.28, diameter 0.13. PLS: maximal diameter 0.35; length of basal, medial and apical segments 0.60, 0.40, 0.38; total length 1.38; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.58 (2.18)	1.50 (1.35)	2.27 (1.60)	–	0.70 (1.28)	7.05 (6.41)
Leg I	4.48 (2.67)	2.53 (1.90)	3.28 (1.92)	3.33 (1.40)	1.95 (1.07)	15.57 (8.96)
Leg II	3.87 (2.45)	2.23 (1.65)	3.15 (1.77)	3.15 (1.45)	1.95 (1.13)	14.35 (8.45)
Leg III	3.63 (2.25)	1.75 (1.35)	2.83 (1.52)	3.63 (1.87)	2.12 (1.30)	13.96 (8.26)
Leg IV	4.45 (3.07)	2.05 (1.60)	3.57 (2.27)	5.18 (2.83)	2.50 (1.50)	17.75 (11.27)

Female (paralectotype MNHN 6506–B.361)

The figures used also partially refer to the most similar female from Arslanbob.

HABITUS. As shown in Fig. 60.

MEASUREMENTS. TBL ca 12.50, CL 3.98, CW 3.42, LL 0.40, LW 0.77, SL 2.03, SW 1.80.

COLOUR. As in male, but uniformly coloured legs I–IV slightly paler; abdomen dorsally with more contrasting chevron-like pattern.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 133. Clypeus and eye group as in Fig. 192. Eye diameters and interdistances: AME 0.13(0.17), ALE 0.20, PLE 0.13, PME 0.11; AME–AME 0.11(0.07), ALE–AME 0.07(0.05), ALE–PLE 0.05, PLE–PME 0.03, PME–PME 0.28. Cheliceral rastellum absent. Each cheliceral furrow with 9 promarginal teeth and 3–4 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 253. Maxillae with 17–22 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; entire on palpal tarsus and tarsus I; narrowly divided by setae on tarsus II, absent on tarsi III–IV. Trichobothria: 2 rows of 9 each on tibiae, 12–14 on metatarsi, 11–12 on tarsi; 9 on palpal tarsus. Palpal claw with 4 promarginal teeth. PTC I–II with 5 teeth on each margin; PTC III–IV with 4 and 5–6 teeth on outer and inner margin, respectively.

SPINATION. Femora I–IV with one basodorsal spine and 3 dorsal spikes; palpal femur dorsally with 3 spikes; palpal patella, patellae I–II, and tarsi I–IV aspinose. Palp: femur pd1; tibia v7; tarsus v8(3). Leg I: femur pd1; tibia v5; metatarsus v5. Leg II: femur pd1; tibia p2, v5; metatarsus v6. Leg III: femur rd1; patella p1, r1; tibia d1, p2, r2, v7; metatarsus d3, p3, r3, v7. Leg IV: femur rd1; patella p1, r1; tibia d1, p2, r2, v7; metatarsus d1, p4, r3, v7.

SPERMATHECAE. Each of paired spermathecae Y-shaped with narrow base carrying two equally thick, long and weakly diverging branches (Fig. 547).

SPINNERETS. See Fig. 615. PMS: length 0.38, diameter 0.17. PLS: maximal diameter 0.69; length of basal, medial and apical segments 1.08, 0.64, 0.63; total length 2.35; apical segment triangular.

Variation

Carapace length in conspecific males (n=21) varies from 4.14 to 5.62, in females (n=28) from 4.52 to 7.33. Variation in the colouration, in the structure of the eye group, and the male tibia and metatarsus I, as shown in Figs 30–33, 163, 193, 287. Variation in the structure of the copulatory bulb and the spermathecae as shown in Figs 456–458 and 548–550, respectively.

Ecology

Most of the collected spiders were found hiding in soil cavities under stones, or in leaf litter, in tall and dense montane forest at 1200–2200 m a.s.l., dominated by walnut, *Juglans regia* (Figs 731–734). Other specimens occurred in a shrubland and fragmentary woodland area at 1000–1250 m a.s.l. (i.e., within the transition zone below the lower forest boundary), or in subalpine and alpine meadows at 2200–3000 m a.s.l., above the forested midland belt.

Distribution

Kyrgyzstan: Fergana Mts, including the northwestern spurs of this mountain ridge. See Fig. 760.

Notes

Simon (1891) very roughly defined the type locality of *R. virgata* as noted above. Bakhromova (2016) and Yunusov *et al.* (2022) noted this species for the entire Ferghana Depression (divided between

Kyrgyzstan, Uzbekistan and Tajikistan), without making distinctions between the countries represented here. No actual records in Uzbekistan have been registered since the original description of this species (1891). Conversely, all the examined congeners collected from this part of Uzbekistan were found to belong to *R. ferghanensis*. The assumed record of *R. virgata* in Kazakhstan (Logunov & Gromov 2012: 220) remains unconfirmed; most likely, it can be based on misidentified material.

Raveniola vulpina sp. nov.

[urn:lsid:zoobank.org:act:C7957862-1670-4A16-AF15-DABDA8453319](https://zoobank.org/urn:lsid:zoobank.org:act:C7957862-1670-4A16-AF15-DABDA8453319)

Figs 34–35, 61–62, 76–77, 108, 134–135, 164–165, 194–195, 227–228, 254–255, 288–289, 309, 377–378, 459–465, 551–554, 616–618, 735–738, 760

Raveniola mikhailovi – Zonstein 2021: only figs 9–10 (♂; mismatched and erroneously used for the publication; see above).

Diagnosis

Males of *Raveniola vulpina* sp. nov. differ from the related male congeners by the following characters: from *R. michailovi* and *R. virgata* by a gently arcuate (vs slightly twisted) embolus, and from *R. nenilini* sp. nov. in having a considerably longer and thinner palpal tibia, as well as a narrower copulatory bulb (Figs 377–378, 459–465 cf. Figs 373–374, 376, 447, 458). Females of *R. vulpina* differ from females of the related species in having the dorsal abdominal pattern lacking a clearly discernible median stripe (vs its presence; see Figs 61–62 cf. Figs 56–58, 60). Additionally, they are distinguishable due to a specific structure of the spermathecae, with broadly spaced, curved and flattened trunks and widely diverging lateral diverticula (vs differently arranged spermathecal structures in other species; Figs 551–554 cf. Figs 538–543, 547–550).

Etymology

The specific epithet ‘*vulpina*’ is the Latin adjective of ‘*vulpes*’ (= fox) meaning ‘vulpine’ and referring to the foxy ground colouration of this species.

Material examined

Holotype

KYRGYZSTAN • ♂; Chatkal Mts. (southern slope), Sary-Chelek Nature Reserve, Tumanyak Gorge, Karagailisai; 41°49.4' N, 71°56.5' E; 1400–1600 m a.s.l.; 5 Jul. 2000; S. Zonstein leg.; SMNH.

Paratypes (18 ♂♂, 30 ♀♀)

KYRGYZSTAN • 3 ♀♀; same collection data as for preceding; SMNH • 2 ♂♂; same collection data as for preceding; 41°48.7' N, 71°55.3' E; 1800 m a.s.l.; SMNH • 1 ♀; Karangitun Gorge; 41°48' N, 71°57' E; 1700 m a.s.l.; 26 May 1993; S. Zonstein leg.; SMNH • 9 ♂♂, 15 ♀♀; Talas Mts (southern slope), Uzunahmat Canyon, Birbulak Gorge; 42°01.6' N, 72°24.6' E; 1400–1800 m a.s.l.; 14 Aug. 1986; S. Zonstein leg.; SMNH • 6 ♂♂, 11 ♀♀; Talas Mts, Tereksai Canyon; 42°10' N, 72°21' E; 2450–2800 m a.s.l.; 16 Aug. 1986; S. Zonstein leg.; SMNH • 1 ♂; Talas Mts (northern slope), Beshtash Canyon, Kyrgolot Gorge; 42°18.3' N, 72°20.4' E; 2030 m a.s.l.; 18 Aug. 1986; S. Zonstein leg.; SMNH.

Additional material (3 juvs)

KYRGYZSTAN • 2 juvs; Talas Mts, Otmek Valley 7 km WNW of Otmek Pass; 42°19' N, 73°07' E; 2800 m a.s.l.; 9 Jul. 1987; S. Zonstein and S.V. Ovchinnikov leg.; SMNH • 1 juv.; Kyrgyz Mts (northern slope), Kara-Balta Canyon, near the confluence of Kara-Balta and Chon-Mazar rivers; 42°24' N, 73°46' E; 2100–2200 m a.s.l.; 3 Jul. 1994; S.V. Ovchinnikov leg.; SMNH.

Description

Male (holotype)

HABITUS. See Figs 34, 76.

MEASUREMENTS. TBL 12.90, CL 5.62, CW 4.82, LL 0.43, LW 0.83, SL 2.80, SW 2.38.

COLOUR. Carapace, palps and legs (except for darker brown femora) brownish orange; leg I slightly darker than other legs; eye tubercle blackish brown; chelicerae medium reddish brown; sternum, labium and maxillae light yellowish orange; abdomen yellowish brown, with almost indistinct brownish dorsal chevron-like pattern and a few small brown marks on ventral side; book-lungs and spinnerets pale yellowish brown.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 108. Clypeus and eye group as in Fig. 264. Eye diameters and interdistances: AME 0.14(0.20), ALE 0.27, PLE 0.18, PME 0.16; AME–AME 0.11(0.05), ALE–AME 0.09(0.06), ALE–PLE 0.07, PLE–PME 0.05, PME–PME 0.29. Anterior cheliceral edge with unmodified setae; rastellum not developed. Intercheliceral tumescence indiscernible. Each cheliceral furrow with 9 promarginal teeth and 1 mesobasal denticle. MIT indiscernible. Sternum, labium and maxillae as shown in Fig. 227. Maxillae with 11–12 cuspules each.

LEGS. Tibia and metatarsus I as in Figs 288, 309. Scopula: entire and distal on metatarsi I–II; entire on tarsus I; narrowly divided by setae on tarsus II; widely divided on tarsus III; vestigial on tarsus IV. Trichobothria: 2 rows of 8–9 each on tibiae, 13–15 on metatarsi, 11–13 on tarsi, 8 on cymbium. PTC I–II and PTC III–IV with 10–11 and 11–13 teeth on each margin, respectively.

SPINATION. Palp: femur d3, pd3, rd2; patella pd2; tibia d2, p3, r3, v6; cymbium d4. Leg I: femur d4, pd3, rd3; patella p1; tibia p2, pv2, r1, rv2+2M, metatarsus v2. Leg II: femur d4, pd3; patella p1; tibia p3, v8(7); metatarsus v6. Leg III: femur d4, pd3(2), rd3; patella p2; tibia d3, p3, r3, v9; metatarsus p4, r3, v10(9). Leg IV: femur d4, pd3, rd2; patella p2; tibia d4, p3, r3, v9; metatarsus p4, r4, v11. Tarsi I–IV aspinose.

PALP. Tibia, cymbium and copulatory bulb as shown in Fig. 377. Embolus long, tapering and slightly curved subapically (Figs 459–462).

SPINNERETS. See Fig. 616. PMS: length 0.25, diameter 0.11. PLS: maximal diameter 0.51; length of basal, medial and apical segments 0.87, 0.58, 0.48; total length 1.93; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.98 (3.25)	1.58 (1.63)	2.47 (2.30)	–	0.87 (2.06)	7.90 (9.24)
Leg I	4.78 (4.38)	2.73 (2.81)	4.02 (3.31)	4.27 (2.68)	2.28 (1.93)	18.08 (15.11)
Leg II	4.62 (4.25)	2.50 (2.56)	3.85 (2.79)	3.85 (2.45)	2.27 (1.84)	17.09 (13.89)
Leg III	3.94 (3.44)	2.09 (1.97)	3.14 (2.40)	4.21 (2.77)	2.34 (1.76)	15.72 (12.34)
Leg IV	4.93 (4.59)	2.42 (2.46)	4.25 (3.33)	5.91 (4.21)	2.73 (2.34)	20.24 (16.93)

Female (paratype)

HABITUS. See Figs 61, 77.

MEASUREMENTS. TBL 17.80, CL 6.31, CW 5.72, LL 0.59, LW 1.22, SL 3.22, SW 3.01.

COLOUR. In general as in male, with more intensely shaded dorsal abdomen and chelicerae.

CEPHALOTHORAX. Carapace and chelicerae as shown in Fig. 134. Clypeus and eye group as in Fig. 194. Eye diameters and interdistances: AME 0.13(0.21), ALE 0.25, PLE 0.20, PME 0.12; AME–AME 0.18(0.10),

ALE–AME 0.13(0.09), ALE–PLE 0.08, PLE–PME 0.08, PME–PME 0.43. Cheliceral rastellum absent. Each cheliceral furrow with 8 promarginal teeth and 1–3 mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 254. Maxillae with 13–20 cuspules each.

LEGS. Scopula: entire and distal on metatarsi I–II; entire on palpal tarsus and tarsus I; narrowly divided by setae on tarsus II; sparse and widely divided on tarsus III; rudimentary on tarsus IV. Trichobothria: 2 rows of 8–10 each on tibiae, 14–15 on metatarsi, 12–15 on tarsi, 10 on palpal tarsus. Palpal claw with 3 promarginal teeth. PTC I–II and III–IV with 6–7 and 6 teeth on each margin, respectively.

SPINATION. Femora I–IV with one basodorsal spine and 3 dorsal bristles; palpal femur dorsally with 4 bristles; tarsi I–IV aspinose. Palp: femur pd1; patella p1(0); tibia p2, v8; tarsus v7. Leg I: femur pd1; patella p1; tibia p1(0), v7; metatarsus v7(6). Leg II: femur pd1; patella p1; tibia p2, v7; metatarsus v7. Leg III: femur pd2, rd2; patella p2, r1; tibia d1, p2, r2, v7(5); metatarsus d2, p4, r4, v12(9). Leg IV: femur pd1, rd1; patella p1, r1; tibia d1, p3, r2, v7; metatarsus d1, p4, r4, v12(11).

SPERMATHECAE. Each of paired spermathecae Y-shaped with relatively long and narrow base carrying two unevenly conformed branches: inner branch longer, wider, flattened and subapically dilated; outer branch shorter, club-like, with long, narrow and strictly sclerotised proximal neck, and with short, more or less rounded subapical section (Fig. 552).

SPINNERETS. See Figs 617–618. PMS: length 0.38, diameter 0.17. PLS: maximal diameter 0.69; length of basal, medial and apical segments 1.08, 0.64, 0.63; total length 2.35; apical segment triangular.

Variation

Carapace length in males (n=11) varies from 4.37 to 5.83, in females (n=14) from 4.28 to 7.29. The colouration and other key somatic characters of males and females from Talas Mts as shown in Figs 35, 77, 135, 165, 195, 228, 255, 289, 378. Variation in the structure of the spermathecae as shown in Figs 463–465, 551, 553–554.

Ecology

The species occurs in midland and highland montane belts, mostly in fragmentary woodlands composed of the spruce *Picea schrenkiana* Fisch. & C.A. Mey. and/or the fir *Abies semenovii* B. Fedtsch., or in the mixed forest, with the participation of these coniferous trees and the walnut *Juglans regia* (Figs 735–738). The spiders were found exclusively in their retreats under stones and logs. Along the river valleys, this species can penetrate into the subalpine and alpine zones.

Distribution

Known only from the type locality. See Fig. 760.

Data on natural history

Habitats

Depending on the altitude, prevailing landscape, precipitation regime and thermal conditions, all inhabited biotopes can be conditionally divided into three main zonal types. The first of these includes a harsh and periodically dry zone of foothills and low mountain ridges limited by lower and upper boundaries at altitudes of 450–500 m and 1000–1500 m, respectively. These biotopes are located mostly on loess substrate, on slopes covered with different types of xerophilic drought-resistant vegetation: from ephemeral semi-deserts to dense shrubland and sparse woodland composed of low sclerophyll trees (Figs 619–626, 715).

Similar to the Western Asian species of *Raveniola*, a higher level of species diversity in Central Asian congeners occurs in the most moist, mild and favorable midland-mountain forest zone (hosting 18 of the 29 regional species). However, compared with the western part of Asia, both the lower and the upper borders of this zone in the central part of the continent are at a higher altitude (which can be explained by the present-day continental climate of the region). Depending on the specific subregion, this zone can comprise a single and continuous area (as for example in southern Kyrgyzstan; Figs 720–721, 731), or it can represent a mozaic of more or less isolated fragments (like those in Tajikistan and southern Uzbekistan, shown in Figs 631–632, 699–700, 708). Within Central Asia, the lower boundary of this zone is at an altitude of at least 750 m (in the western Kopetdagh Mts), but usually 1000–1500 m a.s.l.; the corresponding upper limit is confined to 2000–2300 m a.s.l.

Finally, the third group of biotopes is represented by highland landscapes, with juniper and coniferous forests, subalpine and alpine meadows and meadow-steppes on the rocky slopes (Figs 627–628, 651–654, 677–679, 682, 717–718, 722, 738). The lower edge of this zone is located at an altitude 2000–2300 m a.s.l. The highest altitudinal record for Central Asian *Raveniola* spp. is registered in this zone at an altitude of 3400–3700 m in Darvaz Mts, Tajikistan (Andreeva 1975; 1976; under *Brachythele* sp.).

Burrows and retreats

Sampling and direct observations on the ecology of Central Asian *Raveniola* spp. in the natural environment have shown that the majority of species do not dig their own burrows. Rather, these spiders exploit different natural refuges to hide themselves. In most cases, such refuges comprise cavities and hollows in the soil under stones, where the spiders thinly and scarcely line the bottom and walls with silk (Figs 635–642, 647–650, 683–698, 705–706, 733–734). Several species, e.g., *Raveniola cucullata* sp. nov., are able to further deepen less suitable refuges (Figs 633–634). In contrast, some adult females belonging to *R. mikhailovi*, *R. nenilini* sp. nov., *R. virgata* and *R. vulpina* sp. nov., when inhabiting moist slopes that are devoid of suitable stones and logs (as shown in Figs 724–726, 731–732), can settle using natural open depressions adjacent to tree trunks.

The three species of the *caudata* group are mostly known from wandering males, which have occasionally been found under stones, used as temporary shelter during daytime. The only known female of *Raveniola redikorzevi*, however, as well as all the known juveniles of *R. caudata* and *R. redikorzevi*, were collected from abandoned burrows of gerbils (*Rhombomys opimus* (Lichtenstein, 1823), *Meriones* spp.) and tortoises (*Agrionemys horsfieldii* (Grey, 1844)). Within the *virgata* species group, *R. ovchinnikovi* has also been found to hide deeply inside abandoned burrows of small vertebrate animals. Another uncommon econiche settled by the latter species is that of the natural deep crevices in outcrops of loess substrate. Finally, all hand-collected specimens of *R. fedotovi* were found inhabiting screes in woodlands under the tree canopy (Figs 708–710).

Only a few Central Asian species of *Raveniola* are known to dig their own burrows. It is noteworthy that these burrowing species occurred closer to either the lower or the upper habitat limits of the Central Asian congeners, but are not found in the most favorable environments of the mid-mountain zone. The only species that inhabits the loess foothills of Western Tien Shan (Fig. 715), with their long dry summer period, is *R. ferghanensis*, known as a strictly obligate burrower. In contrast, the four highland members of the *concolor* group, *R. afghana* sp. nov., *R. alajensis* sp. nov., *R. hirta*, sp. nov. and *R. karategensis* sp. nov., which inhabit the subalpine juniper forests, subalpine and alpine meadows, and meadow-steppes at an altitude of 1900–3700 m, have also been collected exclusively from their burrows. *Raveniola insolita* sp. nov., known only from a single male, which was collected at an altitude of 3300–3400 m, can probably also be assigned to the members of the latter subgroup.

Unlike the similarly unprotected holes dug and used by members of the obligate burrowing Central Asian genus *Anemesia*, the burrows of a few bothrobiont *Raveniola* spp. appear to be arranged more simply. Compared with the burrow structure found in *Anemesia* spp. (see Zonstein 2018b: figs 330–367), these burrows are almost similarly deep (ca 30–40 cm in length), but are noticeably narrower in their median part and much more scarcely silk lined (except for the terminal living chamber, which is more densely lined). The open entrance mostly lacks the silk lining and resembles a hole used by other terrestrial arthropods (the bothrobiont coleopterans, e.g., *Lethrus* spp., or woodlice; see Figs 657, 716). Sometimes this entrance is partially camouflaged by the surrounding detritus or vegetation (Figs 655–656, 661). A more complex variant of an entrance arrangement was observed in *R. karategensis* sp. nov., in which the burrow mouth was visibly silk lined and provided with a low rim (Figs 659–665). The expanded living chamber always has a horizontal extension, as shown in Fig. 666. In all cases, no lateral chambers connecting the burrow shaft with the soil surface were observed.

Phenology

Data on the phenology of the congeners are sparse and based completely on fragmentary field observations. The collecting data indicate that in localities with a dry summer period the wandering adult *Raveniola* males occur in April–May (the most wet and favourable period). In some species inhabiting this type of biotope, a second appearance of wandering males, connected with the end of a dry period in October–November, can be observed (particularly, in *R. cucullata* sp. nov., *R. ferghanensis*, and *R. kopetdaghensis*). Several congeners, such as *R. ignobilis* sp. nov., *R. subornata* sp. nov. and *R. ovchinnikovi* sp. nov., are known as species with males collected only in October. In highland members of the genus, e.g., in *R. alajensis* sp. nov. and *R. hirta* sp. nov., the peak of their activity, including the presence of wandering adult males, unsurprisingly moves into the mid-summer (July). Males of the most mesophilic species, like *R. virgata*, within the humid areas (such as the midlands of the Ferghana Mts in the environs of Arslanbob, with summer rainfalls) can be almost evenly found from mid-April to late October.

Females with egg sacs can be found in July (*R. alajensis* sp. nov., *R. cucullata* sp. nov., *R. dolosa* sp. nov., *R. karategensis* sp. nov., *R. mikhailovi*, *R. pamira* sp. nov., *R. sororcula* sp. nov. and *R. tarabaevi* sp. nov.), or in July and August (*R. virgata*, *R. vulpina* sp. nov.). The egg sac usually reaches 12–19 mm in diameter and contains 25–45 eggs.

Feeding

Some currently incomplete data, which nevertheless appear to fit the general trends, have been obtained for only two Central Asian species of the genus: *Raveniola ferghanensis* and *R. virgata*. These are only generalized data on the composition of the prey remains; no quantitative counts were made. The corresponding data for other regional congeners are fragmentary and not comparable to each other, and thus are not considered below.

In *Raveniola ferghanensis*, a major part of the “kitchen leftovers” retrieved from the bottom of the investigated burrows was represented by the head capsules and other fragmented parts of foraging ants (Hymenoptera, Formicidae), including the wandering predatory foragers *Cataglyphus aenescens* (Nylander, 1849), and the marching carpophagous ants *Messor muticus* (Nylander, 1849) and *M. aralocaspius* (Ruzsky, 1902). The minor part of the chitinous remains, observed as leftovers in most of the studied burrows, belonged to burrowing arthropods, which share these biotopes with *R. ferghanensis*: the xerophilic terrestrial woodlice *Hemilepistus fedtschenkoi* (Uljanin, 1874) (Isopoda, Agnaridae) and the colonial coleopterans *Lethrus* spp. (Coleoptera, Geotrupidae). The latter remains tended to belong to either *L. sulcipennis* Kraatz, 1883 or *L. micronatus* Semenov, 1894, or both sympatric species, which inhabit the same biotopes. Finally, some of the burrows contained remains of *Madotrogus* sp. aff. *ferganensis* (Protzenko, 1962) (Coleoptera, Scarabaeidae), as well as of some other unidentified representatives of Coleoptera.

Regarding *Raveniola virgata*, there are somewhat more complete data on the composition of their prey. Similar to the above, most of the prey remains were represented by a few ant species (Hymenoptera, Formicidae), but in this case by ants wandering through or nesting within the forest floor: *Camponotus reichardti* K. Arnoldi, 1967, *Messor rufus* Santschi, 1923 and *Myrmica juglandeti* K. Arnoldi, 1976. Most of the other collected and studied remains belonged to the following representatives of the Coleoptera: Carabidae: *Chilotomus* sp. aff. *uzgentensis* Shaubergger, 1932, *Eocaraterus uzgentensis* Heyden, 1884, *Harpalus* sp., *Leistus* sp. aff. *ferganensis* Semenov & Znojko, 1928, *Poecilus* sp., *Pterostichus* sp. aff. *sodalicius* Heyden, 1885, *Trechus* sp.; Curculionidae: *Asiodonus* sp., *Polydrosus* sp.; Elateridae: *Selastomus* sp.; Glaphyridae: *Amphicoma* sp.; Staphylinidae: *Philonthus* sp.; Tenebrionidae: *Laena* sp., *Zophohelops tiro* (Reitter, 1902). The remains of *Ectobius delicatulus* Bei-Bienko, 1950 (Blattoidea: Ectobiidae) were more frequent, while fragments of *Hessebius plumatus* Zalesskaya, 1978, *Monotarsobium* sp. (Chilopoda, Lithobiidae) and remnants of *Dysdera* sp. aff. *arnoldii* Charitonov, 1956 (Araneae, Dysderidae) were found in a few isolated cases.

Mating

Regarding Central Asian *Raveniola* spp., fairly satisfactory data are available only for representatives of *R. virgata* kept in captivity (for details see Zonstein 2002c). The corresponding observations were carried out on October 20–22, 1992. To imitate the natural environment, observations were made at night, under dim lighting, in large cages for each pair, allowing greater mobility of males and females. Each female was placed in its cage one day before the male, enabling the females to find or to dig a refuge (which mostly resembled an open cavity between lumps of soil). After introducing a male into each cage, the sequence of events in most cases was as follows.

Having discovered the entrance to the female's refuge, the male began to tap with the tips of the palps on the substrate, demonstrating a short courtship stage. When the female appeared, within a few seconds the male made several pedalling movements with the palps (resembling the pedalling of a cyclist). The male then stretched forward its first pair of legs, moved towards the female and approached her (see Figs 739–741). This is followed by touching the female with the tips of the male's legs I for 3–4 seconds (Fig. 742). Concurrently, the male's legs II were also raised off the ground surface and began to vibrate, tapping the female's legs.

A few seconds later, the male used its megaspines to grab the trochanters or femora of the female's palps, gripping them on their proventral side (Figs 743–744). The male then bent his first pair of legs at the tibiometatarsal joint and extended them upward. The male thereby closed the clamps, clasped the female's palps, and lifted the female's cephalothorax upward, so that the latter formed an angle with her abdomen, sometimes reaching almost 90° (Figs 745–746). The entire operation lasted no more than 2–5 seconds. Following attachment, one of the emboli entered the spermathecal openings.

During each recorded phase of mating, the longest of them was the copulation process itself (from the initial insertion of the embolus into the copulatory organs of the female until its final removal). This stage is considered hereafter as the duration of copulation. All other stages – approach, initiation, coupling and uncoupling of the partners – took several seconds each.

The data obtained from laboratory observations on the copulation behavior in 20 pairs of *R. virgata* indicate that the duration of a basic insertion/removal act in this species varies from 27 seconds to 13 min. and 20 sec., averaging 6 min. and 13.2 sec. Usually, the entire copulation process ended with this single act. However, in six pairs a continuation was observed, associated with a one-time change of the involved palp. Even more rarely (three observations), a quadruple insertion of the emboli was detected.

In the latter case, the total duration of copulation, which averaged about 10 min. for the examined specimens, increased up to 14–19 minutes. During copulation, the male continued to move towards the female, turning her onto her dorsal side. Having completed copulation, the male removed the involved embolus. Then, pressing on the female palpal femora, the male knocked the female over, climbing over her before the female could roll back.

According to a few observations of captive representatives of *R. cucullata* sp. nov., *R. ferghanensis* and *R. nenilini* sp. nov. (one, one, and two observed but not documented encounters, respectively), the courtship and copulation in these species occurred in a similar way. In the natural environment, a copulating pair of *R. virgata* has incidentally been observed only once (see Zonstein 1987). In addition, this took place during the daytime, which was somewhat surprising, because such behavior cannot be considered characteristic for either nemesiids, or for mygalomorph spiders in general.

Predators

All known data on the predators interacting with and feeding on the Central Asian species of *Raveniola* refer only to a few taxa of spider wasps (Hymenoptera, Pompilidae). The pompilids that hunt and prey on these members of *Raveniola* belong to the pompilinae genera *Pareiocurgus* Haupt, 1962 and *Pamirospila* Wolf, 1970. *Pareiocurgus latigena* (F. Morawitz, 1893) is known from Uzbekistan, Tajikistan and southern Kyrgyzstan. These wasps feed on several species of burrowing spiders, including *R. ferghanensis* and representatives of *Anemesia* (Zonstein 2000b). All five species of the endemic Central Asian genus *Pamirospila* (surveyed by Zonstein 2000b, 2002a, 2002b) are probably specialized predators feeding only on *Raveniola* spp. *Pamirospila* is confined to the same range as that of *Raveniola* in Central Asia. Additionally, at least twice, females of *P. pamira* (Haupt, 1930) have each been observed leaving a burrow of *R. alajensis* sp. nov., with the living chamber littered with soil lumps and with a paralyzed spider inside. A similar interaction has also been noted for *R. hirta* sp. nov. (Zonstein 2000b).

Discussion

Preliminary notes

This study, which presents a specific part of the genus revision, mainly relates to Central Asian *Raveniola* spp., to their specific and group characters, different peculiarities, adaptations, etc. To a lesser extent, the data also touch upon other members of the genus, including both their better known and previously revised Western Asian congeners and certain lesser-investigated species from Eastern Asia. Where necessary, comparative information on other nemesiid genera, as well as that on the related taxa of Anamidae, Cyrtacheniidae, Entypesidae and Pycnothelidae, are also discussed.

Structures

EYE TUBERCLE. The gradually and evenly raised cone-shaped ocular tubercle in *Raveniola*, where only AME are noticeably elevated, appears to considerably differ in shape from the dome-shaped tubercle in many species of the Nemesiidae. For collation, see Raven (1987: figs 3, 9), Decae (2005: figs 16, 29, 36, 43, 50, 57, 63–64), Zonstein (2016: figs 5–6; 2019: figs 3, 12, 19, 34, 44, 51, 61, 68, 77, 84, 92, 96, 123), Decae & Huber (2017: fig. 5a–b), Calvo & Pagán (2022: fig. 15a–b) and Cassar *et al.* (2022: figs 1–2, 5–6). Among the Central Asian *Raveniola* spp, no prominent group difference in the structure of the eye tubercle was observed. Moreover, in all Central Asian species of the genus, this structure is equally and clearly raised higher than in most Western Asian congeners and some Eastern Asian *Raveniola* spp. (Figs 136–195 cf. Li & Zonstein 2015: figs 9d, 11d, 15d; Zonstein *et al.* 2018: figs 102–128; Lin *et al.* 2024: fig. 24b–c). The atuberculate endogeic and/or troglobiontic members of *Raveniola*, known from the two latter regions (see Lin & Li 2020; Yu & Zhang 2021; Marusik & Zonstein 2021; Lin *et al.* 2022, 2024), have not yet been found in Central Asia.

THORACIC FOVEA. Regarding the conformation of this structure, no particular difference in the details between the considered species groups of *Raveniola* was revealed. Females of the true burrowing species such as *R. afghana* sp. nov., *R. alajensis* sp. nov., *R. ferghanensis*, *R. hirta* sp. nov. and *R. karategensis* sp. nov., possess a wider thoracic fovea compared with that in other Central Asian members of the genus, except for females of *R. redikorzevi* and *R. pallens* sp. nov. (Figs 111–112, 117, 119, 128 cf. Figs 113–116, 118, 120–125, 127, 129–135, and Figs 110, 126, respectively).

CHELICERAE. The cheliceral furrow in the revised members of *Raveniola* bears a dense prolateral row of 8–12 similarly sized and shaped teeth and a few minute and uniformly sized mesobasal denticles (Figs 196–201, 328, 343; Zonstein 2018b: fig. 1; Zonstein *et al.* 2018: fig. 395). This variant thus appears to differ from the structure of the cheliceral furrow in *Nemesia*, *Iberesia*, *Brachythele* and *Entypesa*, which presents either fewer teeth, or heterogeneous teeth, or the presence of numerous multisized denticles (see, for example, Zonstein 2018b: figs 393–394; Calvo & Pagán 2022: fig. 6; Cassar *et al.* 2022: figs 66, 76; Özkütük *et al.* 2022: fig. 4e–f). In all Western Asian species of *Raveniola*, the distalmost edge of the chelicera is covered with unmodified setae (see Zonstein *et al.* 2018: fig. 1). In contrast, some Central Asian congeners have a transverse row or a brush composed of thickened and partially broken setae located in front of the fang base, which may be considered as a weak variant of the cheliceral rastellum. As a group character, this feature is applicable to the following four species of the *concolor* group: *R. afghana* sp. nov., *R. alajensis* sp. nov., *R. hirta* sp. nov. and *R. karategensis* sp. nov. In all other congeners belonging to the same group, the presence of modified setae in front of the cheliceral fang is confirmed for *R. cucullata* sp. nov. (see Figs 197, 328) and *R. sororcula* sp. nov., while their closest relatives, *R. dolosa* sp. nov. and *R. pamira* sp. nov. respectively, lack thickened setae on the chelicerae. An isolated possession of stout cheliceral setae should be noted for *R. ferghanensis* representing the *virgata* species group; in all other members of this group, these setae are unmodified.

MALE INTERCHELICERAL TUMESCENCE. Zonstein *et al.* (2018) had assumed that this structure, presented at least as a remnant, had been observed in all Western Asian *Raveniola* spp. with known males. A subsequent SEM examination of *R. pontica* and *R. zaitzevi*, however, did not reveal the presence of any microstructures that could reliably support this assumption. Nevertheless, while the material used for this part of the revision was being examined, it was found that at least one Central Asian species, *R. cucullata* sp. nov., possesses a possible analog of MIT, which was uniformly present in both the holotype and all nine male paratypes. It features a small pale cuticular area with a clearly defined external border (Fig. 197). A SEM examination revealed that the corresponding surface of the cuticle is smoothed and sparsely covered with several small mounds and pits (Figs 328–330). A similar, although to a lesser extent, situation has been observed in only one other Central Asian species (and a member of the same species group), *R. ignobilis* sp. nov., in which this potentially analogous structure appears as a maculate and densely setose area limited to the same part of the male chelicera (Fig. 198). As in the previous case, this area presents a similar appearance in all the examined males and is absent in the conspecific females. In all other Central Asian *Raveniola* spp., no such remnants have been preserved (see Figs 196, 199–201, 334), and no information regarding the presence or absence of MIT in Eastern Asian species is known to date. In general, the pattern of the observed MIT distribution among the related taxa is often mosaic. Compared with genera of the Entypesidae, in which the structure and distribution of MIT is relatively well studied, these assumed remnants of MIT are not as clearly defined as the intercheliceral structures in *Brachytheliscus* Pocock, 1902 and some species of *Hermacha* Simon, 1889 (Ríos-Tamayo *et al.* 2021: figs 27d, 30d, 42e). The same seems to be true for *Ecapa* Ríos-Tamayo, Lyle & Sole, 2023 (Ríos-Tamayo *et al.* 2023: fig. 3e) and most species of *Lepthercus* Purcell, 1902 (Ríos-Tamayo & Lyle 2020: figs 3c, 5c, 9c, 12c, 14c, 17c, 19c). Nevertheless, in most species of *Hermacha*, as well as in *Lepthercus rattrayi* Hewitt, 1917 and *L. sofiae* Ríos-Tamayo & Lyle, 2020, the corresponding structure appears even more weakly developed than in *R. cucullata* sp. nov. (see Ríos-Tamayo *et al.* 2021: figs 6d, 8d, 11d, 14d, 17d, 22c, 24d, 32d; Ríos-Tamayo & Lyle 2020: figs 21c, 23c).

MAXILLARY CUSPULES. While related genera of the Nemesiidae may strictly differ from each other in the number of maxillary cuspules, within each genus the difference in numbers among the congeners is usually considerably lower. An example of this is the pair *Nemesia* – *Brachythele*, with only a few cuspules (or without any), typical for the former genus, and with numerous dense cuspules typical for the latter one. (Cf. the following illustrations: Decae & Cardoso 2006: fig. 8; Zonstein 2019: figs 4, 13, 20, 29, 35, 45, etc.; Calvo & Pagán 2022: figs 5, 16; Cassar *et al.* 2022: figs 9–10, 15–16; Pertegal & Molero-Baltanás 2022: figs 5c, 6c, 8c, 9c cf. Zonstein 2007: fig. 4; Dimitrov & Zonstein 2022: figs 3, 18; Özkütük *et al.* 2022: fig. 3a–b).

In contrast, the number of maxillary cuspules ranges in *Raveniola* spp. (for each of the maxillae) from a few (2–4) to about a hundred. Within *Raveniola*, however, this array can be found associated with a certain group of species. All three species groups of Western Asian *Raveniola* spp. possess a very limited number of cuspules (less than 25), confined to a probasal corner of the maxillae (Zonstein & Marusik 2010: fig. 3; Marusik *et al.* 2014: fig. 13; Zonstein *et al.* 2018: figs 62–64). Among the Central Asian congeners, the same holds true exclusively for the *diluta* and *virgata* groups, whereas all species of the *caudata* and *concolor* groups possess a larger number of cuspules arranged within a wide triangular area, with no observable interjacent variants (Figs 216–228, 243–255 cf. Figs 202–215, 229–242). Regarding the Eastern Asian members of the genus, the situation is unclear, since here the number of cuspules is quite distinct in the different species, but no one specific regional group of species has as yet been indicated or established.

MALE LEGS I–IV. The male legs in Central Asian *Raveniola* spp. certainly appear longer than those in their Western Asian congeners, and the sexual dimorphism in leg length in the former group is thus more pronounced. The difference in leg length between male congeners from the western and central parts of Asia becomes especially evident when comparing the tibia and metatarsus I (Figs 256–289 cf. Zonstein *et al.* 2018: figs 129–144). Males of some Central Asian *Raveniola* spp. belonging to the *concolor* species group (*R. concolor* itself, as well as *R. dolosa* sp. nov., *R. ignobilis* sp. nov., *R. ornata* sp. nov., *R. ornatula* sp. nov. and *R. pamira* sp. nov.), possess an even longer tibia and metatarsus I than the corresponding segments in other males of this group. These same five species also demonstrate two additional modifications of the male tibia and metatarsus I: the presence of very closely spaced megaspines and the abnormally long and thin setae predominantly covering the ventral and lateral surfaces of these segments (see Figs 265, 267, 269–272). One of these features, viz. the megaspines that are more closely spaced than usual, also appears outside this group, in *R. virgata* (Figs 286, 287). In contrast, the known male members of the *caudata* species group possess the most broadly-spaced megaspines, similar to those in *R. ferghanensis* and *R. nenilini* sp. nov. (Figs 256, 258, 260 cf. Figs 278–279, 283).

FEMALE LEGS I–IV. Regarding the females, the only known obvious modification in the structure of their legs is the presence of the extremely thin and long (and mostly dorsal) uniform setae on the tibia and metatarsus IV in four members of the *concolor* species group: *R. afghana* sp. nov., *R. alajensis* sp. nov., *R. hirta* sp. nov. and *R. karategensis* sp. nov. In all other female congeners belonging to the same group, as well as in those representing the rest of the genus, these setae are heterogenous and unmodified (Figs 310–311, 314, 316–317 cf. Figs 312, 315, 318). It should also be noted that in all known *Raveniola* spp., including the Central Asian species, the female femur IV lacks a dense cluster of short dorsodistal spikes on its prodistal edge. Those spikes are characteristic of the nemesiids *Amblyocarenum*, *Nemesia*, *Iberesia* and *Brachythele*, as well as for the Cyrtacheniiidae (Decae & Bosmans 2014: figs 4–5; Zonstein 2016: figs 2, 20; 2018b: figs 18–20, 137, 142; Cassar *et al.* 2022: fig. 74; Özkütük *et al.* 2022: fig. 9a). However, they are absent in *Calisoga* (Nemesiidae) and in the genera of Entypesidae and Pycnothelidae (Passanha *et al.* 2014: figs 1–2; Pérez-Miles *et al.* 2014: fig. 2b; Leavitt *et al.* 2015: fig. 4; Bertani *et al.* 2017: fig. 6; Zonstein 2018a: figs 10, 28; Ríos-Tamayo & Lyle 2020: figs 7a, 10a, 13a, 18a, 20a, 22a).

LEG MICROSTRUCTURES. In several Central Asian species of *Raveniola*, the structural elements belonging to the leg tarsi (the tarsal organ, bases of the trichobothria, and the tarsal claws) were studied under SEM with the aim, among other purposes, to compare the findings with known data. As expected, the differences between the Central Asian and Western Asian congeners in the details of those structures were not found to be significant. Based on the available information, it has previously been clear that not only nemesiids, but also their relatives, possess a very similar conformation of these structures (see Zonstein 2018b: figs 156–172, 396–397, 399–407). Indeed, no differences are evident in the structure of the trichobothrial bases and tarsal claws between the Central Asian and Western Asian members of *Raveniola* (see Figs 321–324, 326–327, 331–333, 336, 338–339, 342, 347–348 cf. Zonstein *et al.* 2018: figs 13–24); rather, there it appears to be a minor dissimilarity. In Central Asian *Raveniola* spp., the tarsal organ is generally more inclined with a slightly raised and overhanging anterior edge, and it usually appears (but not always) smoother due to its shallower concentric grooves, compared with the dome-shaped structure in the Western Asian congeners (Figs 320, 325, 331, 337, 341, 345–346 cf. Zonstein *et al.* 2018: figs 7–12). Until now, no data regarding the fine details of the leg microstructures in East Asian members of *Raveniola* are available.

MALE PALP. In Central Asian species of *Raveniola*, the male palps generally appear to be noticeably longer, and in some of them considerably longer, than those in the Western Asian *Raveniola* spp. (compare the distal palpal segments shown in Figs 349–378 cf. Zonstein *et al.* 2018: figs 149–164); however, the cymbium in most Central Asian species is shorter than in the Western Asian congeners. This refers to all male members of the *concolor* and *virgata* species groups, whereas the males in the *caudata* and *diluta* groups possess a noticeably longer cymbium comparable in its relative length to the cymbium in males of the previously revised Western Asian species (Figs 352–364, 370–378 cf. Figs 349–351, 365–369). In most Central Asian species, the copulatory bulb is connected to the cymbium closer to its anterior edge (which may be a consequence of the shorter length of the male palpal tarsus), whereas in the Western Asian *Raveniola* spp., the bulb is inserted close to the mid-ventral part of the cymbium.

EMBOLUS. Within Central Asian *Raveniola* spp., three of the four species groups demonstrate the same principal details in structure of the embolus, which can be clearly split into two differently constructed sections: proximal (basal) and distal (apical). The cone-shaped or scoop-shaped (when flattened) proximal section is sometimes grooved and often keeled – either along its entire length or only closer to its distal border. When keeled, it may bear two opposite keels, dorsal and ventral, or the remnants of both, or only the latter. In species possessing the keeled embolus, the boundary (i.e., a transition zone) between the wider basal and narrower distal parts can be more easily detected. When this area could be recognized in the course of this study, it was always found located at the bend of the embolus, close to the distal ending of the embolic keel(s). Considered from this viewpoint, the species belonging to the *caudata* group possess a broadly tipped embolus with a strongly reduced beak-shaped apical part (Figs 379–384). Most species included in the *concolor* group have a fairly elongated proximal part of the embolus (Figs 385–428). Modifications of the embolus in the *diluta* species group relate mainly to the presence and shape of the ventral embolic keel (if the latter is present); see Figs 429–438. Finally, since the entire embolus in all species belonging to the *virgata* group is strongly narrowed and akeeled (Figs 439–465), identifying the boundary between the proximal and apical parts of the embolus seems to be, these cases, practically impossible.

SPERMATHECAE. Since the publication of the first part of this revision (Zonstein *et al.* 2018), information regarding the structure of the spermathecae in *Raveniola* spp. has been supplemented with new data. First, unlike the previously known members of *Raveniola*, some recently described Chinese congeners were concurrently found to possess monobranchied spermathecae (Yu & Zhang 2021: fig. 2a–b; Lin *et al.* 2022: fig. 3a–b; 2024: fig. 21a–b). Second, the spermathecae of *R. beelzebub* Lin & Li, 2020 were shown to have an additional pair of underdeveloped branches (see Lin & Li 2020: fig. 2b), making

this type not fully monobranching, which can be interpreted in favour of its transitional nature. All the above-noted variants could thus be considered as derivatives of the bifurcated construction, generally characteristic for the genus. The inner and outer branches are often uneven in shape and size, as well as in their degree of sclerotization. In particular, the outer branch can be more strongly sclerotized closer to its base, while the inner branch never appears to be sclerotized in this way. Within *Raveniola*, all Central Asian species, with the probable exception of the *caudata* species group (see below), possess the outer branch consisting of a proximal transition neck connecting the spermathecal base with the spermathecal fundus. In contrast, no such sclerotized necks were found in the Western Asian congeners, while among the Eastern Asian *Raveniola* spp., these structures were observed and depicted only for *R. hebeinica* and *R. xiezhen* Lin, Wang & Li, 2024 (Zhu *et al.* 1999: fig. 7; Lin *et al.* 2024: fig. 23a–b). An additional variant constitutes the structure of the spermathecae in *R. redikorzevi*, where both pairs of the terminal heads are each connected to their common base by a short, narrow and heavily sclerotized stalk (Figs 487–488). Unfortunately, the characters of the adult female are known only for one of the three recognized species in the group. Hence, at present it is not possible to draw conclusions regarding how widespread the latter type of the construction is among the species of this group. Other group variants in the structure of the spermathecae differ from each other to a lesser degree. The spermathecae in members of the *diluta* group are distinguishable due to their short conical trunks (Figs 526–533). In members of the *concolor* group, the spermathecae are mostly U-shaped (with the inner and outer branches more distant from each other), or V-shaped (with their bases almost adjoining each other); see Figs 495–499, 510–512, 520–523, and Figs 489–494, 500–503, 509, respectively. Only two species within the group, *R. ornata* sp. nov. and *R. ornatula* sp. nov., possess Y-shaped spermathecae which at first glance resemble the very uniform appearance of Y-shaped spermathecae, characteristic for the *virgata* species group, but differing from the latter type in details (Figs 513–519 cf. Figs 534–554).

POSTERIOR MEDIAN SPINNERETS. As noted earlier (Zonstein *et al.* 2018), one of the features characteristic for *Raveniola* is a frequently occurring miniaturization of the PMS, up to the total absence of this pair in some species. Regarding the genus, this multiple reduction appears to be a frequent and rather routine phenomenon. Therefore, the more interesting question here is that of how closely the observed degree of reduction in different species correlates with their distribution among the considered species groups. Among the Central Asian congeners, the known members of the *caudata* species group have relatively large PMS with both the apex and the preapical ventral side covered with spigots (Figs 555–558). Most species of the *concolor* group also possess similarly large PMS, but with the spigot area confined only to their apices (as in Figs 482–483, 564, 566, 576, 578). Three species of the latter group, *R. dolosa* sp. nov., *R. ornata* sp. nov. and *R. ornatula* sp. nov., possess reduced PMS provided with a few apical spigots (Figs 558–570, 577–583). Similarly, small, or even smaller, PMS lacking spigots are characteristic for almost all members of the *virgata* species group (Figs 485–486, 598–603, 605–618). Finally, *R. kopetdaghensis* and all known members of the *diluta* species group share a total absence of PMS (Figs 589–596, 604).

POSTERIOR LATERAL SPINNERETS. In Western Asian species of *Raveniola*, the apical segment of PLS varies from triangular to shortly digitiform, and the difference in length of this segment between different species is not strongly pronounced (as shown in Zonstein *et al.* 2018: figs 65–67). Among Central Asian congeners, the range in length of the distal segment between the species, and sometimes between and within their groups, is clearly much wider. In particular, all three species belonging to the *caudata* group differ in their long apical segments of PLS not only from the Central Asian congeners, but also from all other species of the genus (see Figs 555–558). Most species of the *concolor* and *virgata* groups have a short triangular apical segment (Figs 559–576, 584–588, 597–603, 605–611, 613–618), with a few exceptions, in which a longer than the normal triangular form of this segment is evident (Figs 577–579, 604, 612). In the members of the *diluta* species group, the length of a more uniformly arranged apical segment varies significantly less (Figs 589–596). Another distinguishing feature is a pattern of the spigot

distribution, mainly in relation to their localization on the basal and apical segments. In all species of the *caudata* group, the widely spaced spigots are distributed almost evenly across the entire ventral surface of the spinnerets, a feature which appears to be a side effect of the PLS stretching, caused by their secondary elongation. Within the *diluta* group, the more closely spaced spigots on the PLS are mostly confined to their median and apical segments. In members of the *virgata* group, a denser concentration of the spigots is confined to the apical segment of the PLS, while the basal segment bears a few spigots located at its apical edge, as shown in Fig. 618. The species of the *concolor* group show a greater variability in the range of the discussed feature. Their PLS segments bear numerous and more closely spaced spigots (compared with the other species groups), and these spigots are spread more evenly than in the members of the *virgata* group. In several members of the *concolor* group, an unusually wide area covered with spigots occupies the distal 0.35–0.45 of the basal segment length (vs 0.20–0.25 of this length in other related species; Figs 576, 585, 587 cf. Figs 566, 572, 574, 579).

Other features

BURROWING ACTIVITY. In general, the members of the Nemesiidae, as well as their closest relatives, representing the nemesioid families Anamidae, Bemmeridae, Cyrtaucheniidae and Pycnothelidae, are known as burrowing spiders. There is, however, a dearth of information regarding the Entypesidae and the genus *Entypesa* itself (see below).

In all species of *Nemesia* and *Iberesia* with a known type of housing, the burrows are protected with a trapdoor (Decae 1995: figs 5, 11; 1996: figs 2–3; 2005: figs 68–82; Decae & Huber 2017: fig. 1; Luis de la Iglesia 2019: figs 28–30; Calvo García 2021: figs 19–21; Luis de la Iglesia *et al.* 2021: figs 31–32; Calvo & Pagán 2022: figs 18–21; Cassar *et al.* 2022: figs 45–53, 71–73, 89–94; Pertegal & Molero-Baltanás 2022: figs 4, 7a–e, 10). Some of the congeners use additional constructions, mainly soil pellets and plugs, protecting the burrow shaft (Decae 1996: fig. 2g; Pertegal *et al.* 2022: figs 5b–d, 6). Within the same family, open unprotected burrows are known for species of *Brachythel* (Thaler & Knoflach 2001) and *Calisoga* (see Kurczewsky *et al.* 2023: figs 1–4).

Unprotected burrow mouths are characteristic for Anaminae (Raven 1984: fig. 2; Harvey *et al.* 2018: fig. 1k–o; 2020: fig. 150; Rix *et al.* 2020: figs 12–15; 2023: figs 7–9) and Bemmeridae (Abraham 1924: figs 4a–b, 7; Mirza & Mondal 2018; Kunsete *et al.* 2020; Basumatary & Brahma 2021: fig. 1). Nevertheless, Main (1983) noted the presence of a protective collapsing collar in representatives of *Teyl* Main, 1975 and *Kwonkan* Main, 1983. In *Aname turrigera* Main, 1994, the burrow lining may protrude outward as a soil-encased aboveground turret (Main 1994: fig. 11–m). Some *Damarchus* spp. can protect their burrows from inside, using a movable soil pellet to block and close the bore (as shown in Schwendinger & Hongpadharakiree 2023: fig. 5).

The species belonging to Cyrtaucheniidae are generally known to live in open burrows, often featuring an above-ground superstructure (Simon 1889: pl. XII fig. 5; Zonstein 2018b: figs 330–367; Dippenaar-Schoeman *et al.* 2022: text figs on p. 3; Dupérré 2023: fig. 69), or in the open silk tubes in moss and detritus (Calatayud-Mascarell *et al.* 2021: fig. 1a). Some members of *Ancylotrypa* Simon, 1889 build burrows protected with a silk flap cover (see Dippenaar-Schoeman & Zyl 2022: figs 7–12). At least one species of the latter genus is known to use the movable soil marbles protecting the hollow (Leroy & Leroy 2005: figs 1–4).

Among the members of Pycnothelidae, open burrows are known for *Stenoterommata* (Goloboff 1995: fig. 70; Schwerdt & Copperi 2014: fig. 2; Ghirotto *et al.* 2021: figs 8–9, 22b; Nicoletta *et al.* 2022: fig. 1e) and *Stanwellia* (Harvey *et al.* 2018: fig. 1j). However, in *Chilelopsis* Goloboff, 1995, all known species use burrows sealed with a flap (Goloboff 1995), while in *Lycinus* Thorell, 1894, the burrow entrance is protected with a trapdoor (Goloboff 1995: figs 137–140).

Main (1972) noted that in species of *Stanwellia* the burrow entrance may have a small collar of fastened leaves, but the upper section of the burrow lacks silk-lining. In some congeners, e.g., in *S. nebulosa* Rainbow & Pulleine, 1918, the burrow is inside-protected. “A pear-shaped pebble made by the spider of compacted soil is attached to one side of the free collar-like upper part of the silk lining. The pebble is so counterweighted, that when the spider is disturbed and pulls on the silk collar, it falls across and blocks the burrow lumen” (Main 1972: 108). In this species, a movable plug is located in a central section of the burrow, close to the point where its bare upper part meets the silk-covered bottom half (see Main 1972: fig. 22a–b), while in *S. occidentalis* Main, 1972, a similar plug is located directly behind the mouth collar (Main 1972: 109).

According to Goloboff (1995), the mesophilic species of *Acantogonatus* build silk tubes under logs and stones (as shown in Montes de Oca *et al.* 2022: fig. 2b), and a few xerophilic species use open burrows (Goloboff 1995: fig. 111; Signorotto *et al.* 2023: fig. 6). However, according to K. Eskov (pers. com.), females of the three species of *Acantogonatus*, collected by him, were found hiding under stones and logs almost without using silk cover. In a moist forest environment, their retreats were weakly and barely silk-lined. It should be added a posteriori that the latter state resembles that characteristic for the less-specialized Central Asian members of *Raveniola*.

Despite the abundance of collected material, there is no corresponding information regarding the habitat strategy in *Entypesa* spp. However, judging by the composition of the pitfall-trapped material, females collected in pitfall traps were also well represented along with males. Additionally, some adult females belonging to smaller species of *Entypesa* were collected by sifting leaf litter. This means that at least part of the female congeners can use the permanent retreats only during the period of laying eggs, protecting the cocoon and raising the spiderlings.

In addition to all the above-noted, it should be emphasized that within the Central Asian members of *Raveniola*, only the species inhabiting harsh and extreme biotopes, such as semi-deserts in the foothills or the subalpine and alpine zones in the highlands, dig their own burrows. Other regional congeners, inhabiting the more suitable habitats in the wooded midland mountain zone, mostly exploit natural retreats, mainly natural soil pits under stones or, as a last resort, deepening these holes.

SEXUAL BEHAVIOR. Within the nemesiids and their allies, the details of courtship and copulation in the studied *Raveniola* spp. differ noticeably from those described by Buchli (1962) for *Nemesia caementaria* Costa, 1835 and *N. dubia* O. Pickard-Cambridge, 1873, as well as by Ferretti *et al.* (2011) for *Acantogonathus centralis* Goloboff, 1995. In these species, the male uses its megaspines to lock the cheliceral fangs of the coupled female. Although there are no published data on copulation in two nemesiid genera, *Brachythele* and *Calisoga*, the prolateral position of the megaspines on the male tibia I in both genera indicates a similar use of the clasping structures. Another variant of interaction occurs and can be observed in many species of Pycnothelidae, in which the male extends its first pair of legs between the female palps and chelicerae, and clasps the proximal segments of the female palps. Such an interaction is generally achieved with the retrolateral position of the megaspines on the male tibia I, supporting such a fixed position. This type of sexual behavior was described by Pérez-Miles & Capocasale (1982) for *Acantogonathus tacuariensis* (Pérez-Miles & Capocasale, 1982), and by Pérez-Miles *et al.* (2014) for *Pycnothele labordai* (Pérez-Miles, Costa & Montes de Oca, 2014), and by Schwerdt & Copperi (2014) and Nicoletta *et al.* (2022) for species of *Stenoterommata*. This second type of interaction was also observed during copulation in the Central Asian species of *Raveniola*.

Relationships

A significant dissimilarity between the majority of West Asian and Central Asian representatives of *Raveniola* in the structure of the eye tubercle, chelicerae, spinnerets, male palps and legs, as well as the

differences in the main structural types of the male and female copulatory organs, have already been noted above (see p. 8, 87–91). However, the level of similarities and differences between the Central Asian and Eastern Asian congeners, currently known exclusively from China, seems to be less clear.

Among the currently known Chinese species, none could be definitively assigned to one of the known species groups. When one group of the used characters indicates a possible similarity, e.g., the structure of the male palp, other characters of the same species, such as the structure of the spinnerets or of the male tibia I, do not match (Figs 261–272, 353, 361–364, 370–378, 597–618 cf. Zhu *et al.* 1999: figs 6, 8–10; Li & Zonstein 2015: figs 15a–c, e, 17a–c, 18a; Lin *et al.* 2024: figs 22, 24d). It could be hence concluded, at least for the moment, that the considered species groups embrace exclusively the Central Asian *Raveniola* spp.

While four Central Asian species groups are equally clearly defined and easily distinguishable from each other, the *caudata* group is even more prominent in its homogeneity and originality. All three species assigned to the *caudata* group share the broadly tipped embolus and the elongated apical segment of the PLS (Figs 379–384, 555–558) – characters that have no analogs within the genus outside this species group. Some group features, such as numerous cuspules on the maxillae, can potentially indicate a closer relationship with the *concolor* species group, rather than with members of the *diluta* and *virgata* groups (Figs 202–204, 229 cf. Figs 205–228, 230–255). In *Raveniola redikorzevi*, the general shape of the spermathecae appears similar to that in the species of the Western Asian *hyrcanica* group (Figs 447–448 cf. Zonstein *et al.* 2018: figs 198–203). However, according to another character – the strictly sclerotized necks of the spermathecal branches – this species is closer to the rest of the Central Asian species than to the above-noted Western Asian group.

Among the remaining three groups, the *concolor* species group seems to be the most diverse and heterogenous association. Despite the diversity, all members of the group share two features: a distinct elongation of the proximal part of the embolus (with no analogs in other Central Asian *Raveniola* spp.) and the presence of numerous cuspules on the maxillae (the latter character makes them similar to species of the previous group; see above). In contrast to other members of the *concolor* group, two species (*R. ornata* sp. nov. and *R. ornatula* sp. nov.) share a broad subcircular sternum, a densely ornamented abdomen, reduced PMS and a short digitiform apical segment of the PLS (Figs 212–213, 239–240, 577–583). Males of the same two species, together with males of *R. concolor*, *R. dolosa* sp. nov., *R. ignobilis* sp. nov. and *R. pamira* sp. nov., have long modified hairs on the tibia and metatarsus I (Figs 262, 265, 267, 269–272) distinguishing them from the other species. Within the rest of the group, *R. cucullata* sp. nov. lacks any significant acquisitions and appears to be more distantly related to the last four mentioned species, while the four highland species, *R. afghana* sp. nov., *R. alajensis* sp. nov., *R. hirta* sp. nov. and *R. karategensis* sp. nov., share the presence of long modified setae on the female tibia and metatarsus IV (see Figs 310–311, 314, 316–317). The situation with *R. insolita* sp. nov. and *R. sororcula* sp. nov. is not entirely clear, since these two species were described only from either the male (the former) or the female (the latter).

The four species belonging to the *diluta* species group are predominantly minute and pale coloured congeners, and all four lack both the dorsal abdominal pattern and PMS (Figs 15–18, 50–53, 589–596). Each one of these two group characters also occurs individually (not together) in the related species outside the group: the former in *Raveniola ovchinnikovi* sp. nov. and the latter in *R. kopetdaghensis* (see Figs 26–27 and Fig. 604, respectively). All other congeners lacking PMS are known from China, distant from the region discussed here (see Zonstein & Marusik 2012; Li & Zonstein 2015). In species included in the *diluta* group, the embolus and spermathecal trunks are fairly short and have a peculiar form (Figs 429–438, 526–533), distinguishing these congeners from other *Raveniola* spp. In all members of this group, similar to species in the *virgata* group, the maxillary cuspules are reduced in number and

located predominantly along the probasal maxillary edge (Figs 216–219, 243–246 cf. Figs 220–228, 247–255). In contrast, the cymbium in *R. diluta* sp. nov. and related species is visibly longer than that in members of the *concolor* and *virgata* groups, more resembling in shape the cymbia of *R. redikorzevi* and other species of the *caudata* group (Figs 365–369 cf. Figs 349–364, 370–378).

The most peripheral geographically of the studied groups, the *virgata* group, comprises nine species, which share a thin thorn-like embolus and narrow, mostly Y-shaped, spermathecae (Figs 439–465 and 534–554, respectively). In all members of the group, the cymbium is very short, as in species of the *concolor* group (Figs 370–378 cf. Figs 352–364), and the number of maxillary cuspules is reduced, as in congeners from the *diluta* species group (Figs 220–228, 247–255 cf. Figs 216–219, 243–246). None of the other Central Asian species possess a similarly arranged embolus. The Y-shaped spermathecae, found in some species of the *concolor* group, present the trunks directed outward from each other (Figs 513–519), while in the *virgata* species group, the trunks are always directed inward toward each other. The core members of the group are the six sibling species grouped around *R. virgata* (Figs 20, 23–25, 28–35, 55–62); the group also includes a few diverged species. Among the group members, *R. kopetdaghensis* differs from other species in the total absence of PMS (Fig. 604) and in having a somewhat underdeveloped second megaspine on the male tibia I (Fig. 281). All other male characters, however, clearly indicate that this species should be assigned to the *virgata* species group. *Raveniola ferghanensis* generally resembles a core species, but is distinguishable due to its noticeably larger size, longer embolus and spermathecae, and vestigial PMS (see Figs 19, 54, 370, 439–440, 534–536, 597–600). The same is partially true for *R. ovchinnikovi* sp. nov., but its difference from the core group is based mostly on its certainly paler colouration, the full absence of a dorsal pattern, and a longer apical segment of the PLS (Figs 27–28, 106, 284–285, 375, 612).

Biogeography

The summarized range of known Central Asian *Raveniola* spp. extends for about 2000 km from west to east and for 1000 km from north to south (Fig. 750). The western and the eastern edges of this area are bounded by the Caspian Sea and the cold aridized highlands of the Inner Tien-Shan and Central Pamir, respectively.

The northern edge of the genus distribution in Central Asia seems to be limited by the southern edge of a huge desert region, in which the vast extra arid areas range from the Caspian Sea in the west to northern Xinjiang in the east, as an uninterrupted wide dry belt. During the late Cenozoic, a considerable part of this now desert region was influenced by transgressions and regressions of the ancient Paratethys Sea (Popov *et al.* 2004). A seasonal frost in the substrate, ranging from the soil surface in most part of the plains and lowlands in Uzbekistan, Tajikistan, the southern regions of Kyrgyzstan and Turkmenistan, down to 60–200 cm in Kazakhstan north of 43° N, may also have played a role in the origins of the present-day northern barrier (see Teltayev & Suppes 2015: figs 1, 3–5).

The southern range limit of *Raveniola* in Central Asia is unclear. As in many regional taxa, such a limit does not coincide with the administrative southern border of Central Asia (in the narrow sense), which passes through the Kopetdag and Paropamiz mountains and further along the Amu Darya River. The significant participation of Turan flora elements can be detected and tracked southward to at least central Afghanistan (Kamelin 2021). In the recent (in the paleobotanical sense) past, the similarity between the flora of mountainous Central Asia and that of the adjacent southern lands was even more noticeable. Judging by modern data from palynological analyses, the late Cenozoic fossil dendroflora of the Darvaz and Pamir Mts belonged to the present-day Western-Himalayan type and included different species of *Quercus* L., *Pinus* L., *Cedrus* Trew and *Tsuga* (Endl.) Carrière (Kamelin 2017a). This type of dendroflora became replaced with the current forest types only during the late Pleistocene–early Holocene (see Kamelin 1973, 2017a; Grichuk 1997; Jiang *et al.* 2013; Zhao *et al.* 2019). Hence, the fact

that species of *Raveniola* were found on both the northern and southern sides of the relatively recently elevated Hindu Kush mountain barrier is not surprising. However, it is unclear how far south the range of the genus crosses this orographic barrier, since there are very few records of *Raveniola* spp. pertaining to behind the obstruction.

Information regarding the geographical range of the *caudata* species group is limited to several records from within the Badkhyz Plateau and a few records from southern Tajikistan, with a huge spatial gap between these two groups of localities (Fig. 748). This might be due to the incomplete inventory, as well as to the data regarding a peculiar habitat strategy known for the members of the group. The unknown intermediate (and connecting) part of the range apparently runs through the poorly investigated foothills of the Paropamiz Mts in Afghanistan, characterized by a dearth of data on any taxon of Araneae. All the habitats known to date located in the arid or subarid lowland zone are mostly avoided by other *Raveniola* spp. as unsuitable. Such avoidance probably arises from the long dry period and extreme high summer temperatures, resulting in drying and heating of the loess substrate to a significant depth. Despite the harsh environmental conditions, no members of the group present any obvious adaptations to burrowing. With the exception of wandering males found hiding under stones, all other representatives were dug from the abandoned deep burrows of other animals. In Turkmenistan, *R. redikorzevi* does not occur together with any other congener. In contrast, *R. inopinata* sp. nov. was collected in southern Tajikistan from a locality almost adjacent to one of the collection sites known for *R. caudata*. Above 1500 m a.s.l., both these species (each separately) were found together with *R. ornata* sp. nov., representing the *concolor* group.

The most species-rich and diverse *concolor* species group occupies the entire southeastern sector of the intergroup range. Eleven of the 13 species have been found in the central and southern regions of Tajikistan, and two of them (each species separately) were also found in the adjacent areas of Kyrgyzstan and Uzbekistan; the two additional species are known from the highlands of central Afghanistan and northwestern India. Additionally, one as yet undescribed species, albeit clearly belonging to this group, was revealed inhabiting northwestern Pakistan (Pir Asmat Ali & Yuri Marusik, pers. com.). The western, northern and eastern limits of the group distribution correspond to the Babatagh Mts, the northern edge of the Afghan-Tajik depression, and the Vakhsh-Surhob River valley, as well as to the conventional line separating the Darvaz mountain system from the Pamir Mts itself. As noted above for the entire genus, the southern border of its range is currently unclear, being defined at present by a few records of group members south of the main Hindu Kush watershed.

The summarized range of species belonging to the *diluta* group appears to be the most compact among the Central Asian groupings. In general, it is restricted to the western Hissar-Alay mountain system, including the western margins of the Turkestan and Zeravshan Mts, as well as the Hissar Mts itself and its large western and southwestern spurs: the Baisuntau, Kugitang and Babatag Mts. The latter ridge is the only known locality where the ranges of the *concolor* and *diluta* groups overlap (Fig. 753 cf. Fig. 755).

The distribution of the *virgata* group is confined to two regions that are uneven in size and distant from one another. The group encompasses eight species distributed in the western and northern parts of the Tien-Shan mountain system, as well as an isolated member, *Raveniola kopetdaghensis*, found only in the midland mountain belt of the Kopetdagh Mts (Turkmenistan). The minimal distance between these two disjunctive parts of the group range is about 1000 km. Unlike the somewhat similar situation with the *caudata* species group, the territories held by the western Hissar-Alay and the Afghan-Tajik depression, which are located halfway between Kopetdagh Mts, Tien-Shan and Alay, are relatively well studied. Moreover, they are known to be entirely inhabited only by the members of the *concolor* and the *diluta* groups. It should be noted that this type of disjunctive range, resulting apparently from a

successive desertification of the intermediate plains (which led to the splitting a single area into two parts), seems to be very rare, but by no means unique. Some isolated floral and faunal elements, which are shared by the Kopetdagh Mts and the Western Tien-Shan region (located distant from one another), despite such elements being unknown for the Western Hissar mountain system that separates them, were noted by Kryzhanovskiy (1965, 2002) and Anikin & Sazhnev (2008) for *Carabus* (*Gnathocarabus*) spp. (Coleoptera, Carabidae), and by Kamelin (2017b) for *Astragalus* (sect. *Chronopus*) spp. (Fabaceae).

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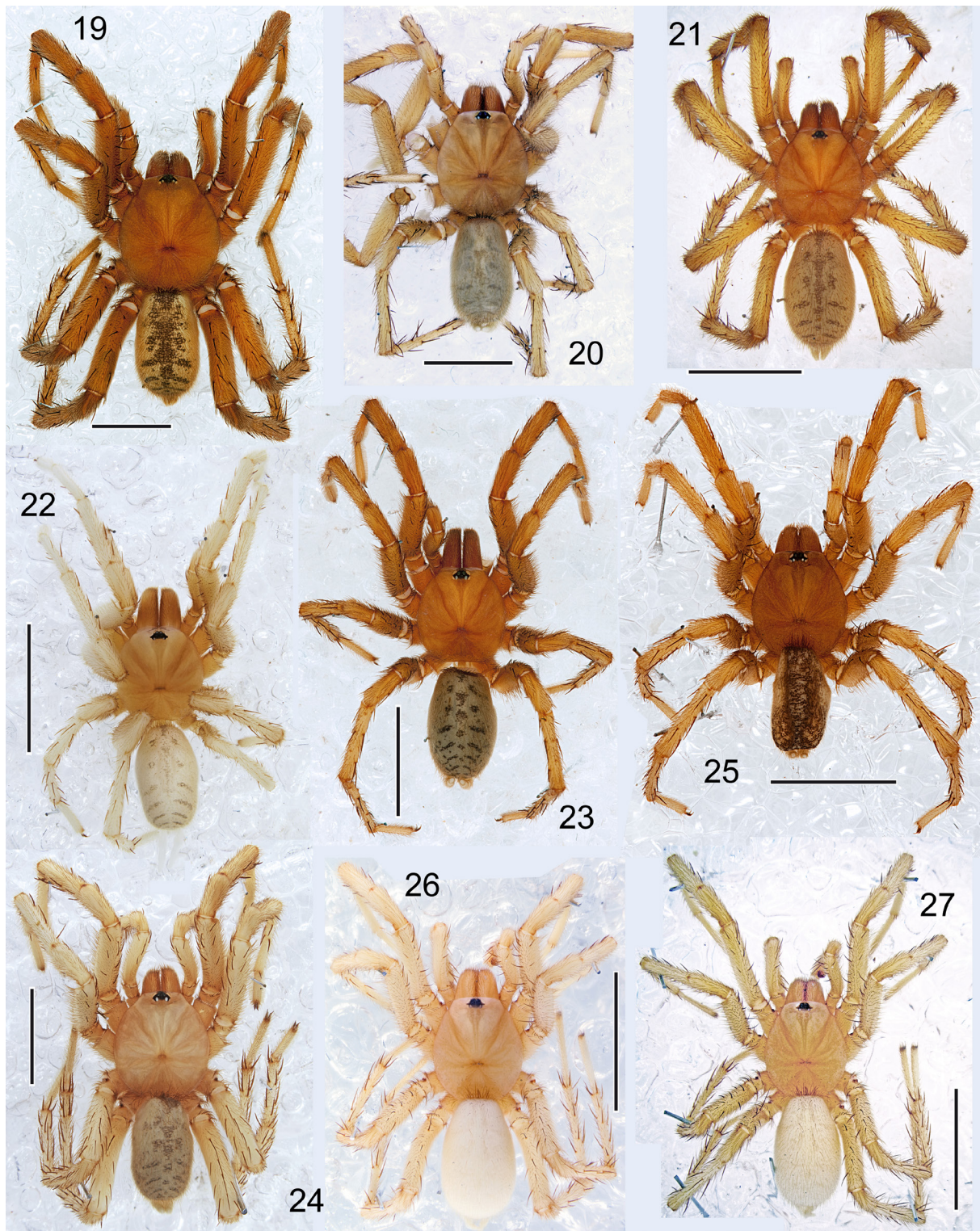
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Figs 1–9. *Raveniola* spp., ♂♂, holotypes (except 3, 6), habitus, dorsal views. 1. *R. caudata* Zonstein, 2009 (SMNH). 2. *R. inopinata* sp. nov. (SMNH). 3. *R. redikorzevi* (Spassky, 1937), ♂ from Akar-Cheshme (SMNH). 4. *R. alajensis* sp. nov. (SMNH). 5. *R. cucullata* sp. nov. (SMNH). 6. *R. cucullata*, paratype from Shahob (SMNH). 7. *R. dolosa* sp. nov. (SMNH). 8. *R. hirta* sp. nov. (SMNH). 9. *R. ignobilis* sp. nov. (SMNH). Scale bars: 5.0 mm.



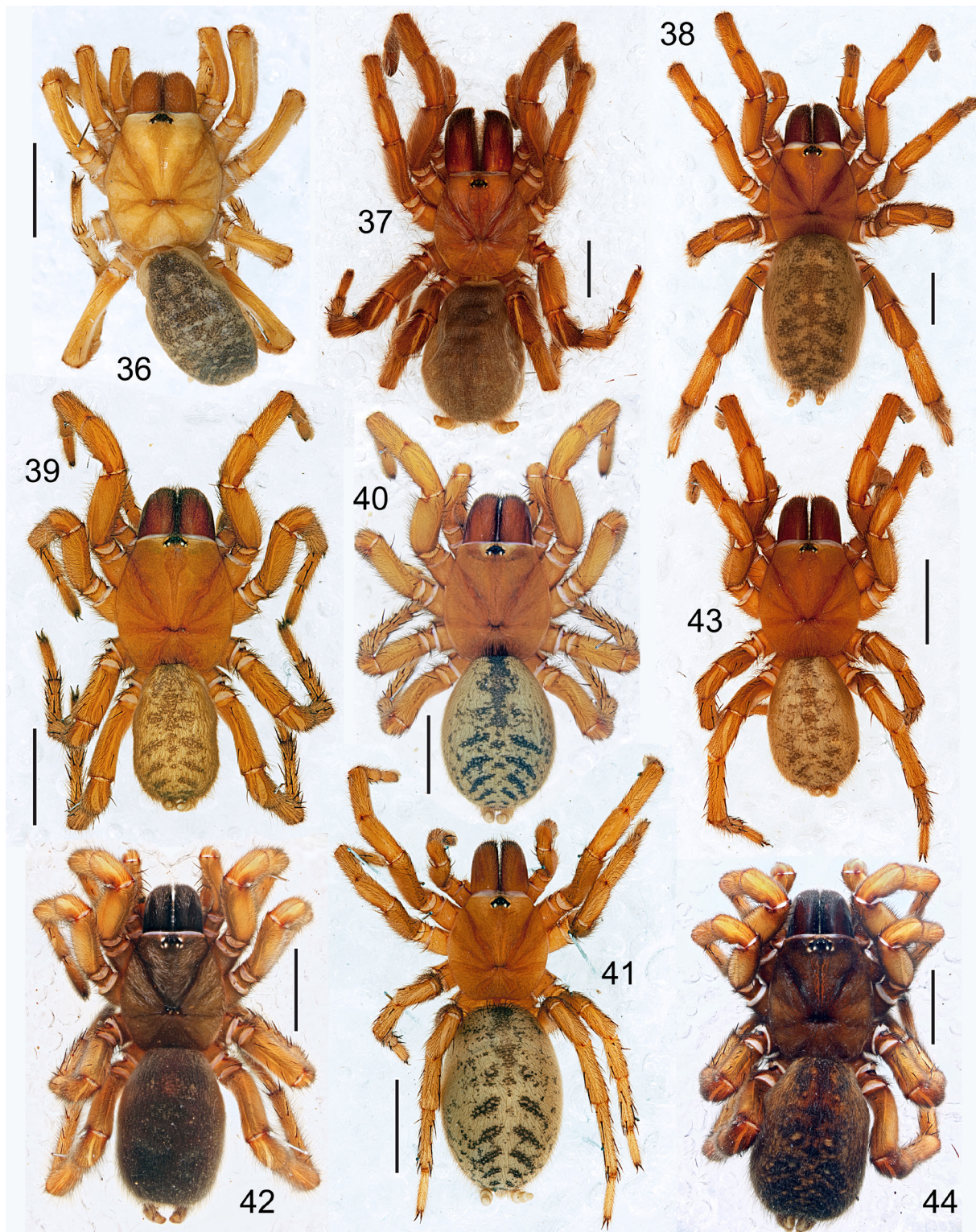
Figs 10–18. *Raveniola* spp., ♂♂, holotypes (except 14, 16), habitus, dorsal views. 10. *R. insolita* sp. nov. (ZISP). 11. *R. ornata* sp. nov. (SMNH). 12. *R. ornatula* sp. nov. (SMNH). 13. *R. pamira* sp. nov. (SMNH). 14. *R. pamira* sp. nov., paratype (SMNH). 15. *R. diluta* sp. nov. (SMNH). 16. *R. fedotovi* (Charitonov, 1946), from Hojakurgan (SMNH). 17. *R. pallens* sp. nov. (SMNH). 18. *R. zyuzini* sp. nov. (SMNH). Scale bars: 5.0 mm.



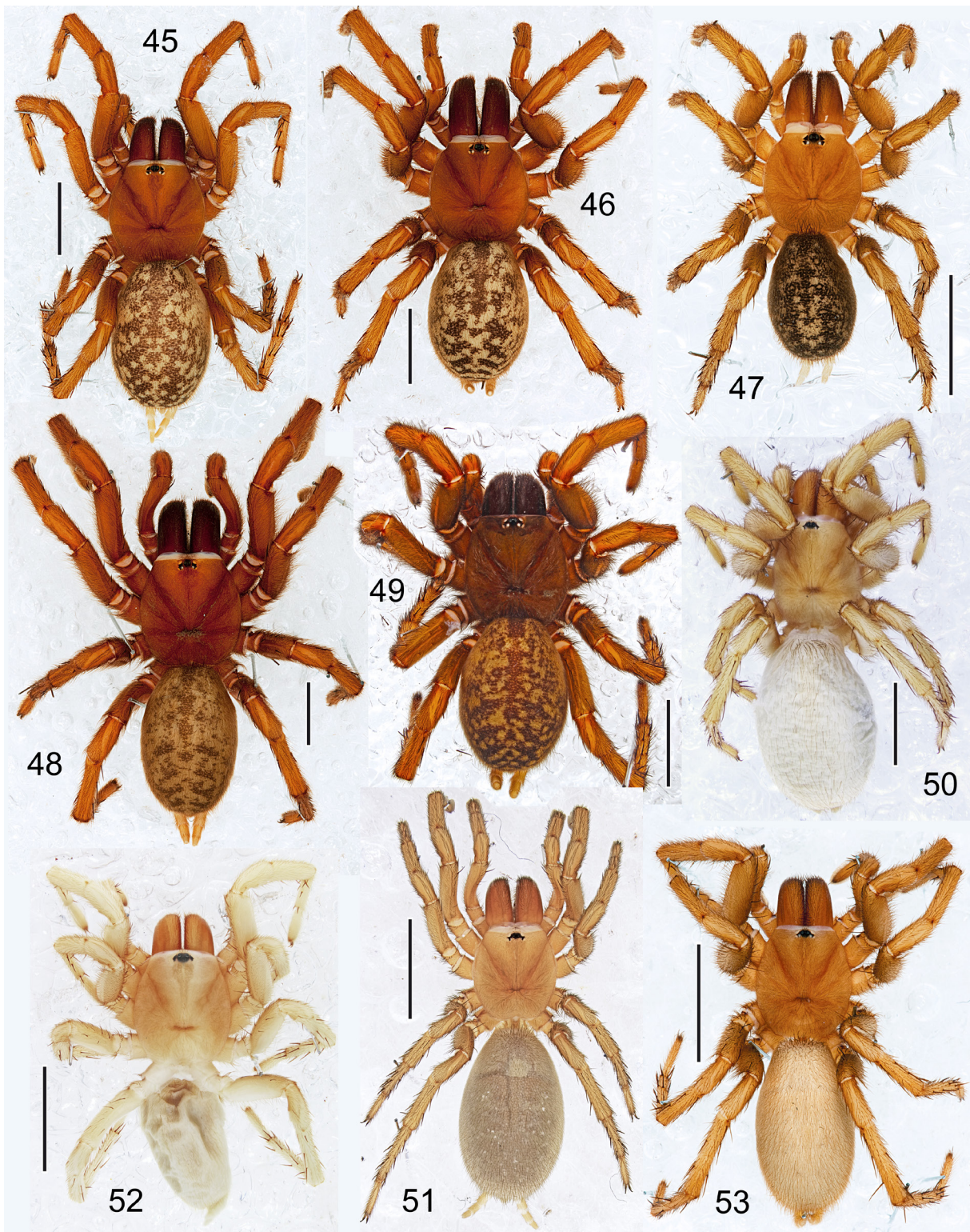
Figs 19–27. *Raveniola* spp., ♂♂, holotypes (except 22, 24, 27), habitus, dorsal views. **19.** *R. ferghanensis* (Zonstein, 1984) (ZISP). **20.** *R. kirgizica* sp. nov. (SMNH). **21.** *R. kopetdaghensis* (Fet, 1984) (ZISP). **22.** *R. kopetdaghensis*, ♂ from Mt. Syunt (SMNH). **23.** *R. mikhailovi* Zonstein, 2021 (SMNH). **24.** *R. mikhailovi*, paratype (SMNH). **25.** *R. nenilini* sp. nov. (SMNH). **26.** *R. ovchinnikovi* sp. nov. (SMNH). **27.** *R. ovchinnikovi*, paratype (SMNH). Scale bars: 5.0 mm.



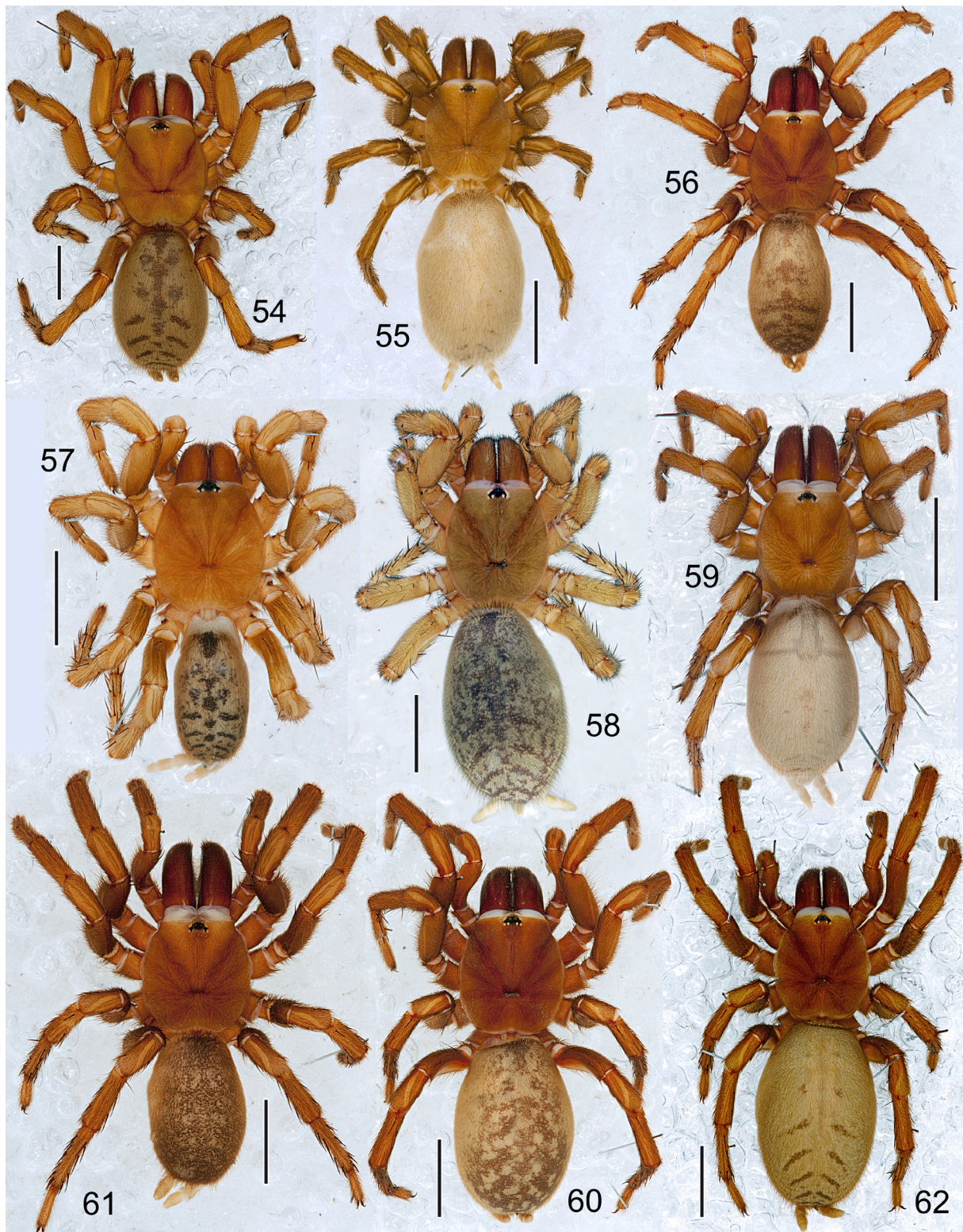
Figs 28–35. *Raveniola* spp., ♂♂, habitus, lateral (28–30) and dorsal (31–35) views. **28–29.** *R. virgata* (Simon, 1891), lectotype (MNHN 6506–B361). **30–33.** *R. virgata*, four ♂♂ from surroundings of Arslanbob, demonstrating paler (30–31) and darker (32–33) types of colourations, including dorsal abdominal pattern (SMNH). **34.** *R. vulpina* sp. nov., holotype (SMNH). **35.** *R. vulpina*, paratype from Tereksai (SMNH). Scale bars: 5.0 mm.



Figs 36–44. *Raveniola* spp., ♀♀, paratypes (except 36–37, 44), habitus, dorsal views. **36.** *R. redikorzevi* (Spassky, 1937), from Kepele (SMNH). **37.** *R. afghana* sp. nov., holotype (NHMD). **38.** *R. alajensis* sp. nov. (SMNH). **39–40.** *R. cucullata* sp. nov. from Shikildara (SMNH) and Childara (SMNH), respectively. **41.** *R. dolosa* sp. nov. (SMNH). **42.** *R. hirta* sp. nov. (SMNH). **43.** *R. ignobilis* sp. nov. (SMNH). **44.** *R. karatogensis* sp. nov., holotype (SMNH). Scale bars: 5.0 mm.



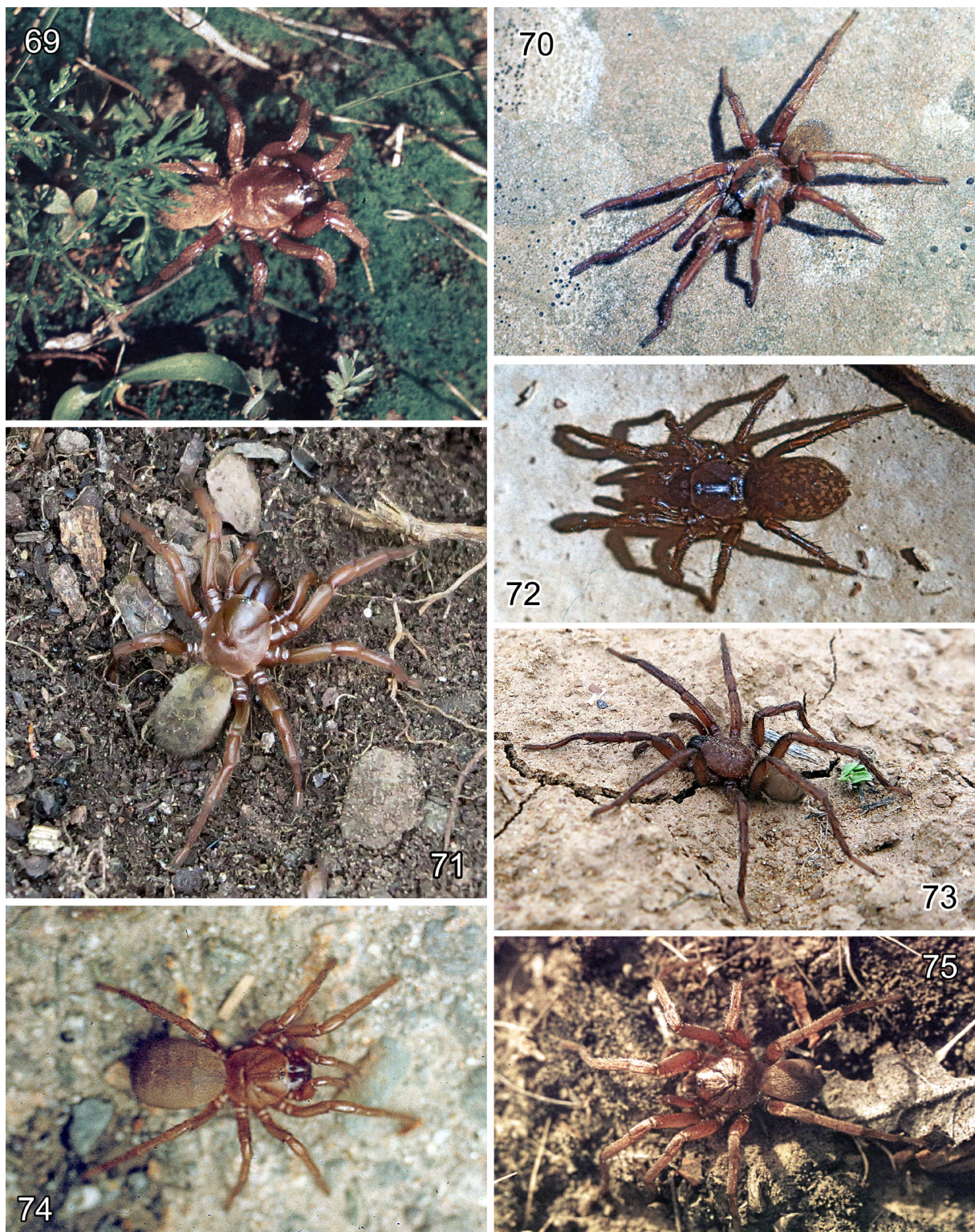
Figs 45–53. *Raveniola* spp., ♀♀, paratypes (except 49, 51), habitus, dorsal views. **45–46.** *R. ornata* sp. nov., from Ganjina and Sanglok (both SMNH), respectively. **47.** *R. ornatula* sp. nov. (SMNH). **48.** *R. pamira* sp. nov. (SMNH). **49.** *R. sororcula* sp. nov., holotype (SMNH). **50.** *R. diluta* sp. nov. (SMNH). **51.** *R. fedotovi* (Charitonov, 1946), from Hojakurgan (SMNH). **52.** *R. pallens* sp. nov. (SMNH). **53.** *R. zyuzini* sp. nov. (SMNH). Scale bars: 5.0 mm.



Figs 54–62. *Raveniola* spp., ♀♀, paratypes (except 59–60), habitus, dorsal views. **54.** *R. ferghanensis* (Zonstein, 1984) (SMNH). **55.** *R. kirgizica* sp. nov. (SMNH). **56–57.** *R. mikhailovi* Zonstein, 2021, from Aflatun (ZMMU) and Sary-Chelek Reserve (SMNH), respectively. **58.** *R. nenilini* sp. nov. (SMNH). **59.** *R. tarabaevi* sp. nov., holotype (SMNH). **60.** *R. virgata* (Simon, 1891), ♀ from Arslanbob (SMNH). **61–62.** *R. vulpina* sp. nov., from Sary-Chelek Reserve and Tereksai (both SMNH), respectively. Scale bars: 5.0 mm.



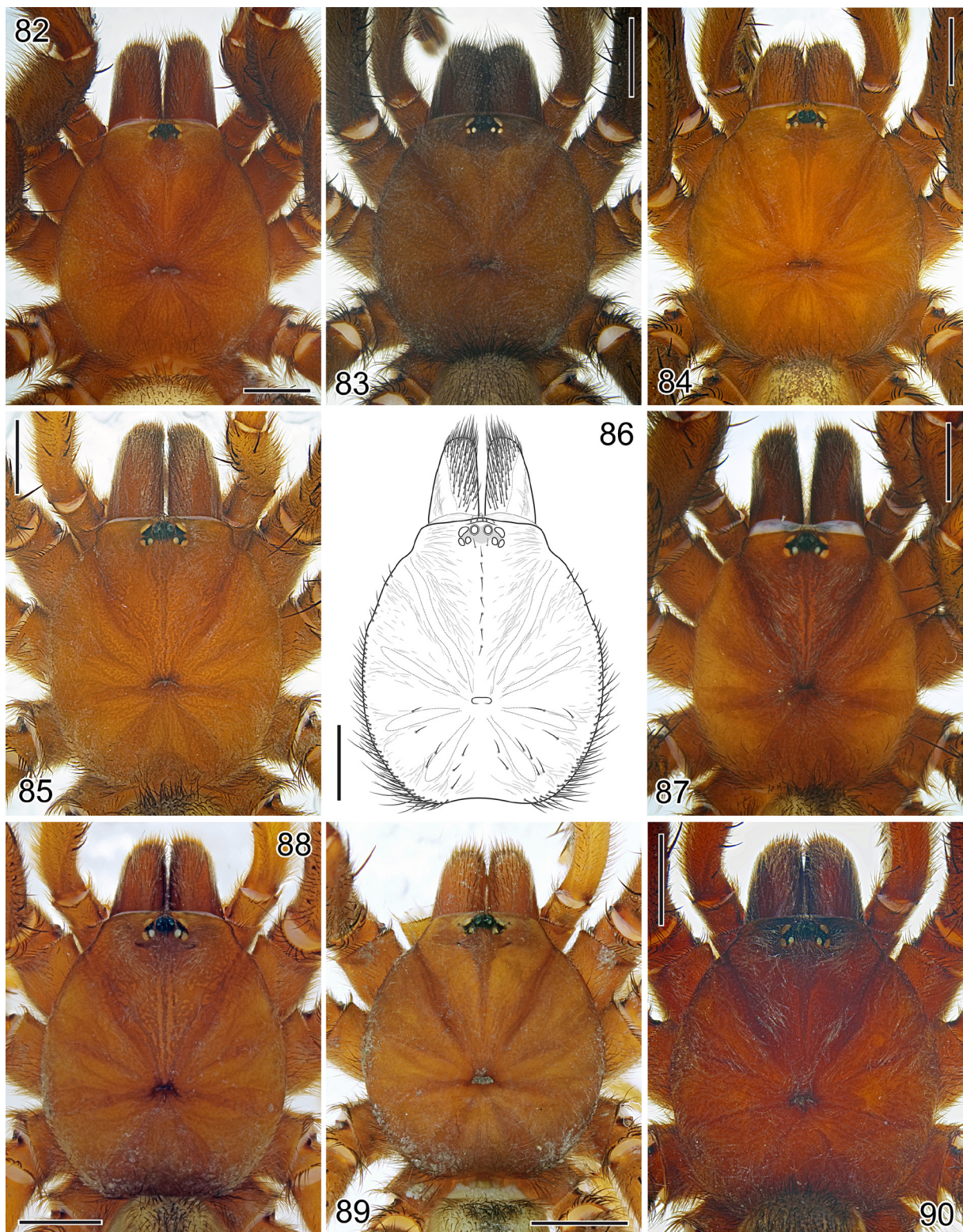
Figs 63–68. *Raveniola* spp., ♂ (63–64) and ♀♀ (65–68), live spiders; dorsal (63, 65, 67) dorsolateral (64, 66), and lateral (68) views. **63–64.** *R. inopinata* sp. nov. (SMNH). **65.** *R. alajensis* sp. nov. (courtesy of Dmitri Milko) (SMNH). **66.** *R. cucullata* sp. nov. (SMNH). **67–68.** *R. hirta* sp. nov. (67: courtesy of Alexander Fomichev) (67: ISEA; 68: SMNH).



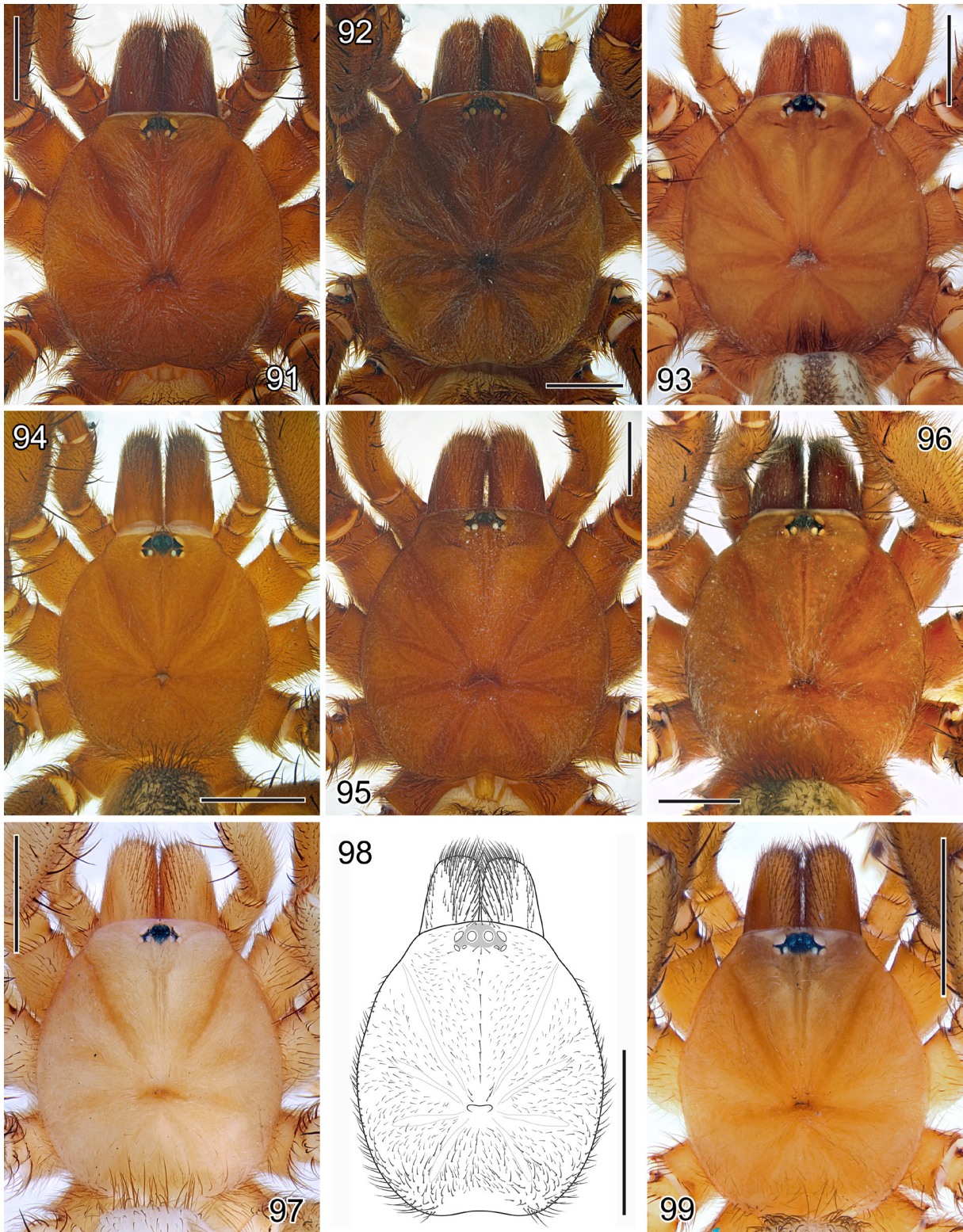
Figs 69–75. *Raveniola* spp., ♀♀ (69, 71–72, 74) and ♂♂ (70, 73, 75), live spiders; predominantly dorsal (69, 71–72, 74–75) and dorsolateral (70, 73) views. **69–70.** *R. cucullata* sp. nov. (SMNH). **71.** *R. dolosa* sp. nov. (SMNH). **72.** *R. ornata* sp. nov. (SMNH). **73–74.** *R. zyuzini* sp. nov. (SMNH). **75.** *R. ferghanensis* (Zonstein, 1984) (SMNH).



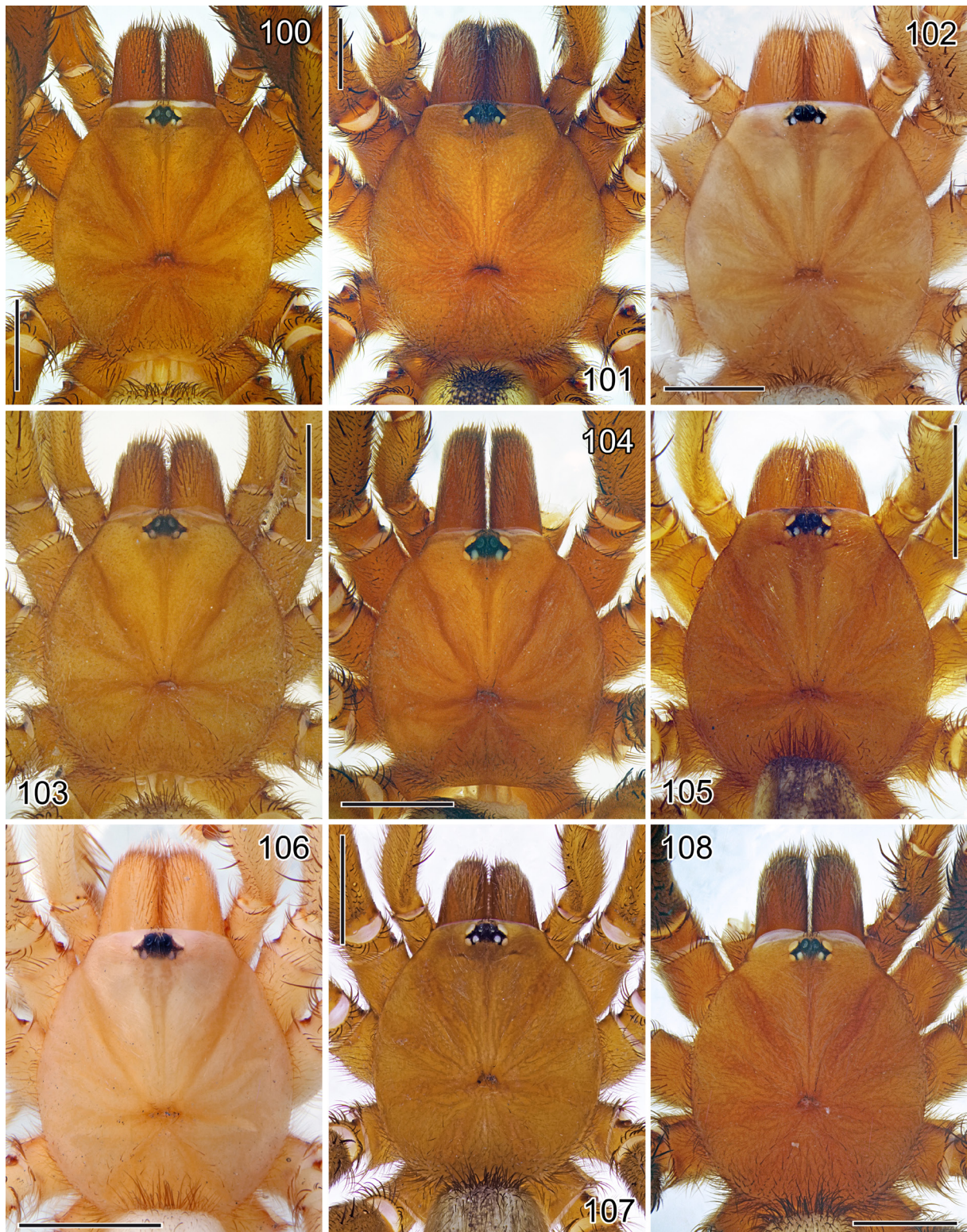
Figs 76–81. *Raveniola* spp., ♂♂ (76, 78, 80) and ♀♀ (77, 79, 81), captured live spiders, dorsolateral views. 76–77. *R. vulpina* sp. nov. (SMNH). 78–79. *R. mikhailovi* Zonstein, 2021 (SMNH). 80–81. *R. ferghanensis* (Zonstein, 1984) (SMNH).



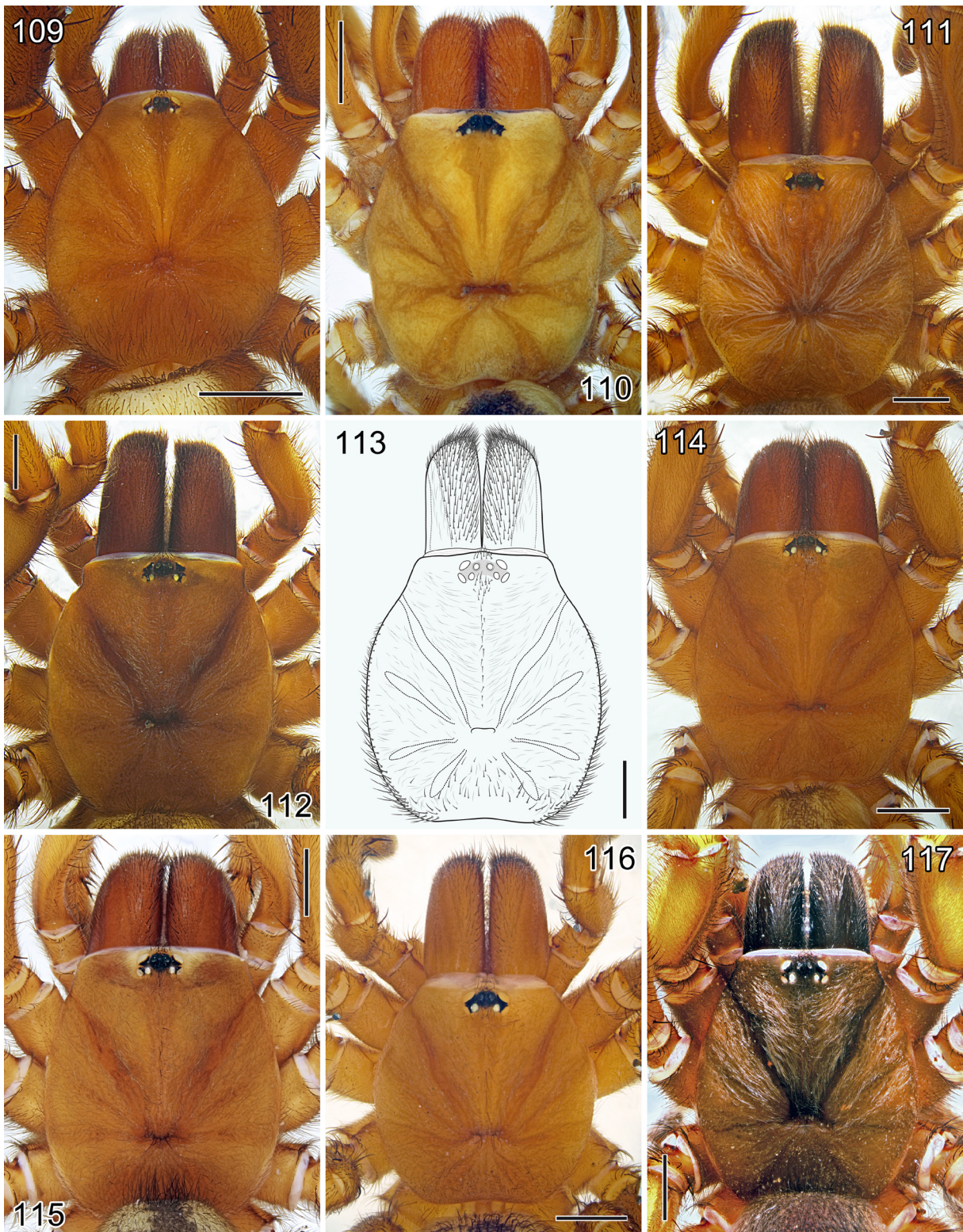
Figs 82–90. *Raveniola* spp., ♂♂, holotypes (except 84, 88), cephalothorax, dorsal views. **82.** *R. caudata* Zonstein, 2009 (SMNH). **83.** *R. inopinata* sp. nov. (SMNH). **84.** *R. redikorzevi* (Spassky, 1937), ♂ from Akar-Cheshme (SMNH). **85.** *R. alajensis* sp. nov. (SMNH). **86.** *R. concolor* Zonstein, 2000 (MCSN AR 18). **87.** *R. cucullata* sp. nov. (SMNH). **88.** *R. cucullata*, paratype from Shahob (SMNH). **89.** *R. dolosa* sp. nov. (SMNH). **90.** *R. hirta* sp. nov. (SMNH). Scale bars: 2.0 mm.



Figs 91–99. *Raveniola* spp., ♂♂, holotypes (except 96, 98), cephalothorax, dorsal views. **91.** *R. ignobilis* sp. nov. (SMNH). **92.** *R. insolita* sp. nov. (ZISP). **93.** *R. ornata* sp. nov. (SMNH). **94.** *R. ornatula* sp. nov. (SMNH). **95.** *R. pamira* sp. nov. (SMNH). **96.** *R. pamira*, paratype (SMNH). **97.** *R. diluta* sp. nov. (SMNH). **98.** *R. fedotovi* (Charitonov, 1946), lectotype (ZMMU). **99.** *R. pallens* sp. nov. (SMNH). Scale bars: 2.0 mm.



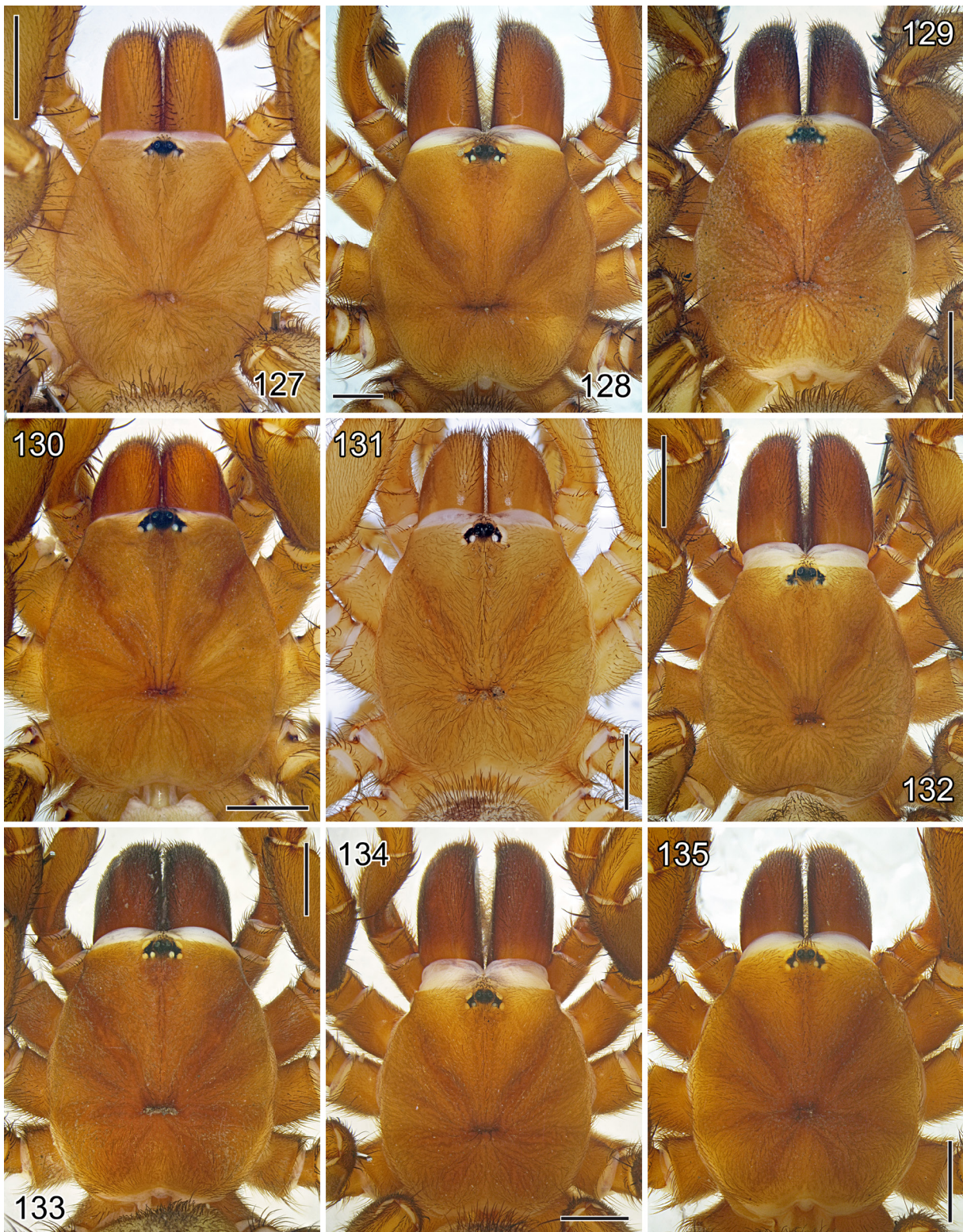
Figs 100–108. *Raveniola* spp., ♂♂, holotypes (except 107), cephalothorax, dorsal views. **100.** *R. zyuzini* sp. nov. (SMNH). **101.** *R. ferghanensis* (Zonstein, 1984) (ZISP). **102.** *R. kirgizica* sp. nov. (SMNH). **103.** *R. kopetdaghensis* (Fet, 1984) (ZISP). **104.** *R. mikhailovi* Zonstein, 2021 (SMNH). **105.** *R. nenilini* sp. nov. (SMNH). **106.** *R. ovchinnikovi* sp. nov. (SMNH). **107.** *R. virgata* (Simon, 1891), ♂ from vicinity of Arslanbob (SMNH). **108.** *R. vulpina* sp. nov. (SMNH). Scale bars: 2.0 mm.



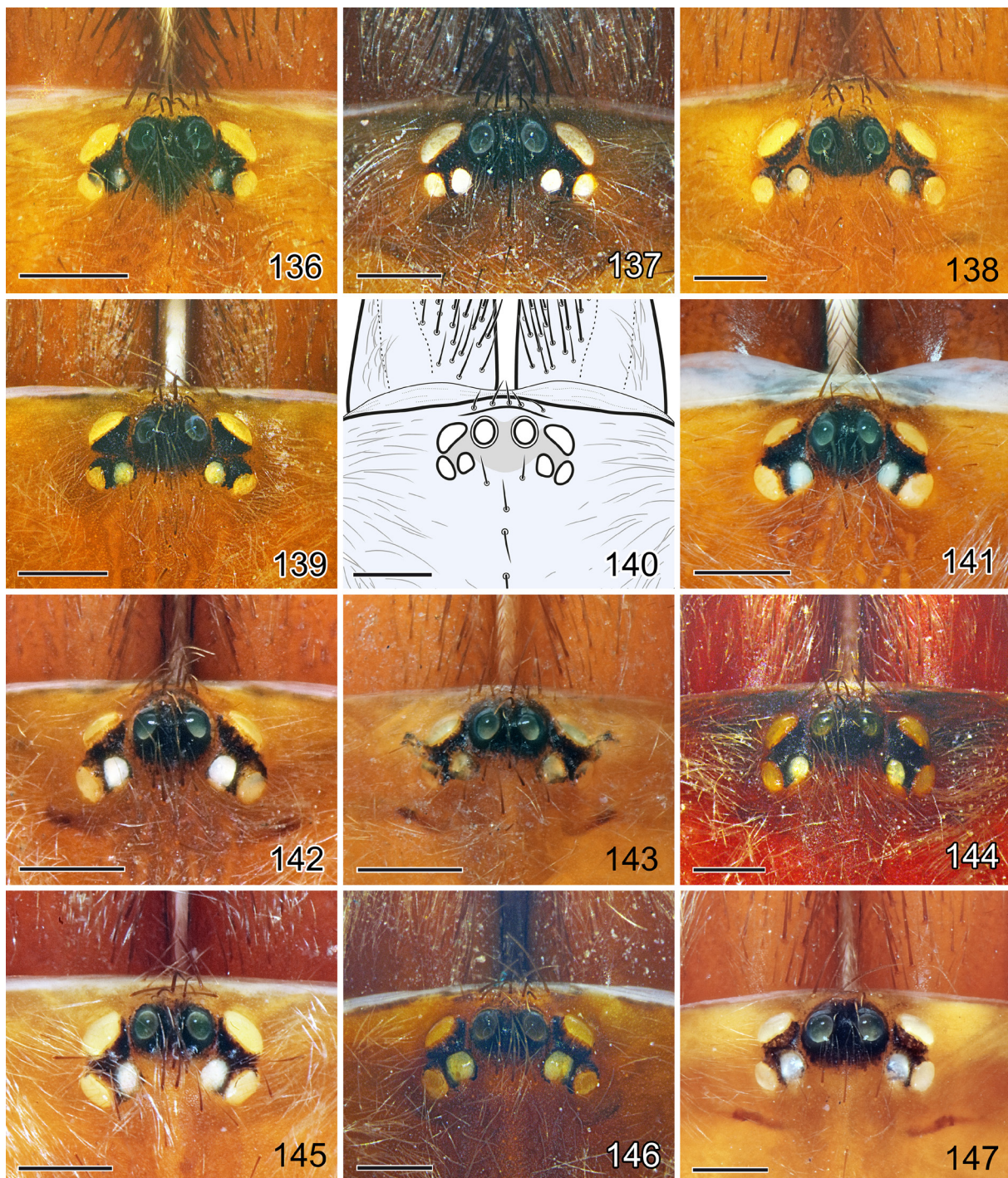
Figs 109–117. *Raveniola* spp., ♂ (109) and ♀♀ (110–117), paratypes (except 109–111). Cephalothorax, dorsal views. **109.** *R. vulpina* sp. nov., from Tereksai (SMNH). **110.** *R. redikorzevi* (Spassky, 1937), ♀ from Kepele (SMNH). **111.** *R. afghana* sp. nov., holotype (NHMD). **112.** *R. alajensis* sp. nov. (SMNH). **113.** *R. concolor* Zonstein, 2000 (MCSN AR 19). **114–115.** *R. cucullata* sp. nov. from Mulloconi and Shahob, respectively (both SMNH). **116.** *R. dolosa* sp. nov. (SMNH). **117.** *R. hirta* sp. nov. (SMNH). Scale bars: 2.0 mm.



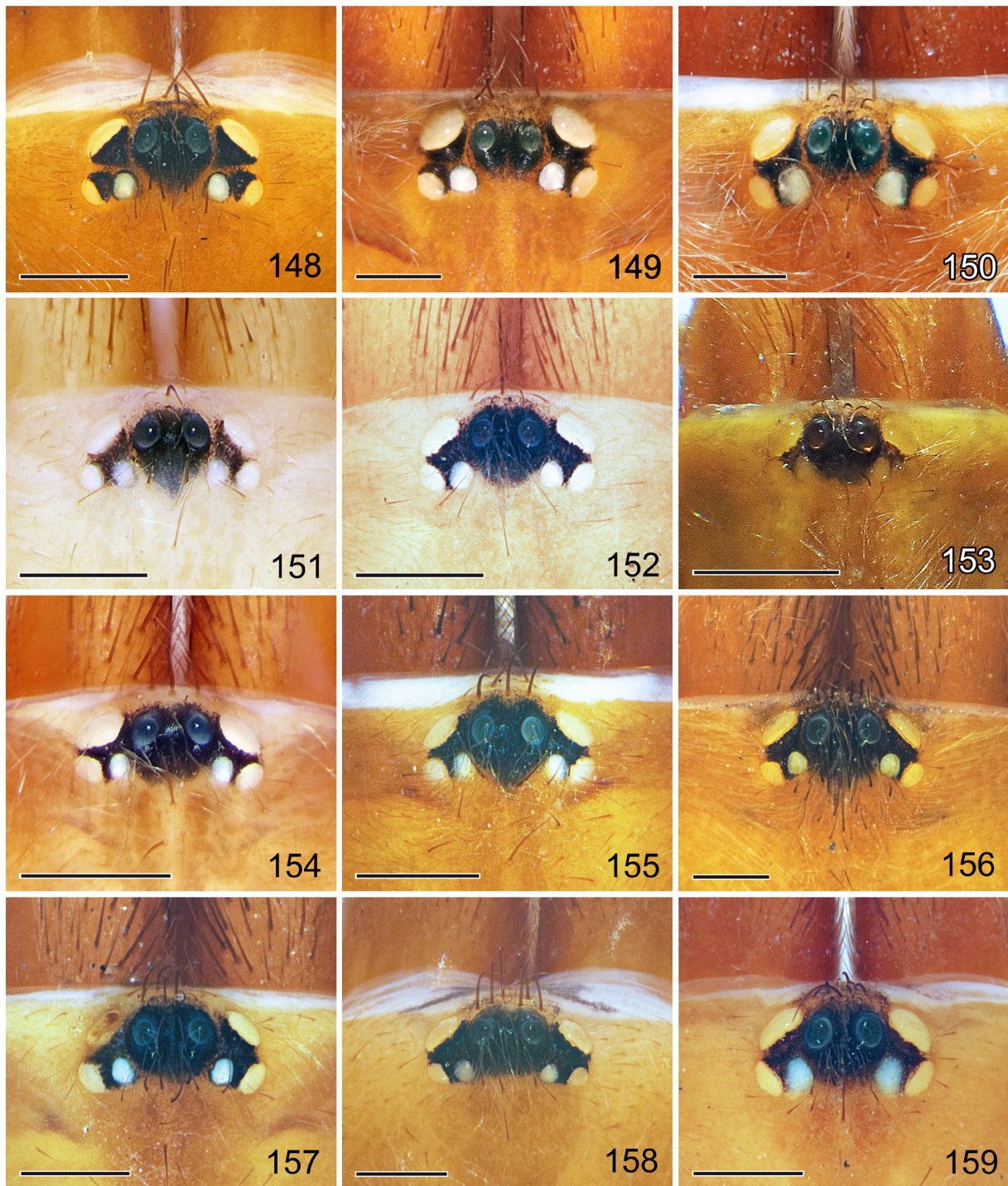
Figs 118–126. *Raveniola* spp., ♀♀, paratypes (except 119, 123, 125), cephalothorax, dorsal views. 118. *R. ignobilis* sp. nov. (SMNH). 119. *R. karategensis* sp. nov., holotype (SMNH). 120. *R. ornata* sp. nov., from Sanglok (SMNH). 121. *R. ornatula* sp. nov. (SMNH). 122. *R. pamira* sp. nov. (SMNH). 123. *R. sororcula* sp. nov., holotype (SMNH). 124. *R. diluta* sp. nov. (SMNH). 125. *R. fedotovi* (Charitonov, 1946), ♀ from Hojakurgan (SMNH). 126. *R. pallens* sp. nov. (SMNH). Scale bars: 2.0 mm.



Figs 127–135. *Raveniola* spp., ♀♀, paratypes (except 132–133), cephalothorax, dorsal views. **127.** *R. zyuzini* sp. nov. (SMNH). **128.** *R. ferghanensis* (Zonstein, 1984) (SMNH). **129.** *R. kirgizica* sp. nov. (SMNH). **130.** *R. mikhailovi* Zonstein, 2021, from Sary-Chelek Reserve (SMNH). **131.** *R. nenilini* sp. nov. (SMNH). **132.** *R. tarabaevi* sp. nov., holotype (SMNH). **133.** *R. virgata* (Simon, 1891), from Arslanbob (SMNH). **134–135.** *R. vulpina* sp. nov., from Sary-Chelek Reserve and Tereksai (both SMNH), respectively. Scale bars: 2.0 mm.



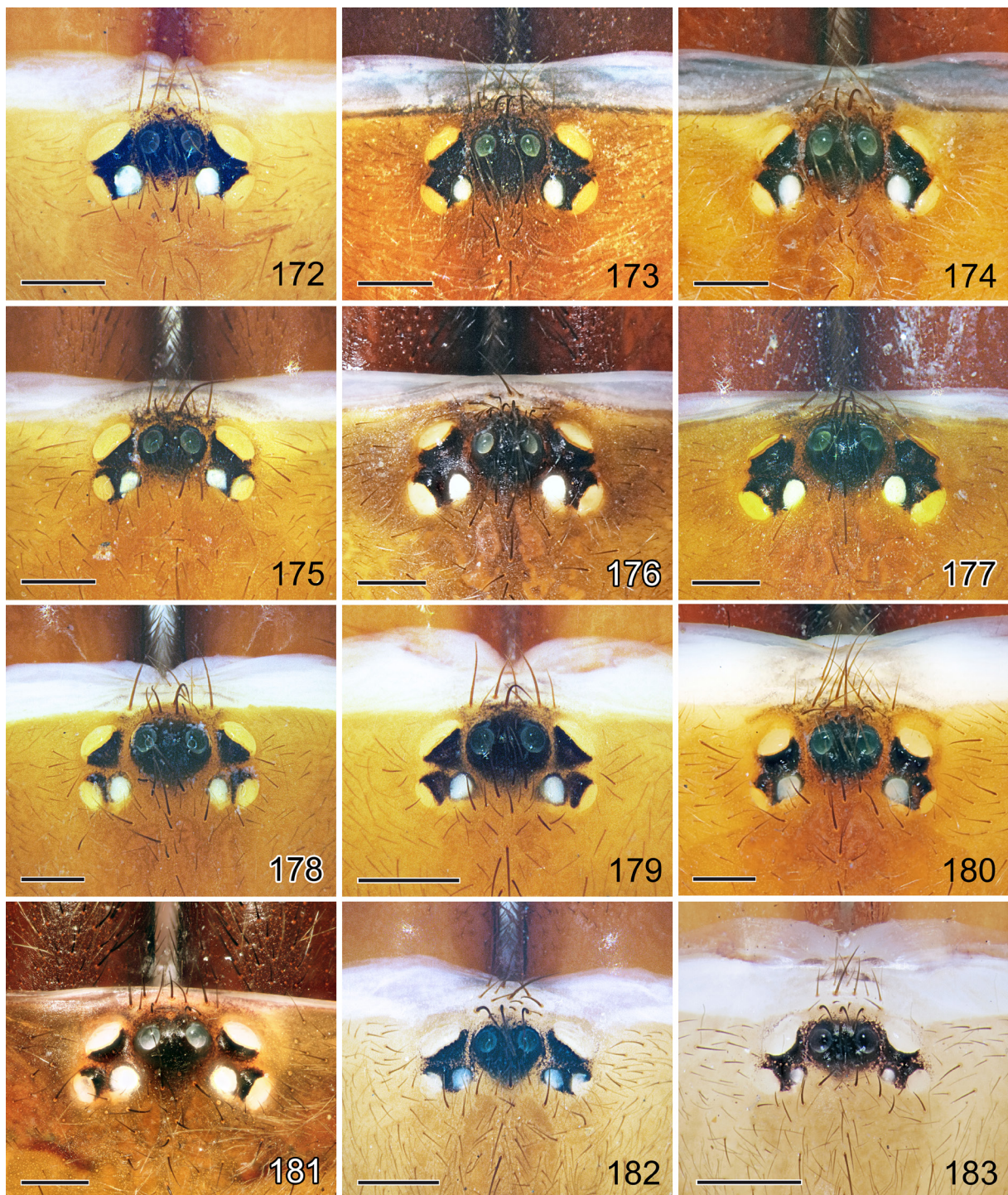
Figs 136–147. *Raveniola* spp., ♂♂, holotypes (except 138, 142), clypeus and eye tubercle, dorsal views. **136.** *R. caudata* Zonstein, 2009 (SMNH). **137.** *R. inopinata* sp. nov. (SMNH). **138.** *R. redikorzevi* (Spassky, 1937), ♂ from Akar-Cheshme (SMNH). **139.** *R. alajensis* sp. nov. (SMNH). **140.** *R. concolor* Zonstein, 2000 (MCSN AR 18). **141.** *R. cucullata* sp. nov. (SMNH). **142.** *R. cucullata*, paratype from Shahob (SMNH). **143.** *R. dolosa* sp. nov. (SMNH). **144.** *R. hirta* sp. nov. (SMNH). **145.** *R. ignobilis* sp. nov. (SMNH). **146.** *R. insolita* sp. nov. (ZISP). **147.** *R. ornata* sp. nov. (SMNH). Scale bars: 0.5 mm.



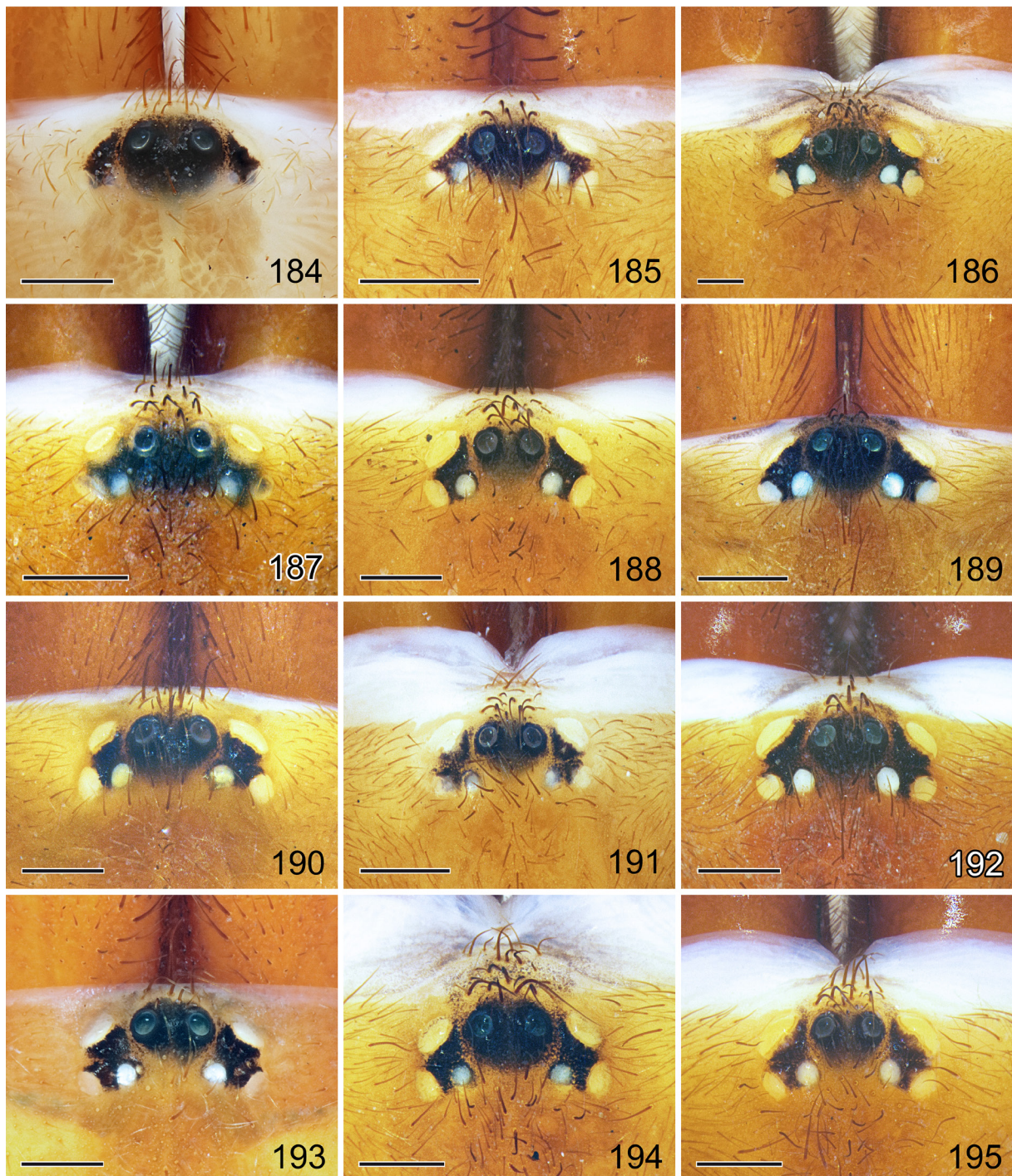
Figs 148–159. *Raveniola* spp., ♂♂, holotypes (except 150, 152–153), clypeus and eye tubercle, dorsal views. **148.** *R. ornatula* sp. nov. (SMNH). **149.** *R. pamira* sp. nov. (SMNH). **150.** *R. pamira*, paratype (SMNH). **151.** *R. diluta* sp. nov. (SMNH). **152.** *R. diluta*, paratype (SMNH). **153.** *R. fedotovi* (Charitonov, 1946), paralectotype (PSU). **154.** *R. pallens* sp. nov. (SMNH). **155.** *R. zyuzini* sp. nov. (SMNH). **156.** *R. ferghanensis* (Zonstein, 1984) (ZISP). **157.** *R. kirgizica* sp. nov. (SMNH). **158.** *R. kopetdaghensis* (Fet, 1984) (ZISP). **159.** *R. mikhailovi* Zonstein, 2021 (SMNH). Scale bars: 0.5 mm.



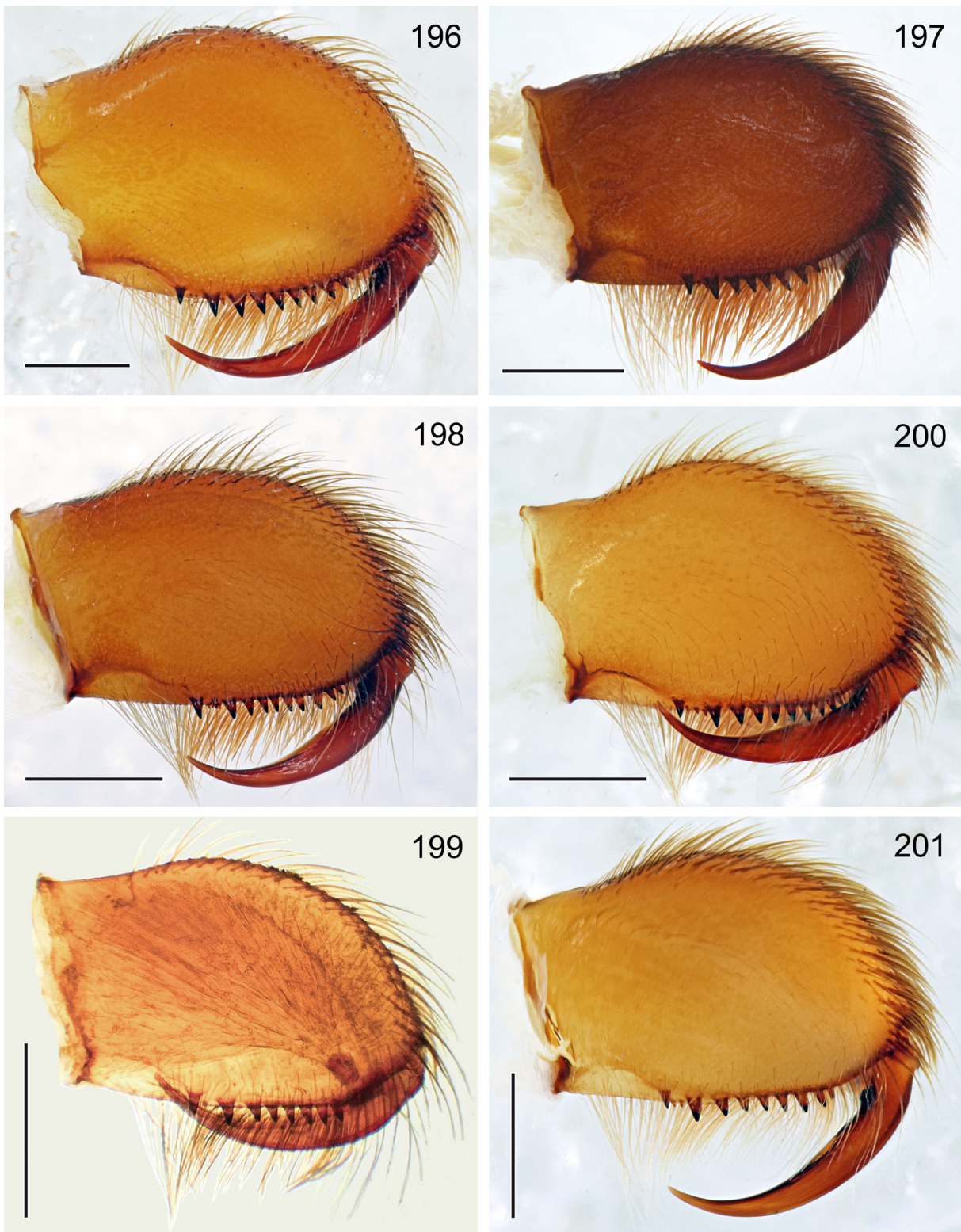
Figs 160–171. *Raveniola* spp., ♂♂ (160–165) and ♀♀ (166–171), clypeus and eye tubercle, dorsal views. **160.** *R. nenilini* sp. nov., holotype (SMNH). **161.** *R. ovchinnikovi* sp. nov., holotype (SMNH). **162.** *R. virgata* (Simon, 1891), ♂ from vicinity of Arslanbob (SMNH). **163.** *R. virgata*, ♂ from Gava (SMF). **164.** *R. vulpina* sp. nov., holotype (SMNH). **165.** *R. vulpina*, paratype from Tereksai (SMNH). **166.** *R. redikorzevi* (Spassky, 1937), ♀ from Kepele (SMNH). **167.** *R. afghana* sp. nov., holotype (NHMD). **168.** *R. alajensis* sp. nov. (SMNH). **169.** *R. concolor* Zonstein, 2000 (MCSN AR 19). **170–171.** *R. cucullata* sp. nov., paratypes from Shikildara and Shahob (SMNH), respectively. Scale bars: 0.5 mm.



Figs 172–183. *Raveniola* spp., ♀♀, paratypes (except 176, 181, 183), clypeus and eye tubercle, dorsal views. 172. *R. dolosa* sp. nov. (SMNH). 173–174. *R. hirta* sp. nov. (SMNH). 175. *R. ignobilis* sp. nov. (SMNH). 176. *R. karategensis* sp. nov., holotype (SMNH). 177. *R. karategensis*, paratype (SMNH). 178. *R. ornata* sp. nov., from Sanglok (SMNH). 179. *R. ornatula* sp. nov. (SMNH). 180. *R. pamira* sp. nov. (SMNH). 181. *R. sororcula* sp. nov., holotype (SMNH). 182. *R. diluta* sp. nov. (SMNH). 183. *R. fedotovi* (Charitonov, 1946), ♀ from Hojakurgan (SMNH). Scale bars: 0.5 mm.



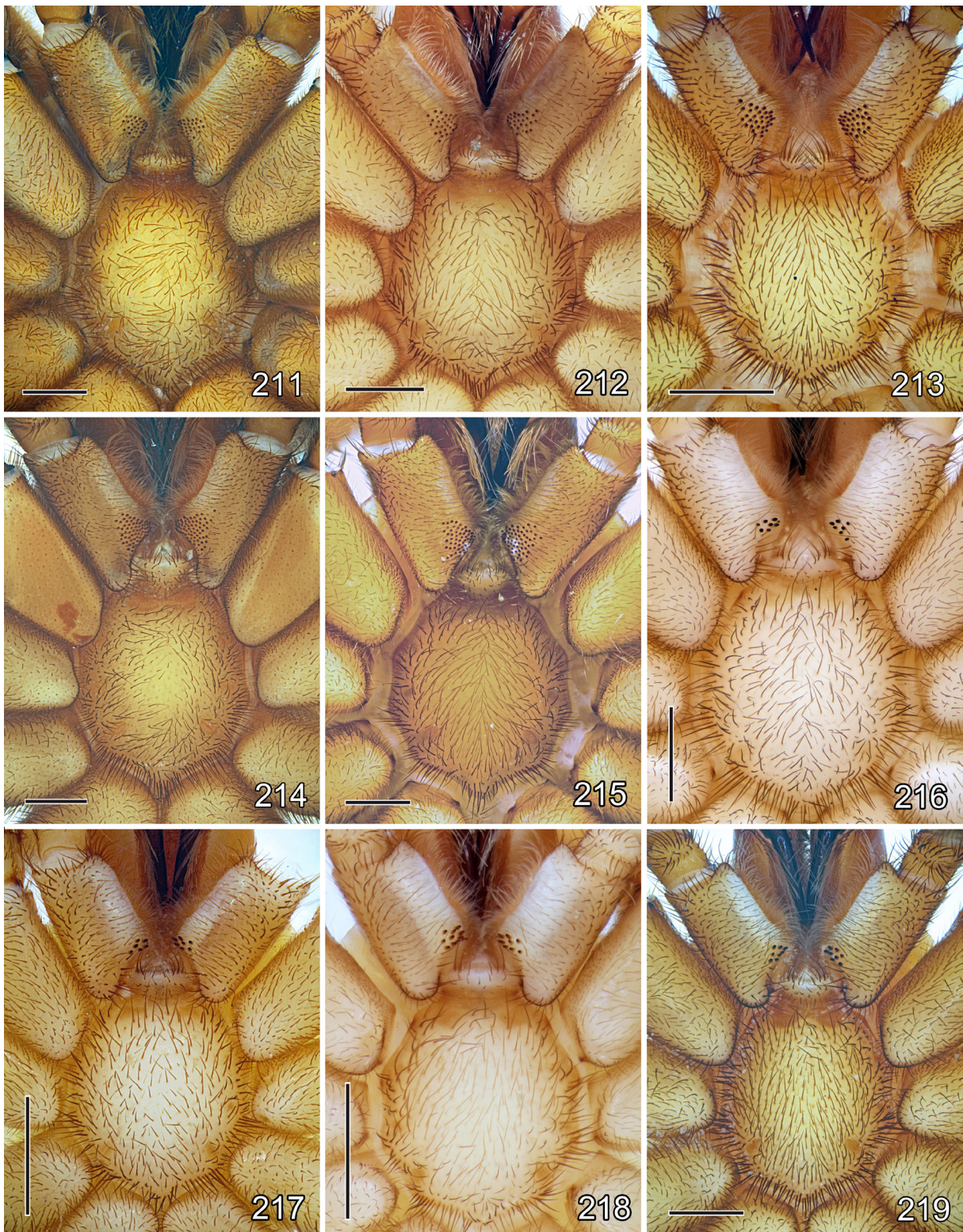
Figs 184–195. *Raveniola* spp., ♀♀, paratypes (except 191–193), clypeus and eye tubercle, dorsal views. **184.** *R. pallens* sp. nov. (SMNH). **185.** *R. zyuzini* sp. nov. (SMNH). **186.** *R. ferghanensis* (Zonstein, 1984) (SMNH). **187.** *R. kirgizica* sp. nov. (SMNH). **188–189.** *R. mikhailovi* Zonstein, 2021, from Aflatun (ZMMU) and Sary-Chelek Reserve (SMNH), respectively. **190.** *R. nenilini* sp. nov. (SMNH). **191.** *R. tarabaevi* sp. nov., holotype (SMNH). **192–193.** *R. virgata* (Simon, 1891), ♀♀ from Arslanbob (SMNH) and Gava (SMF), respectively. **194–195.** *R. vulpina* sp. nov., from Sary-Chelek Reserve and Tereksai, respectively (both SMNH). Scale bars: 0.5 mm.



Figs 196–201. *Raveniola* spp., ♂♂, chelicera, proteral views. **196.** *R. redikorzevi* (Spassky, 1937), ♂ from Kepele (SMNH). **197.** *R. cucullata* sp. nov., paratype from Shikildara (SMNH). **198.** *R. ignobilis* sp. nov., paratype (SMNH). **199.** *R. fedotovi* (Charitonov, 1946), paralectotype (PSU). **200.** *R. kopetdaghensis* (Fet, 1984), paratype (SMNH). **201.** *R. virgata* (Simon, 1891), ♂ from vicinity of Arslanbob (SMNH). Scale bars: 1.0 mm.



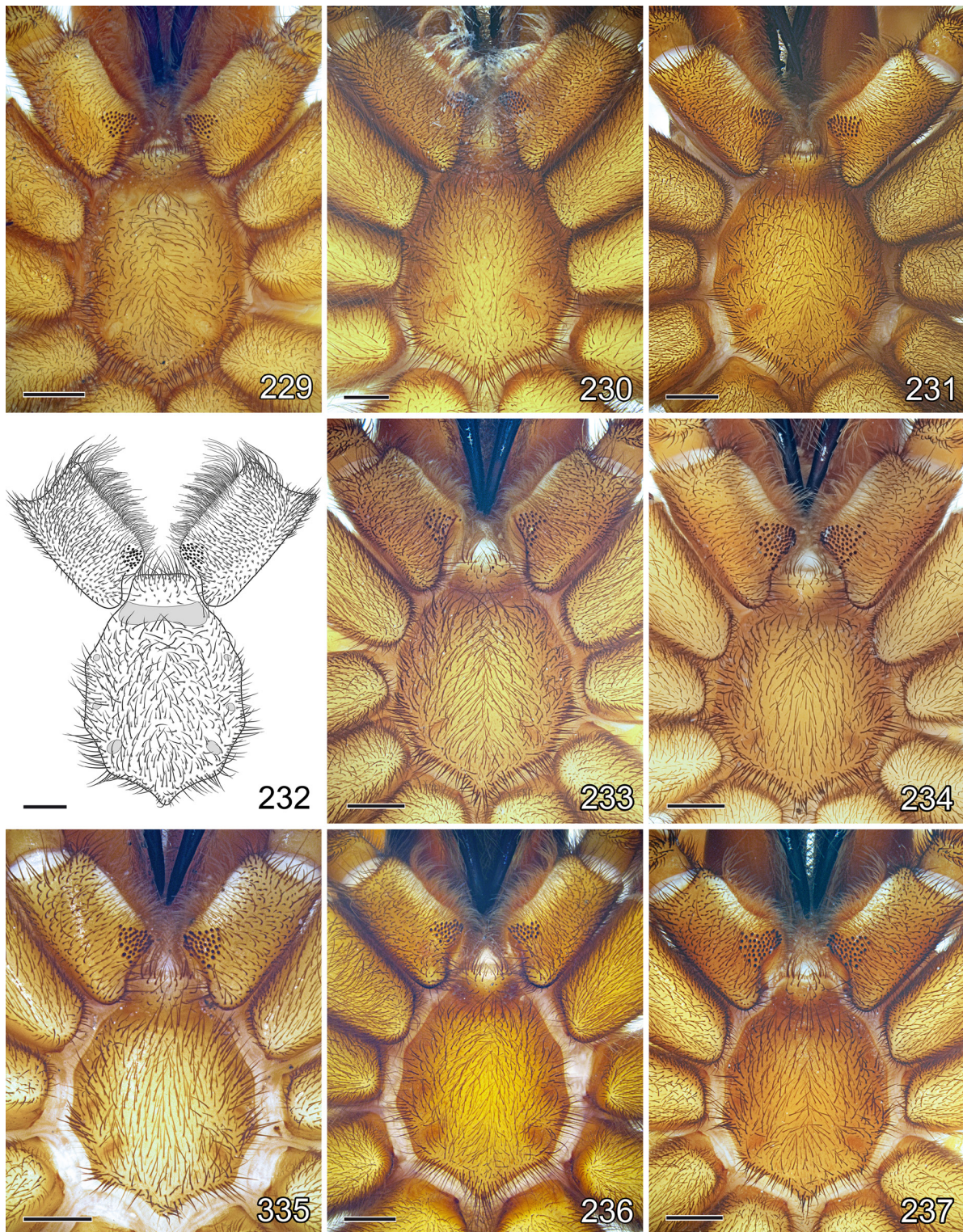
Figs 202–210. *Raveniola* spp., ♂♂, holotypes (except 204), sternum, labium and maxillae, ventral views. **202.** *R. caudata* Zonstein, 2009 (SMNH). **203.** *R. inopinata* sp. nov. (SMNH). **204.** *R. redikorzevi* (Spassky, 1937), ♂ from Akar-Cheshme (SMNH). **205.** *R. alajensis* sp. nov. (SMNH). **206.** *R. concolor* Zonstein, 2000 (MCSN AR 18). **207.** *R. cucullata* sp. nov. (SMNH). **208.** *R. dolosa* sp. nov. (SMNH). **209.** *R. hirta* sp. nov. (SMNH). **210.** *R. ignobilis* sp. nov. (SMNH). Scale bars: 1.0 mm.



Figs 211–219. *Raveniola* spp., ♂♂, holotypes (except 215, 217), sternum, labium and maxillae, ventral views. **211.** *R. insolita* sp. nov. (ZISP). **212.** *R. ornata* sp. nov. (SMNH). **213.** *R. ornatula* sp. nov. (SMNH). **214.** *R. pamira* sp. nov. (SMNH). **215.** *R. pamira*, paratype (SMNH). **216.** *R. diluta* sp. nov. (SMNH). **217.** *R. fedotovi* (Charitonov, 1946), ♂ from Hojakurgan (SMNH). **218.** *R. pallens* sp. nov. (SMNH). **219.** *R. zyuzini* sp. nov. (SMNH). Scale bars: 1.0 mm.



Figs 220–228. *Raveniola* spp., ♂♂, holotypes (except 226, 228), sternum, labium and maxillae, ventral views. **220.** *R. ferghanensis* (Zonstein, 1984) (ZISP). **221.** *R. kirgizica* sp. nov. (SMNH). **222.** *R. kopetdaghensis* (Fet, 1984) (ZISP). **223.** *R. mikhailovi* Zonstein, 2021 (SMNH). **224.** *R. nenilini* sp. nov. (SMNH). **225.** *R. ovchinnikovi* sp. nov. (SMNH). **226.** *R. virgata* (Simon, 1891), ♂ from vicinity of Arslanbob (SMNH). **227.** *R. vulpina* sp. nov. (SMNH). **228.** *R. vulpina*, paratype from Tereksai (SMNH). Scale bars: 1.0 mm.



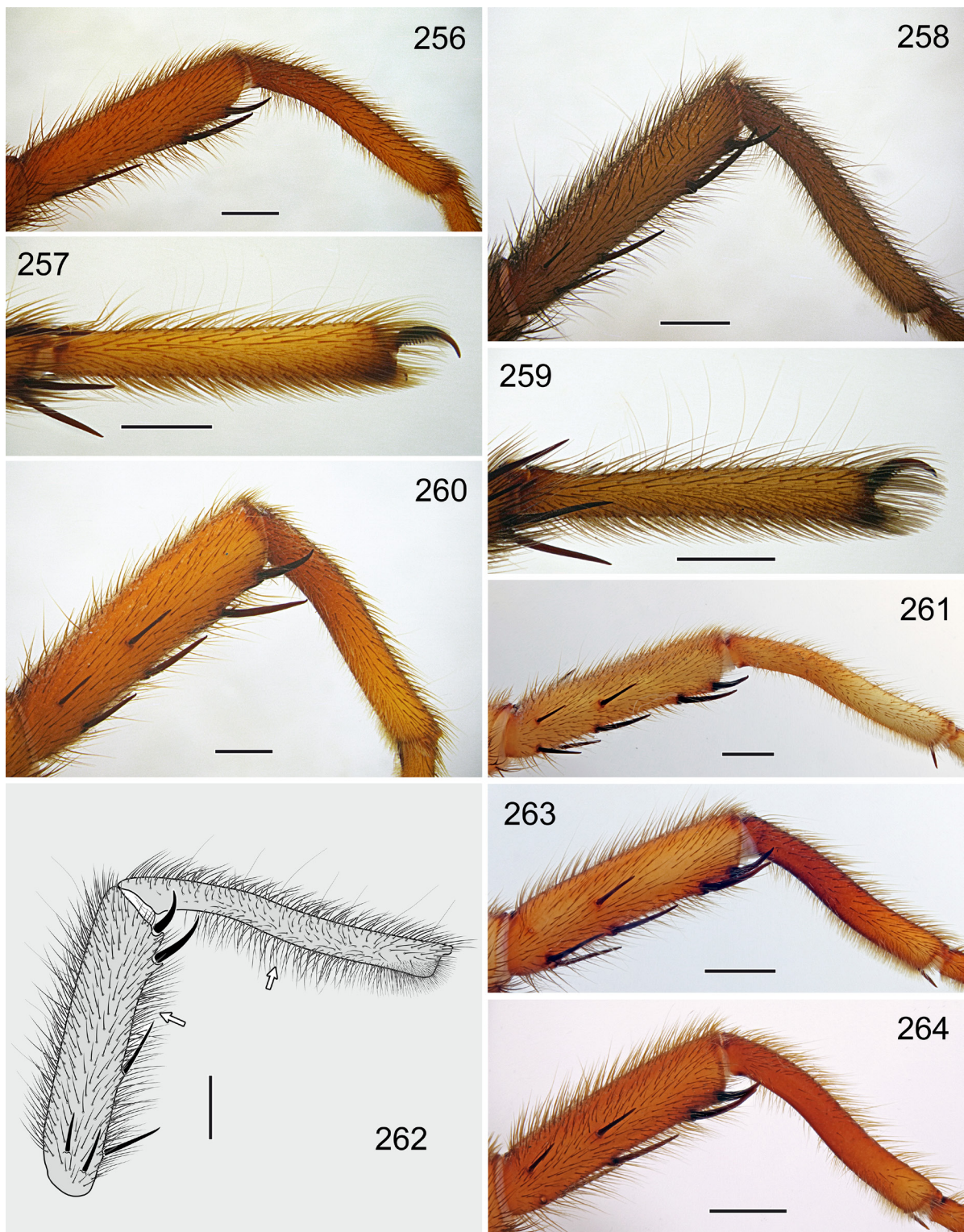
Figs 229–237. *Raveniola* spp., ♀♀, paratypes (except 229–230), sternum, labium and maxillae, ventral views. **229.** *R. redikorzevi* (Spassky, 1937), ♀ from Kepele (SMNH). **230.** *R. afghana* sp. nov., holotype (NHMD). **231.** *R. alajensis* sp. nov. (SMNH). **232.** *R. concolor* Zonstein, 2000 (MCSN AR 19). **233–234.** *R. cucullata* sp. nov. from Shikildara (SMNH) and Shahob (SMNH), respectively. **235.** *R. dolosa* sp. nov. (SMNH). **236.** *R. hirta* sp. nov. (SMNH). **237.** *R. ignobilis* sp. nov. (SMNH). Scale bars: 1.0 mm.



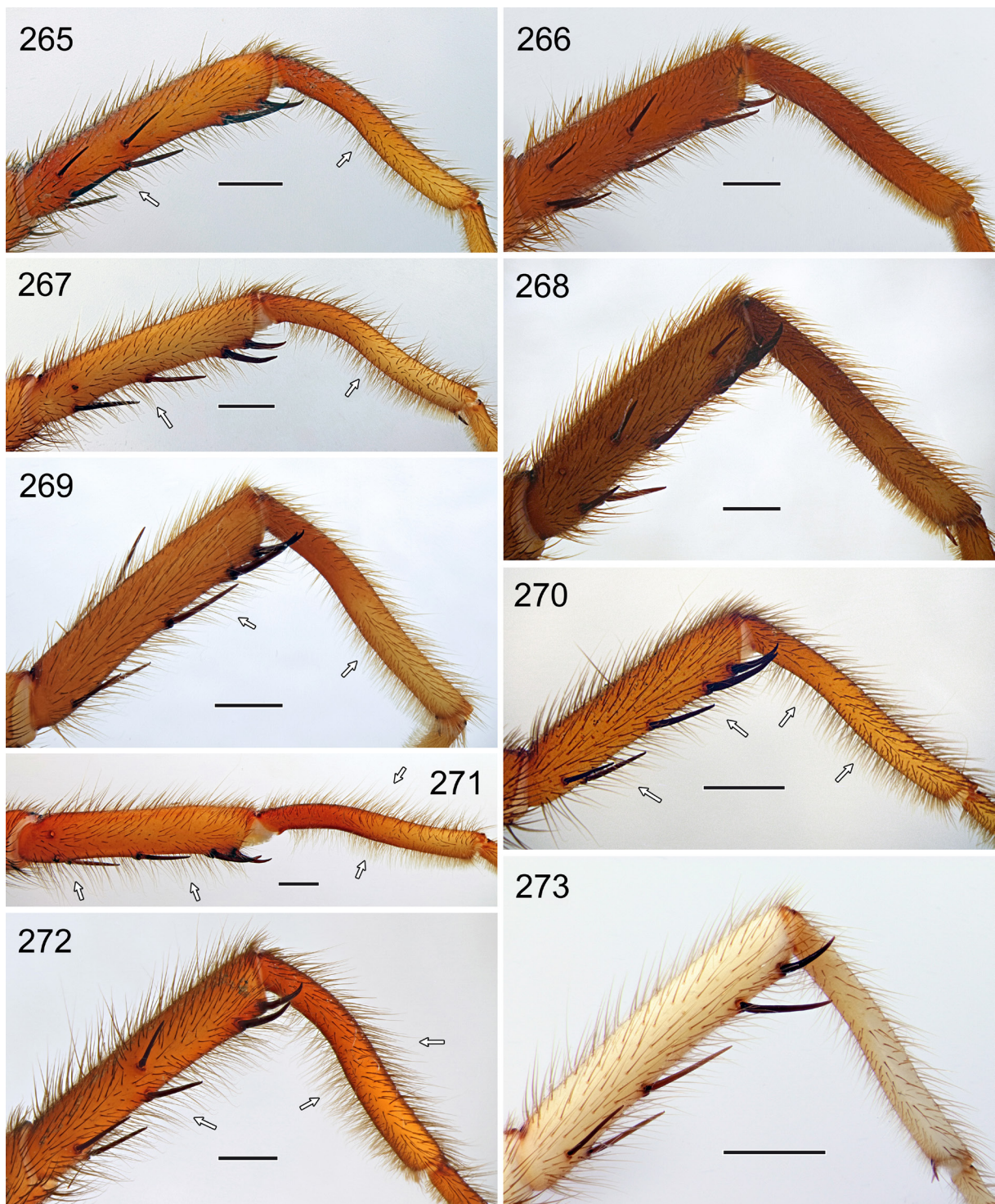
Figs 238–246. *Raveniola* spp., ♀♀, paratypes (except 238, 242, 244), sternum, labium and maxillae, ventral views. **238.** *R. karategensis* sp. nov., holotype (SMNH). **239.** *R. ornata* sp. nov., from Sanglok (SMNH). **240.** *R. ornatula* sp. nov. (SMNH). **241.** *R. pamira* sp. nov. (SMNH). **242.** *R. sororcula* sp. nov., holotype (SMNH). **243.** *R. diluta* sp. nov. (SMNH). **244.** *R. fedotovi* (Charitonov, 1946), ♀ from Hojakurgan (SMNH). **245.** *R. pallens* sp. nov. (SMNH). **246.** *R. zyuzini* sp. nov. (SMNH). Scale bars: 1.0 mm.



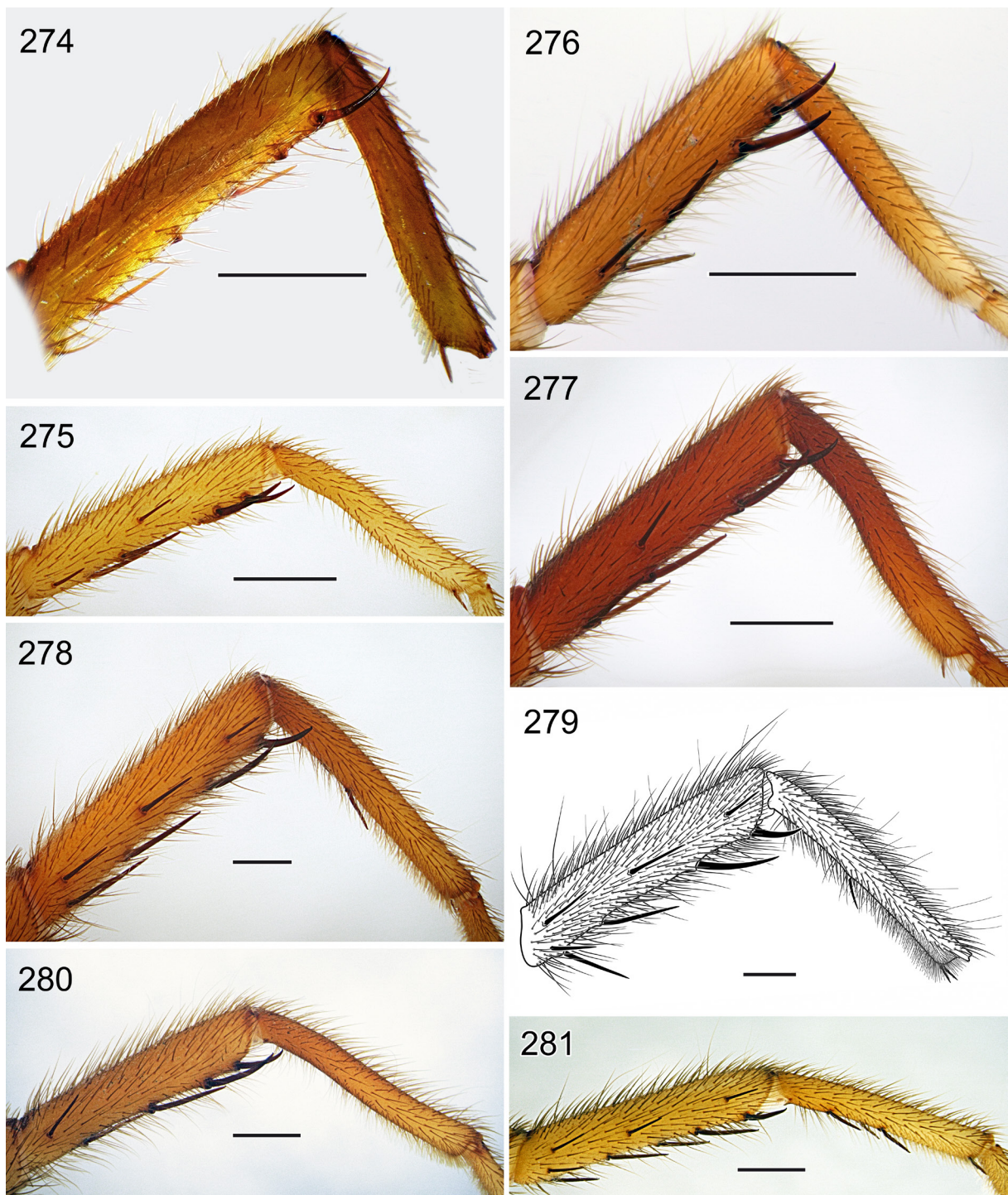
Figs 247–255. *Raveniola* spp., ♀♀, paratypes (except 252–253), sternum, labium and maxillae, ventral views. **247.** *R. ferghanensis* (Zonstein, 1984) (SMNH). **248.** *R. kirgizica* sp. nov. (SMNH). **249–250.** *R. mikhailovi* Zonstein, 2021, from Aflatun (ZMMU) and Karangitun (SMNH), respectively. **251.** *R. nenilini* sp. nov. (SMNH). **252.** *R. tarabaevi* sp. nov., holotype (SMNH). **253.** *R. virgata* (Simon, 1891), ♀ from Arslanbob (SMNH). **254–255.** *R. vulpina* sp. nov., from Sary-Chelek Reserve and Tereksai, respectively (both SMNH). Scale bars: 1.0 mm.



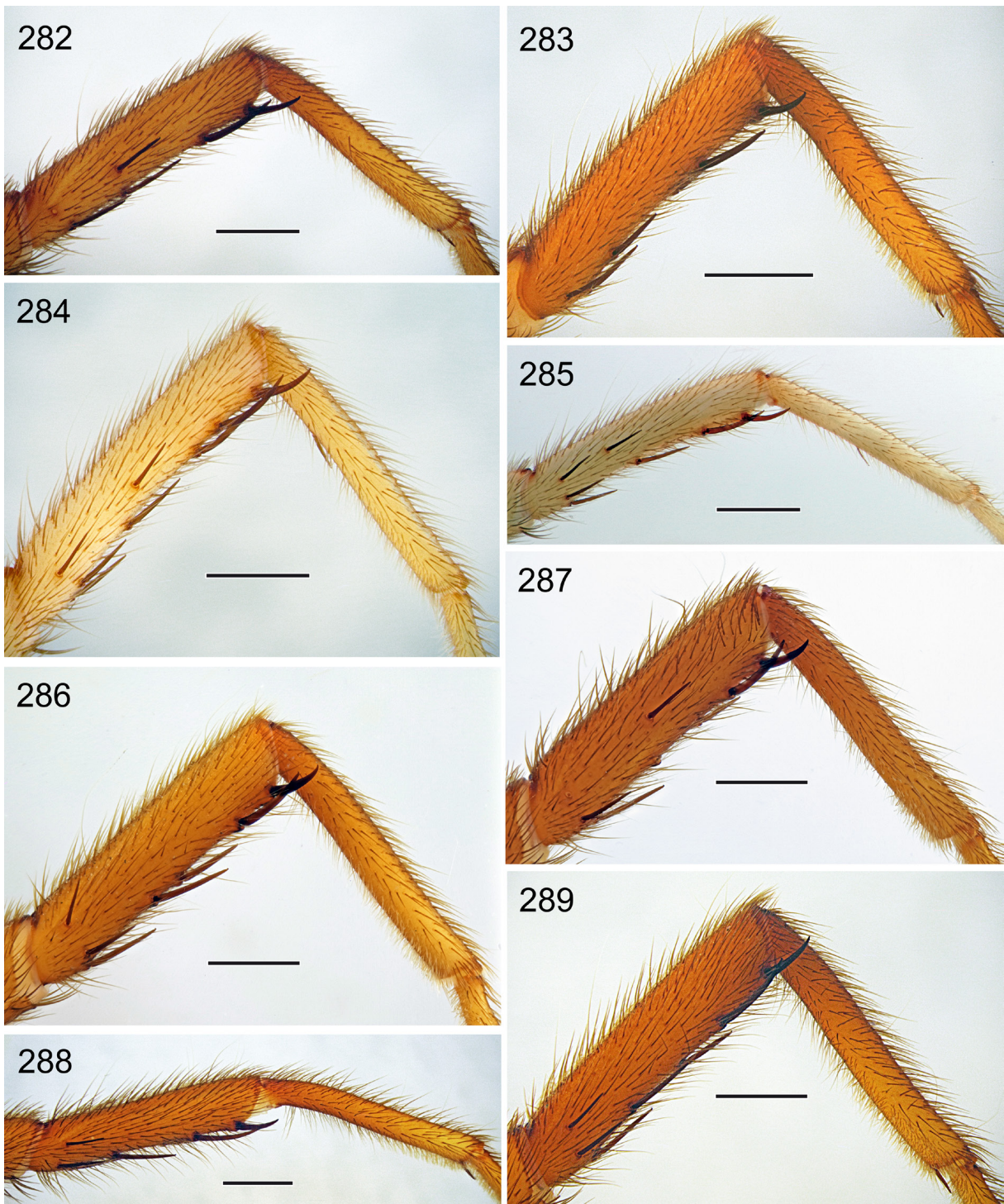
Figs 256–264. *Raveniola* spp., ♂♂; holotypes (except 260, 264), tibia and metatarsus I (256, 258, 260–264) and tarsus IV (257, 259); retrolateral views. **256–257.** *R. caudata* Zonstein, 2009 (SMNH). **258–259.** *R. inopinata* sp. nov. (SMNH). **260.** *R. redikorzevi* (Spassky, 1937), ♂ from Akar-Cheshme (SMNH). **261.** *R. alajensis* sp. nov. (SMNH) **262.** *R. concolor* Zonstein, 2000 (MCSN AR 18). **263.** *R. cucullata* sp. nov. (SMNH). **264.** *R. cucullata*, paratype from Shahob (SMNH). Modified hairs are indicated with arrows. Scale bars: 1.0 mm.



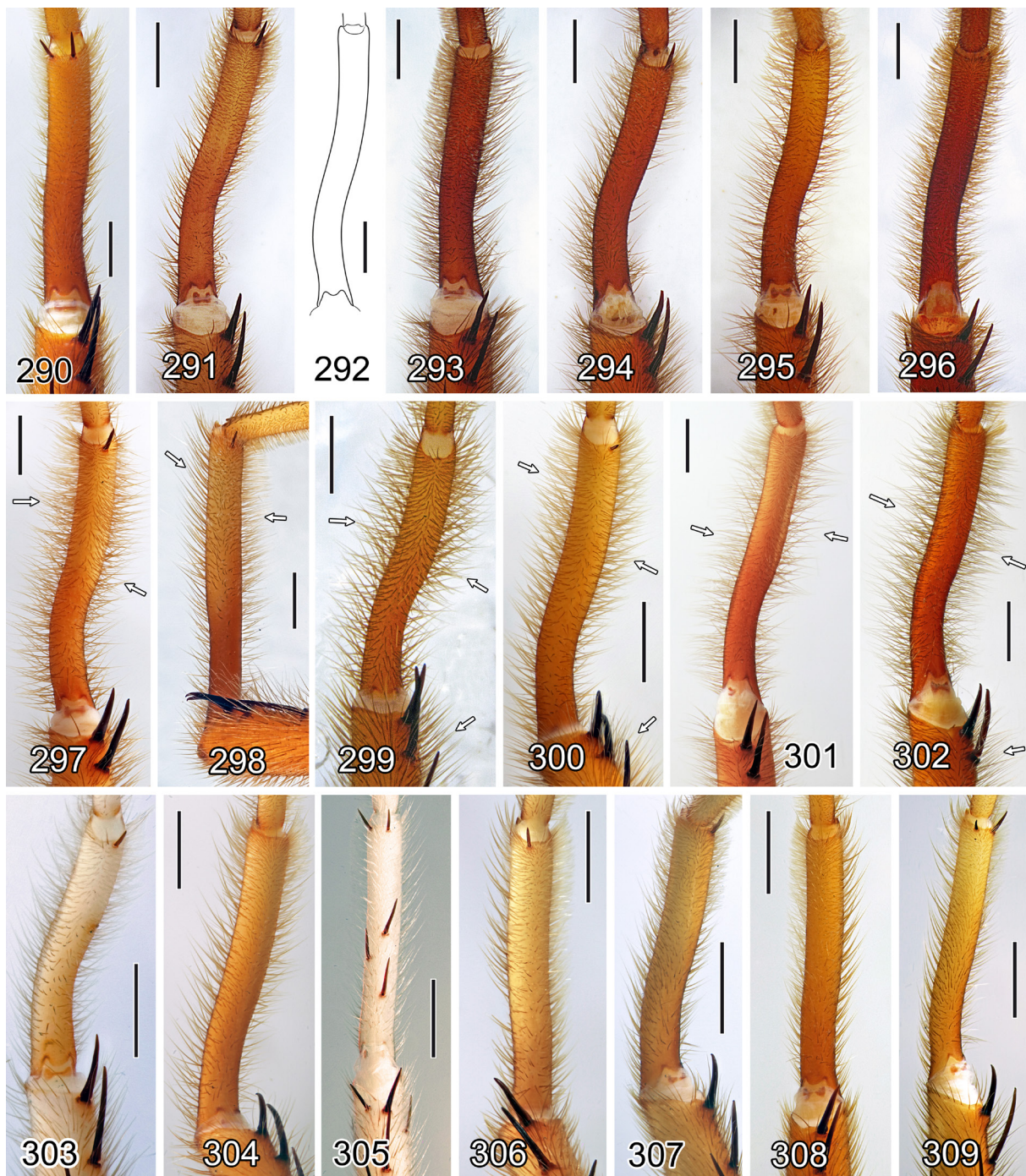
Figs 265–273. *Raveniola* spp., ♂♂, holotypes (except 272), tibia and metatarsus I, retrolateral views. 265. *R. dolosa* sp. nov. (SMNH). 266. *R. hirta* sp. nov. (SMNH). 267. *R. ignobilis* sp. nov. (SMNH). 268. *R. insolita* sp. nov. (ZISP). 269. *R. ornata* sp. nov. (SMNH). 270. *R. ornatula* sp. nov. (SMNH). 271. *R. pamira* sp. nov. (SMNH). 272. *R. pamira*, paratype (SMNH). 273. *R. diluta* sp. nov. (SMNH). Modified hairs are indicated with arrows. Scale bars: 1.0 mm.



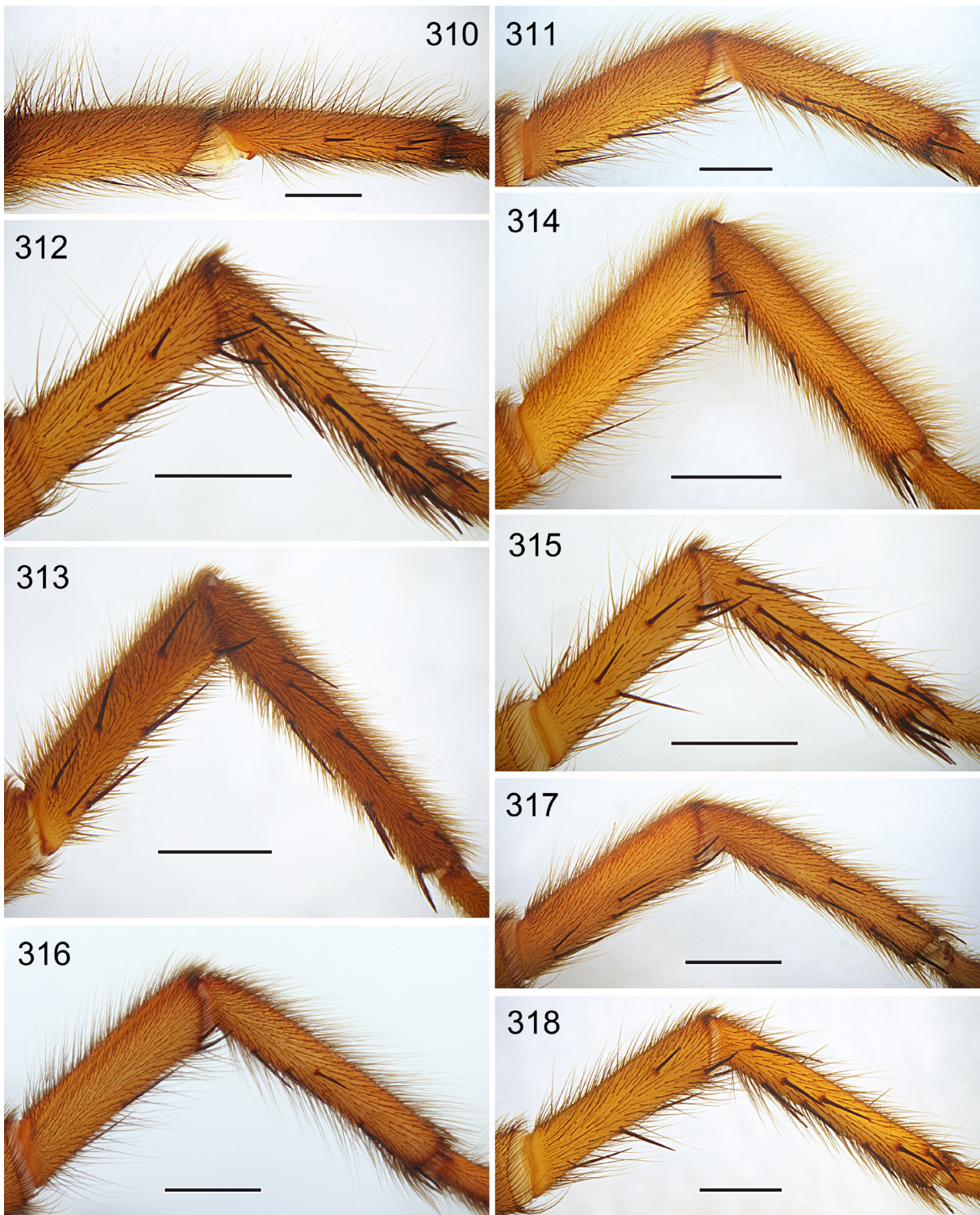
Figs 274–281. *Raveniola* spp., ♂♂, holotypes (except 275, 279), tibia and metatarsus I, retrolateral views. **274.** *R. fedotovi* (Charitonov, 1946), lectotype (ZMMU). **275.** *R. fedotovi*, ♂ from Hojakurgan (SMNH). **276.** *R. pallens* sp. nov. (SMNH). **277.** *R. zyuzini* sp. nov. (SMNH). **278.** *R. ferghanensis* (Zonstein, 1984) (ZISP). **279.** *R. ferghanensis*, paratype (SMNH). **280.** *R. kirgizica* sp. nov. (SMNH). **281.** *R. kopetdaghensis* (Fet, 1984) (ZISP). Scale bars: 1.0 mm.



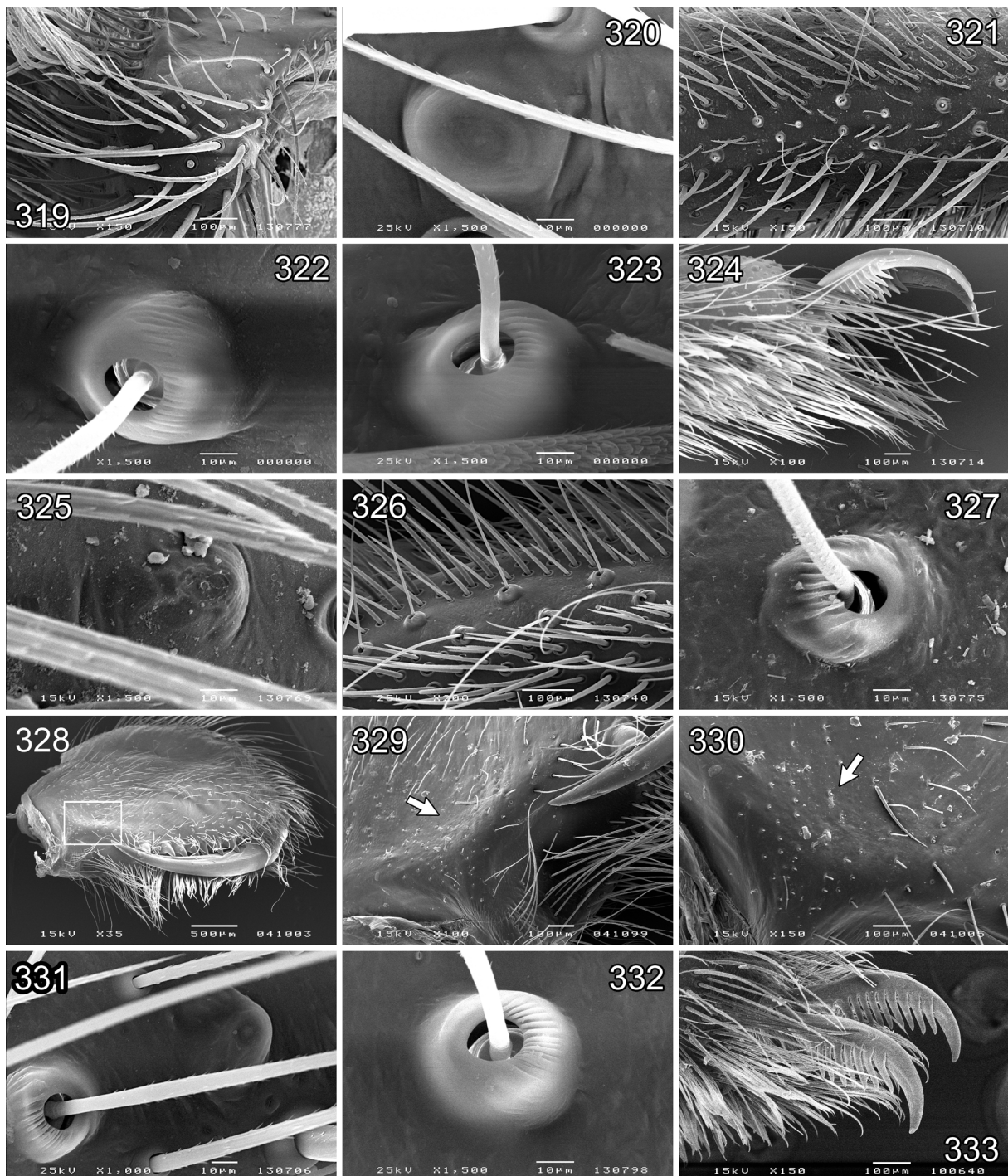
Figs 282–289. *Raveniola* spp., ♂♂, holotypes (except 285–287, 289), tibia and metatarsus I, retrolateral views. **282.** *R. mikhailovi* Zonstein, 2021 (SMNH). **283.** *R. nenilini* sp. nov. (SMNH). **284.** *R. ovchinnikovi* sp. nov. (SMNH). **285.** *R. ovchinnikovi*, paratype (SMNH). **286.** *R. virgata* (Simon, 1891), ♂ from vicinity of Arslanbob (SMNH). **287.** *R. virgata*, ♂ from Gava (SMF). **288.** *R. vulpina* sp. nov. (SMNH). **289.** *R. vulpina*, paratype from Tereksai (SMNH). Scale bars: 1.0 mm.



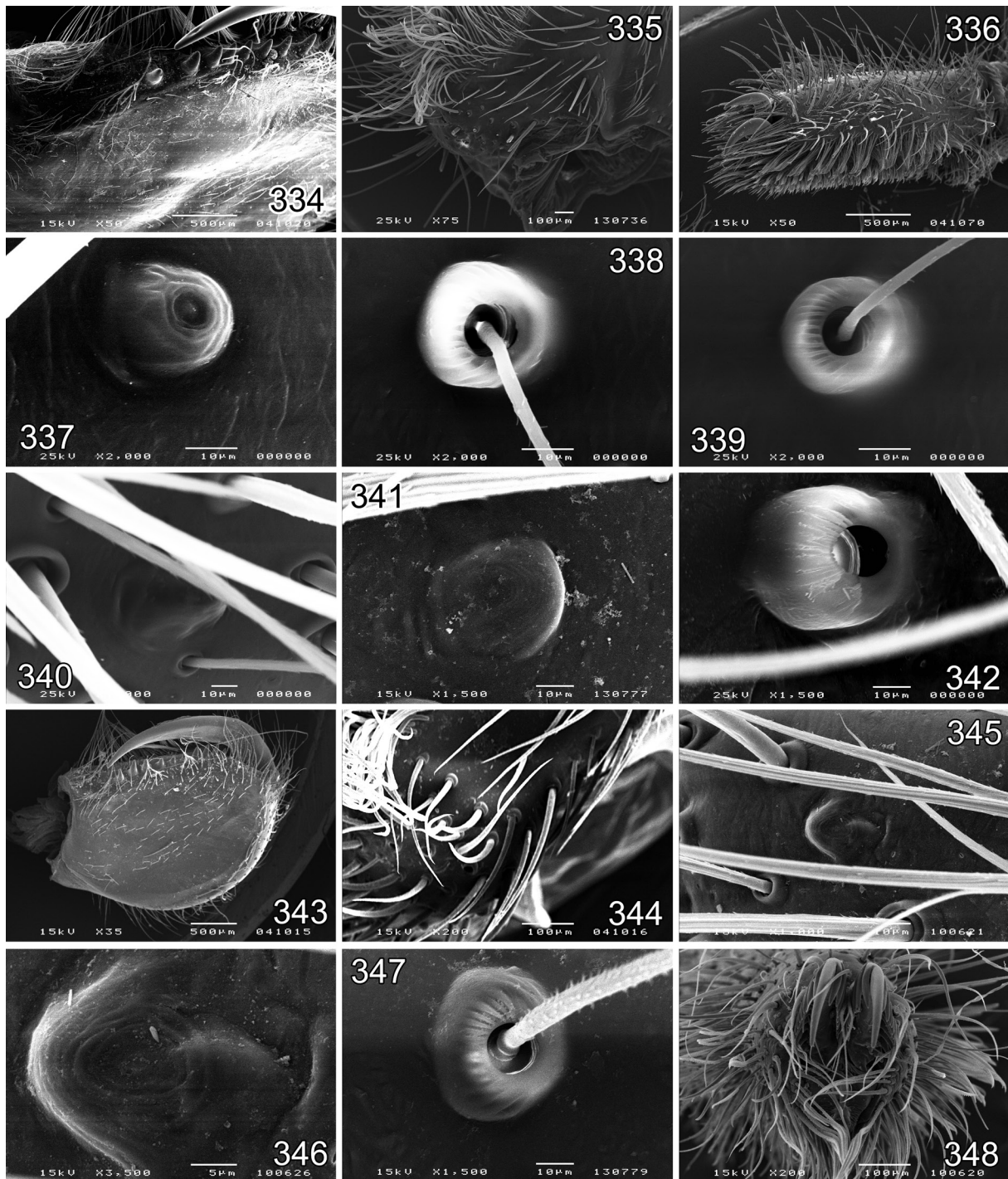
Figs 290–309. *Raveniola* spp., ♂♂, holotypes (except 290, 294, 300, 302, 308), metatarsus I, ventral views. **290.** *R. redikorzevi* (Spassky, 1937), ♂ from Akar-Cheshme (SMNH). **291.** *R. alajensis* sp. nov. (SMNH). **292.** *R. concolor* Zonstein, 2000 (MCSN AR 18). **293.** *R. cucullata* sp. nov. (SMNH). **294.** *R. cucullata*, paratype from Shahob (SMNH). **295.** *R. dolosa* sp. nov. (SMNH). **296.** *R. hirta* sp. nov. (SMNH). **297.** *R. ignobilis* sp. nov. (SMNH). **298.** *R. ornata* sp. nov. (SMNH). **299.** *R. ornatula* sp. nov. (SMNH). **300.** *R. ornatula*, paratype (SMNH). **301.** *R. pamira* sp. nov. (SMNH). **302.** *R. pamira*, paratype (SMNH). **303.** *R. diluta* sp. nov. (SMNH). **304.** *R. kirgizica* sp. nov. (SMNH). **305.** *R. kopetdaghensis* (Fet, 1984) (ZISP). **306.** *R. mikhailovi* Zonstein, 2021 (SMNH). **307.** *R. nenilini* sp. nov. (SMNH). **308.** *R. virgata* (Simon, 1891), ♂ from vicinity of Arslanbob (SMNH). **309.** *R. vulpina* sp. nov. (SMNH). Modified hairs are indicated with arrows. Scale bars: 1.0 mm.



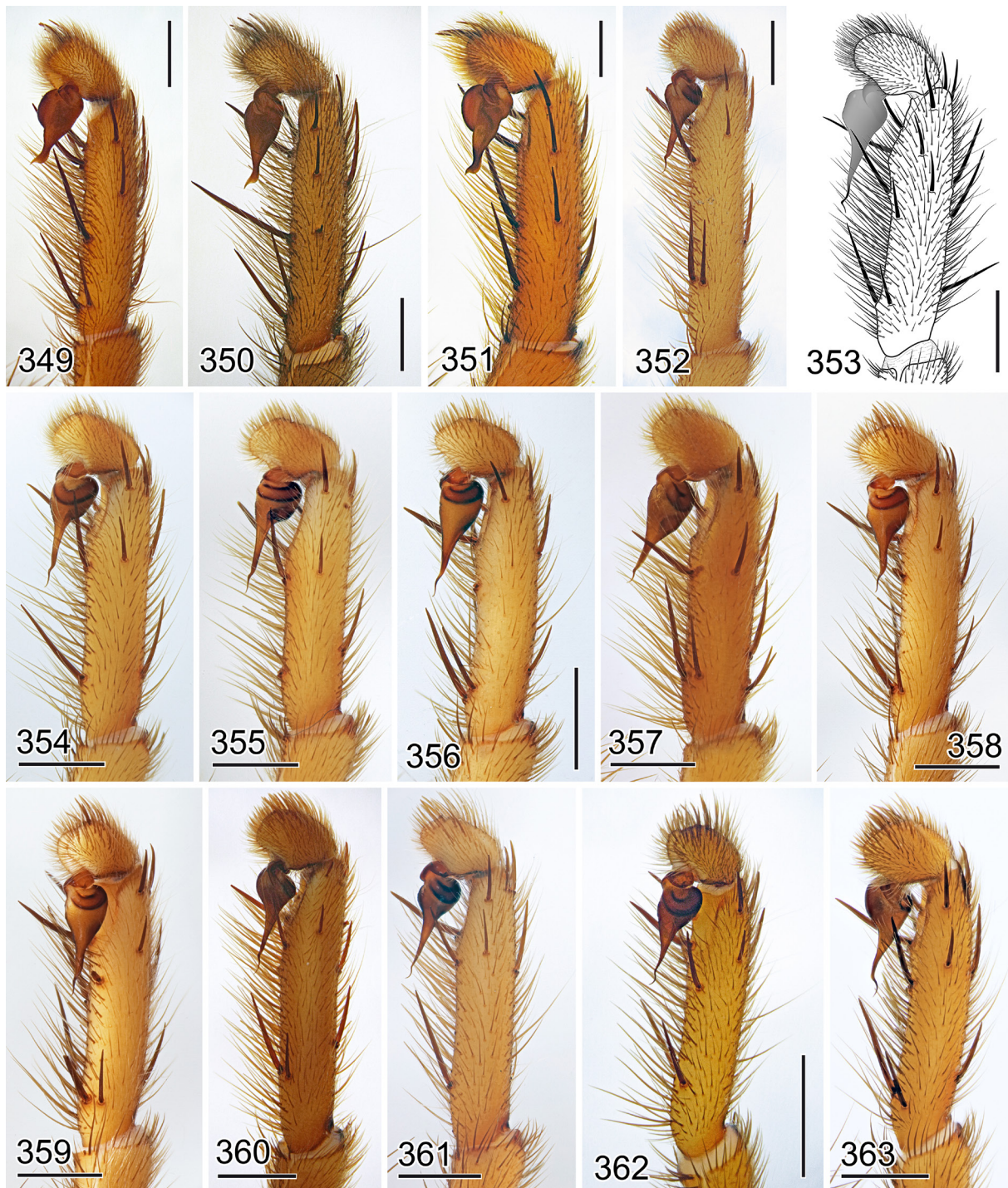
Figs 310–318. *Raveniola* spp., ♀♀ (310–312, 314–318) and ♂ (313), tibia and metatarsus IV, retrolateral views. **310.** *R. afghana* sp. nov., holotype (NHMD). **311.** *R. alajensis* sp. nov., paratype from Berksu. **312.** *R. cucullata* sp. nov., paratype from Mullokoni (SMNH). **313–314.** *R. hirta* sp. nov., holotype (SMNH) and paratype (SMNH), respectively. **315.** *R. ignobilis* sp. nov., paratype from Sangdara (SMNH). **316–317.** *R. karategensis* sp. nov., holotype (SMNH) and paratype (SMNH), respectively. **318.** *R. pamira* sp. nov., paratype from Ubagandara (SMNH). Scale bars: 2.0 mm.



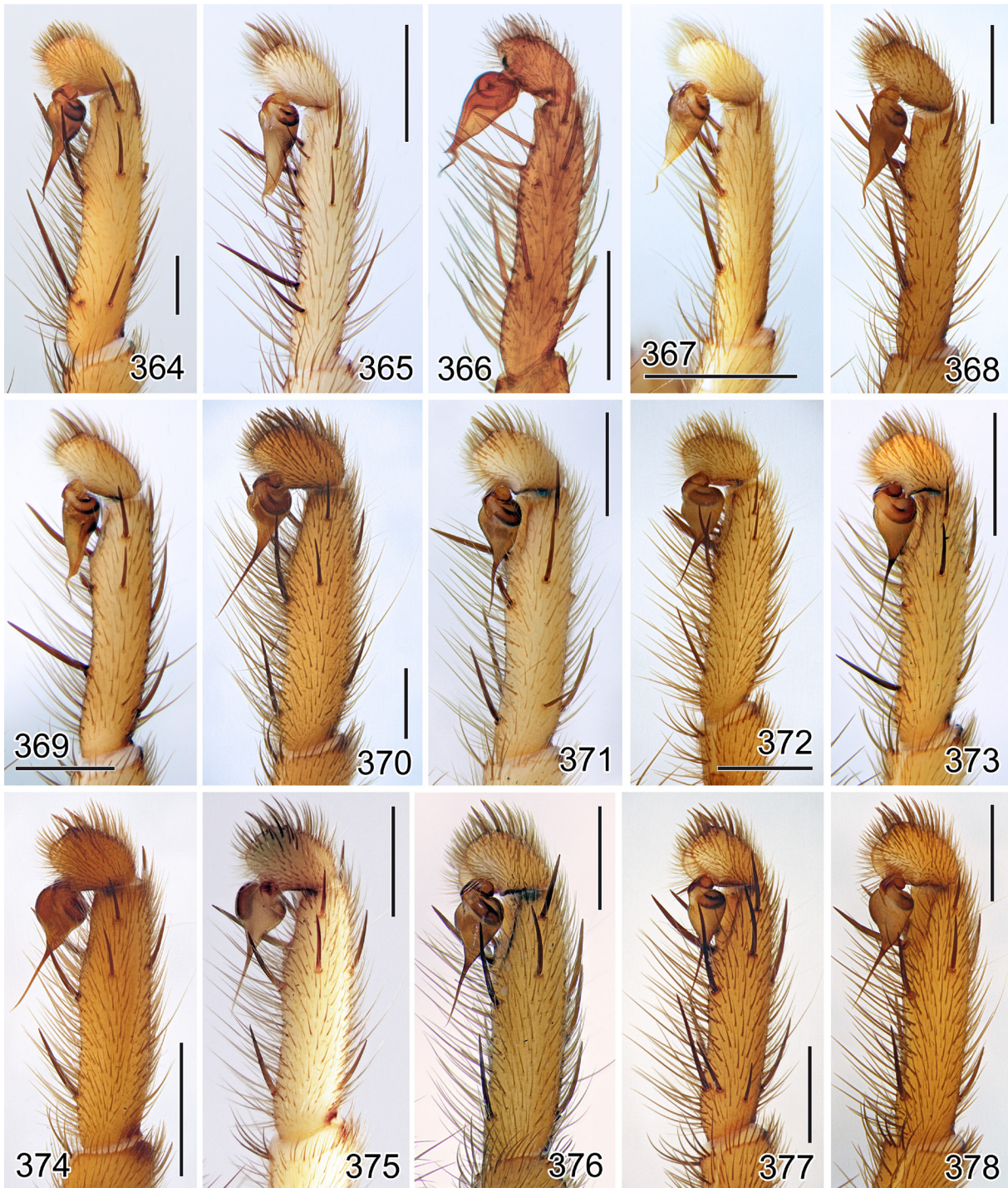
Figs 319–333. *Raveniola* spp., ♂ (319–324) and ♀♀ (325–333); apical edge of maxilla (319); tarsus I, tarsal organ, (320, 325, 331); same, zigzag row of trichobothria (321, 326, dorsal and retrodorsal views, respectively); same, bases of trichobothria (322–323, 327, 332); tarsal claws of leg IV (324) and leg I (333); entire chelicera (328) and its probasal corner (329–330); ventroapical (319), dorsal (320–323, 325, 327, 331–332), retrolateral (324, 333) and proventro-caudal (328–330) views. **319–324.** *R. redikorzevi* (Spassky, 1937) (SMNH). **325–327.** *R. alajensis* sp. nov. (SMNH). **328–333.** *R. cucullata* sp. nov. (SMNH).



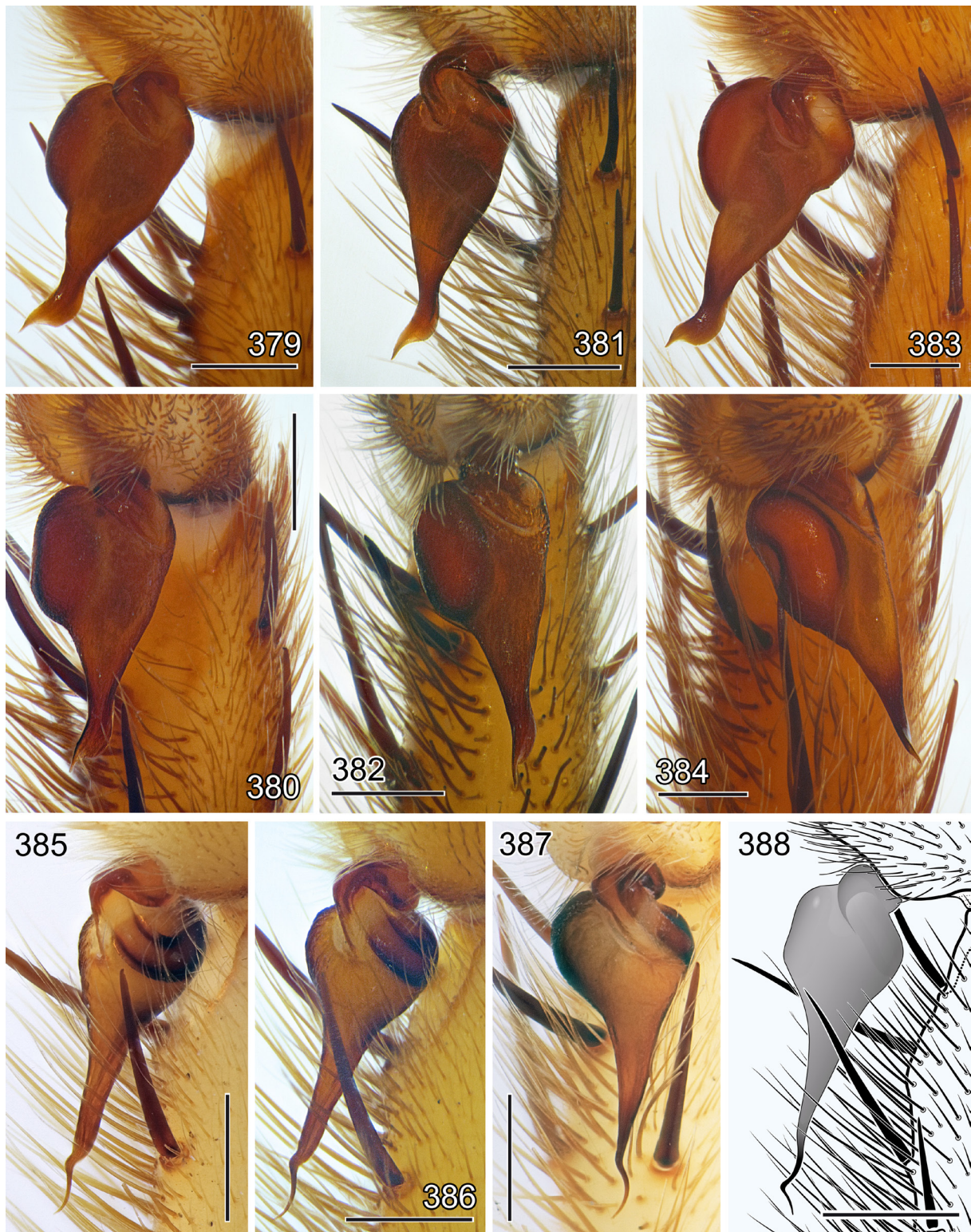
Figs 334–348. *Raveniola* spp., ♂♂ (334, 337–348) and ♀♀ (335–336); chelicera, probasal corner (334) and entire structure (343); apical edge of maxilla (335, 344); tarsus I (336); same, tarsal organ (337, 340–341, 345–346); same, bases of trichobotria (338–339, 342, 347); same, claws (348); proventrocaudal (334, 343), ventroapical (335, 344), dorsal (336–342, 345–347) and anterior (348) views. **334–336.** *R. pamira* sp. nov. (SMNH). **337–339.** *R. zyuzini* sp. nov. (SMNH). **340–342.** *R. ferghanensis* (Zonstein, 1984) (SMNH). **343–348.** *R. virgata* (Simon, 1891) (SMNH).



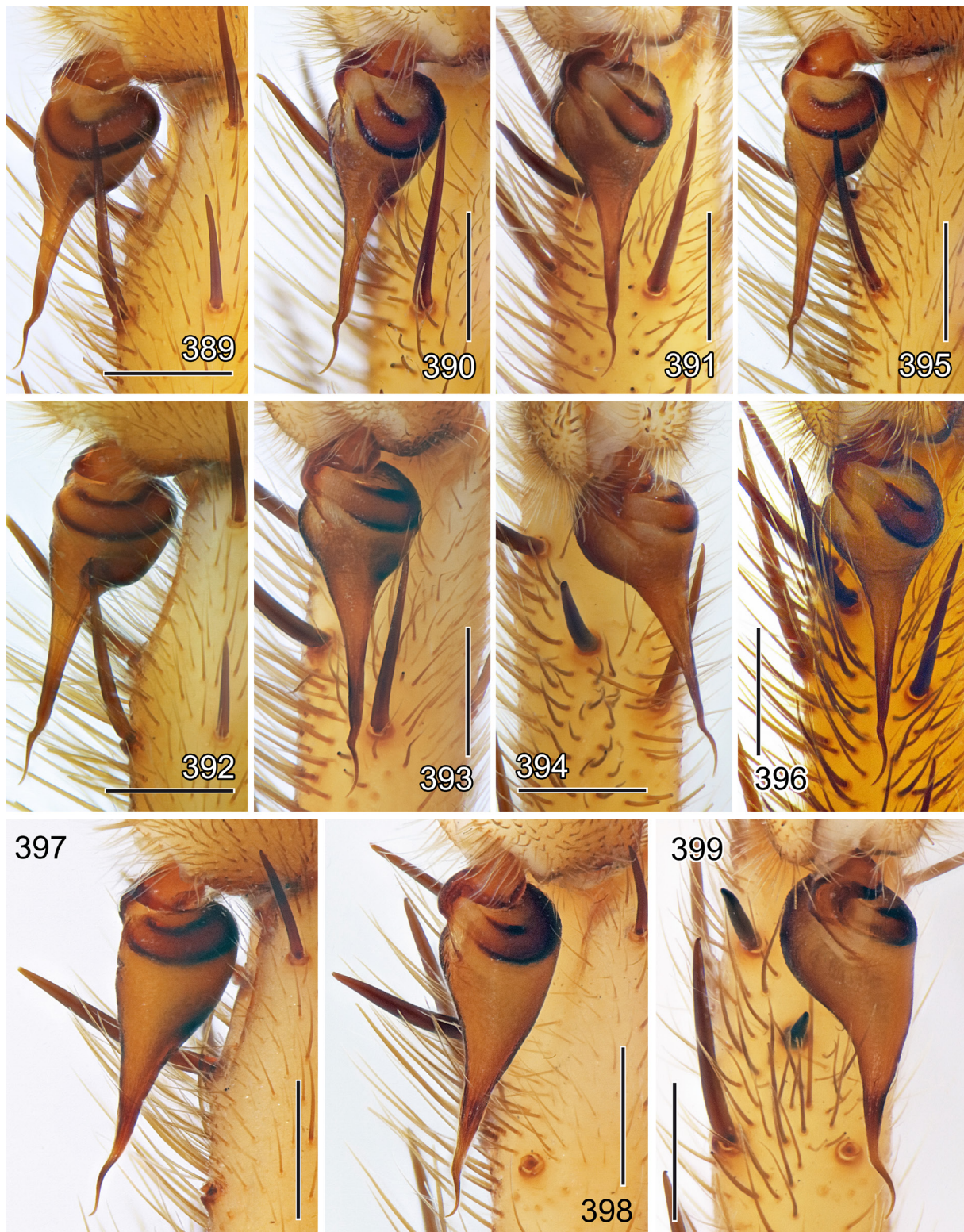
Figs 349–363. *Raveniola* spp., ♂♂, holotypes (except 351, 355, 363), palpal tibia, cymbium and copulatory bulb, retrolateral (349–358, 360–361, 363) and retroventral (359, 362) views. **349.** *R. caudata* Zonstein, 2009 (SMNH). **350.** *R. inopinata* sp. nov. (SMNH). **351.** *R. redikorzevi* (Spassky, 1937), ♂ from Akar-Cheshme (SMNH). **352.** *R. alajensis* sp. nov. (SMNH). **353.** *R. concolor* Zonstein, 2000 (MCSN AR 18). **354.** *R. cucullata* sp. nov. (SMNH). **355.** *R. cucullata*, paratype from Shahob (SMNH). **356.** *R. dolosa* sp. nov. (SMNH). **357.** *R. hirta* sp. nov. (SMNH). **358–359.** *R. ignobilis* sp. nov. (SMNH). **360.** *R. insolita* sp. nov. (ZISP). **361.** *R. ornata* sp. nov. (SMNH). **362.** *R. ornatula* sp. nov. (SMNH). **363.** *R. pamira* sp. nov., paratype (SMNH). Scale bars: 1.0 mm.



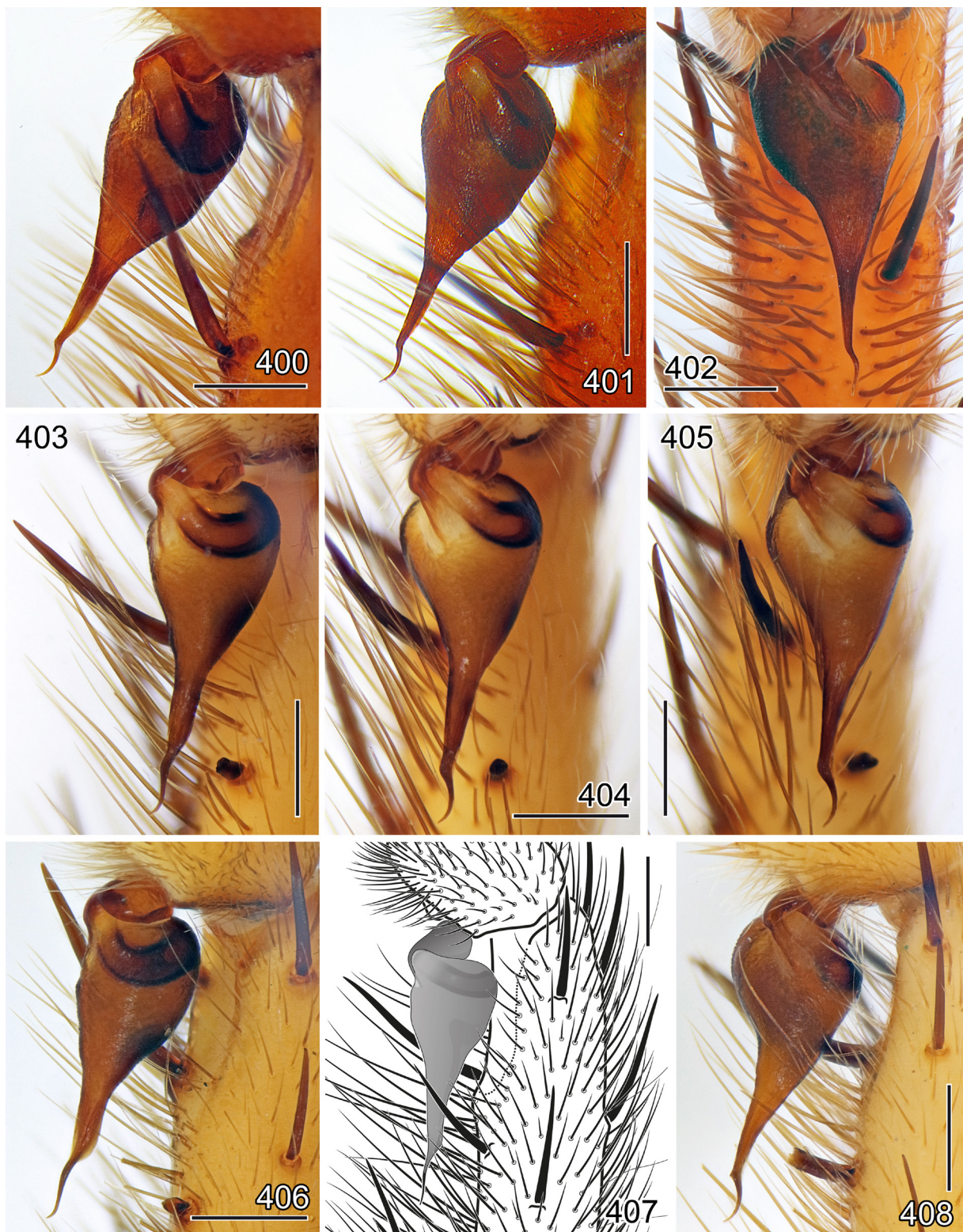
Figs 364–378. *Raveniola* spp., ♂♂, holotypes (except 366, 369, 376, 378), palpal tibia, cymbium and copulatory bulb, retrolateral (364–377) and retroventral (378) views. **364.** *R. pamira* sp. nov. (SMNH). **365.** *R. diluta* sp. nov. (SMNH). **366.** *R. fedotovi* (Charitonov, 1946), lectotype (ZMMU). **367.** *R. pallens* sp. nov. (SMNH). **368.** *R. zyuzini* sp. nov. (SMNH). **369.** *R. zyuzini*, paratype (SMNH). **370.** *R. ferghanensis* (Zonstein, 1984) (ZISP). **371.** *R. kirgizica* sp. nov. (SMNH). **372.** *R. kopetdaghensis* (Fet, 1984) (ZISP). **373.** *R. mikhailovi* Zonstein, 2021 (SMNH). **374.** *R. nenilini* sp. nov. (SMNH). **375.** *R. ovchinnikovi* sp. nov. (SMNH). **376.** *R. virgata* (Simon, 1891), ♂ from vicinity of Arslanbob (SMNH). **377.** *R. vulpina* sp. nov. (SMNH). **378.** *R. vulpina*, paratype from Tereksai (SMNH). Scale bars: 1.0 mm.



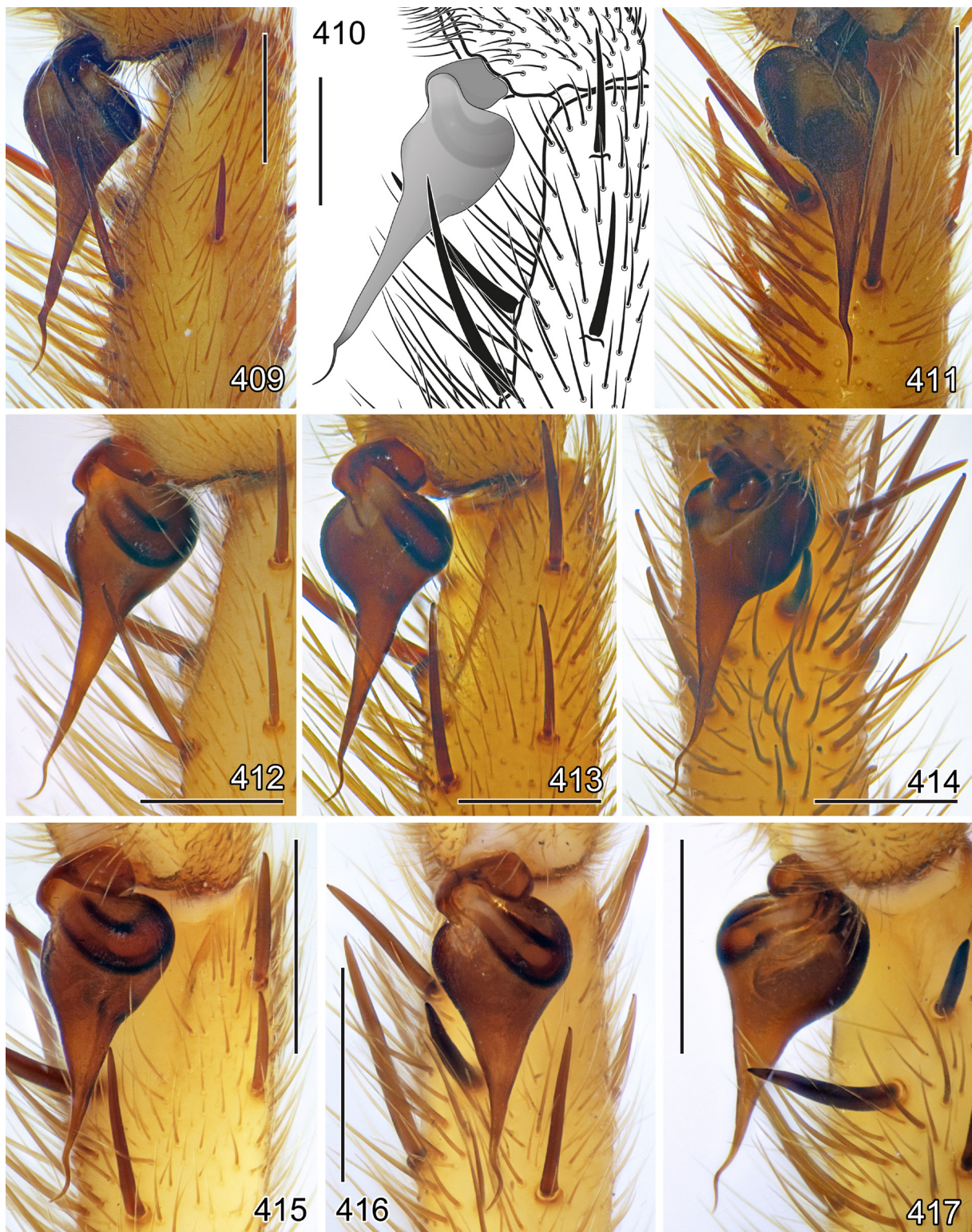
Figs 379–388. *Raveniola* spp., ♂♂, holotypes, details of copulatory bulb, retrolateral (379, 381, 383, 385, 388), ventral (380, 382, 384, 387) and retroventral (386) views. **379–380.** *R. caudata* Zonstein, 2009 (SMNH). **381–382.** *R. inopinata* sp. nov. (SMNH). **383–384.** *R. redikorzevi* (Spassky, 1937), ♂ from Akar-Cheshme (SMNH). **385–387.** *R. alajensis* sp. nov. (SMNH). **388.** *R. concolor* Zonstein, 2000 (MCSN AR 18). Scale bars: 0.5 mm.



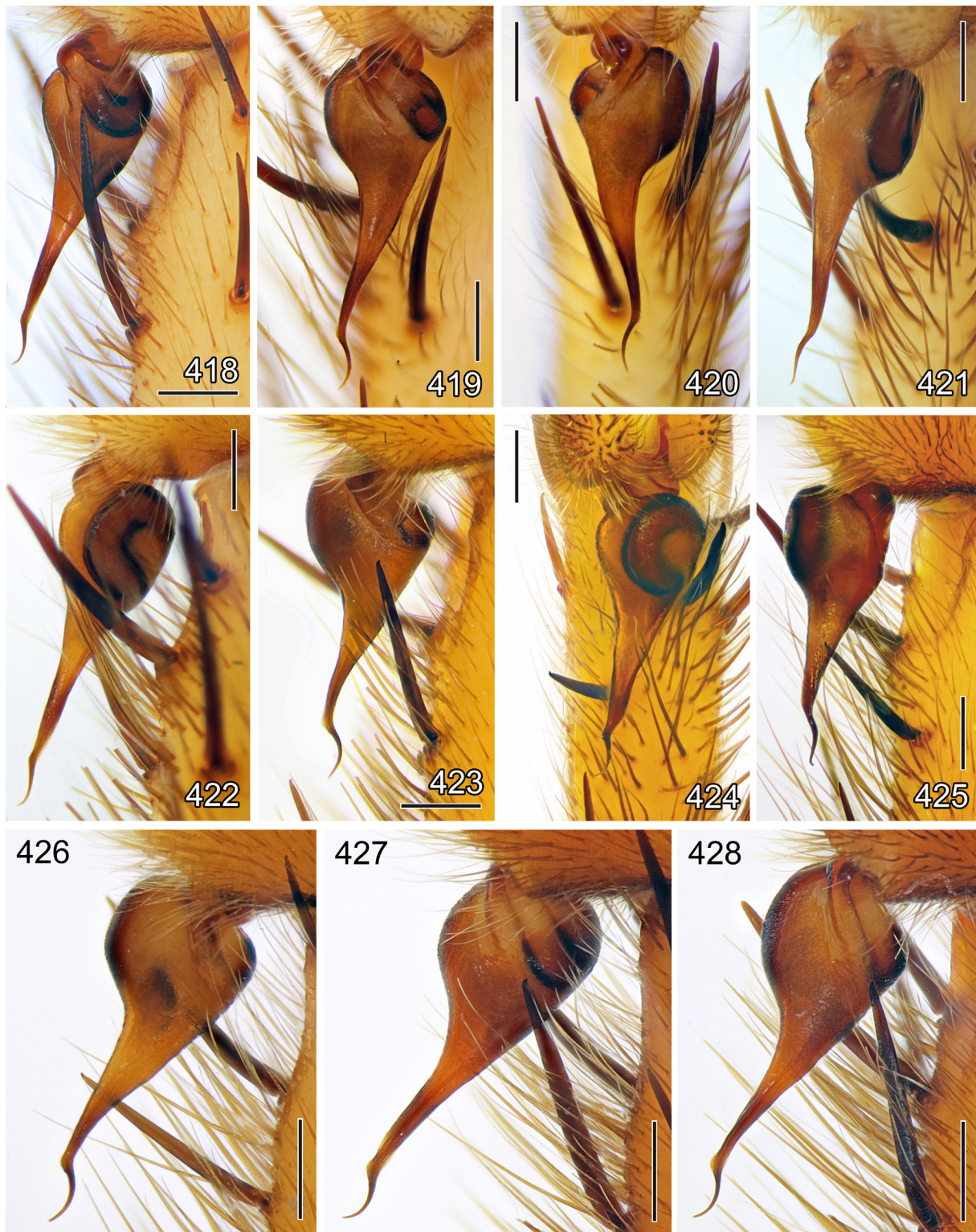
Figs 389–399. *Raveniola* spp., ♂♂, holotypes (except 392–396), details of copulatory bulb, retrolateral (389, 392, 395, 397), retroventral (390, 393, 398) and ventral (391, 394, 396, 399) views. **389–391.** *R. cucullata* sp. nov. (SMNH). **392–394.** *R. cucullata* sp. nov., paratype from Shahob (SMNH). **395–396.** *R. cucullata*, paratype from Sangdara (SMNH). **397–399.** *R. dolosa* sp. nov. (SMNH). Scale bars: 0.5 mm.



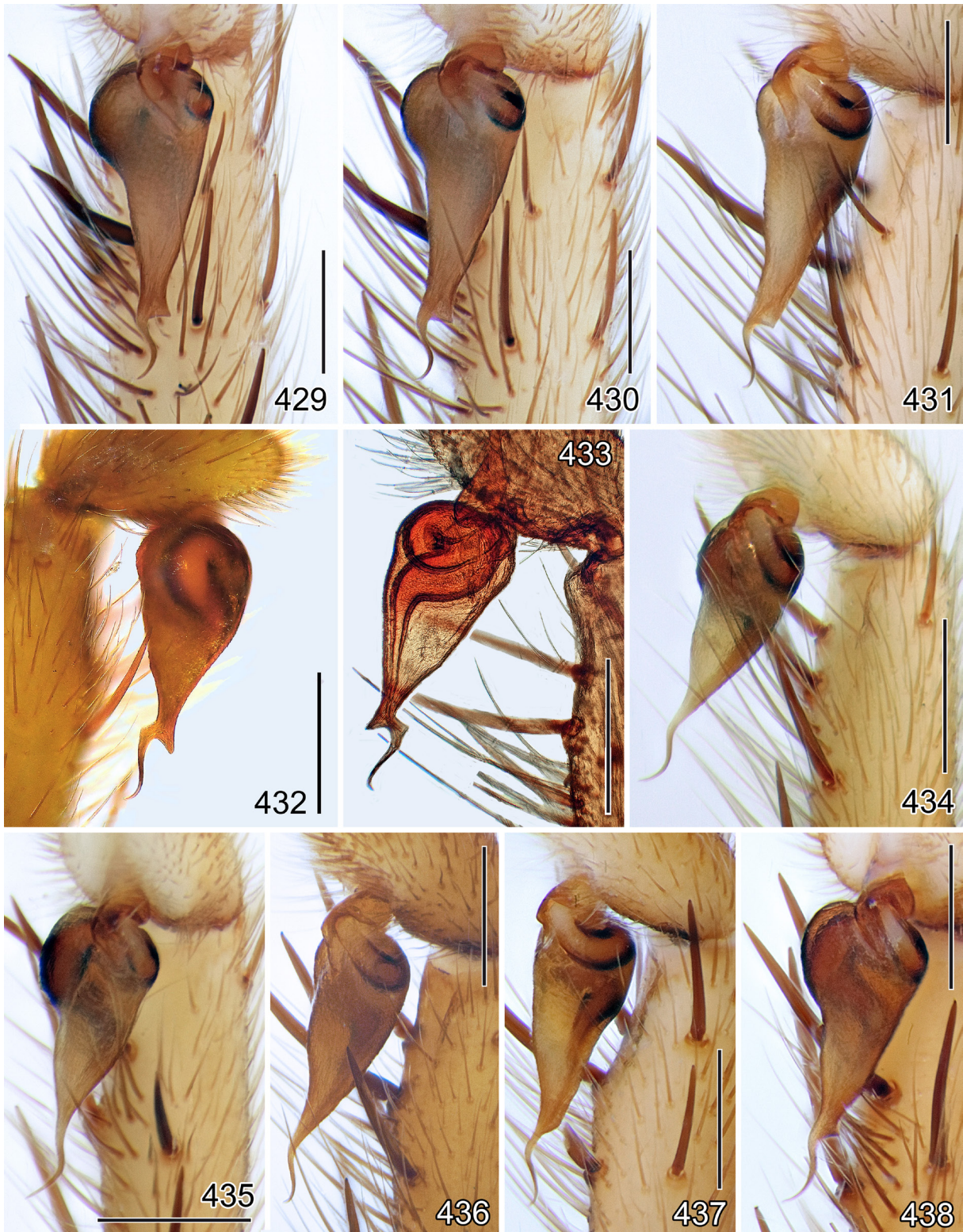
Figs 400–408. *Raveniola* spp., ♂♂, holotypes (except 406–408), details of copulatory bulb; retrolateral (400, 403, 406–407), retroventral (401, 404) and ventral (402, 405, 408) views. **400–402.** *R. hirta* sp. nov. (SMNH). **403–405.** *R. ignobilis* sp. nov. (SMNH). **406–408.** *R. ignobilis*, paratypes (SMNH). Scale bars: 0.5 mm.



Figs 409–417. *Raveniola* spp., ♂♂, holotypes, details of copulatory bulb; retroventral (409, 413, 416), retrolateral (410, 412, 415) and ventral (411, 414, 417) views. **409–411.** *R. insolita* sp. nov. (ZISP). **412–414.** *R. ornata* sp. nov. (SMNH). **415–417.** *R. ornatula* sp. nov. (SMNH). Scale bars: 0.5 mm.



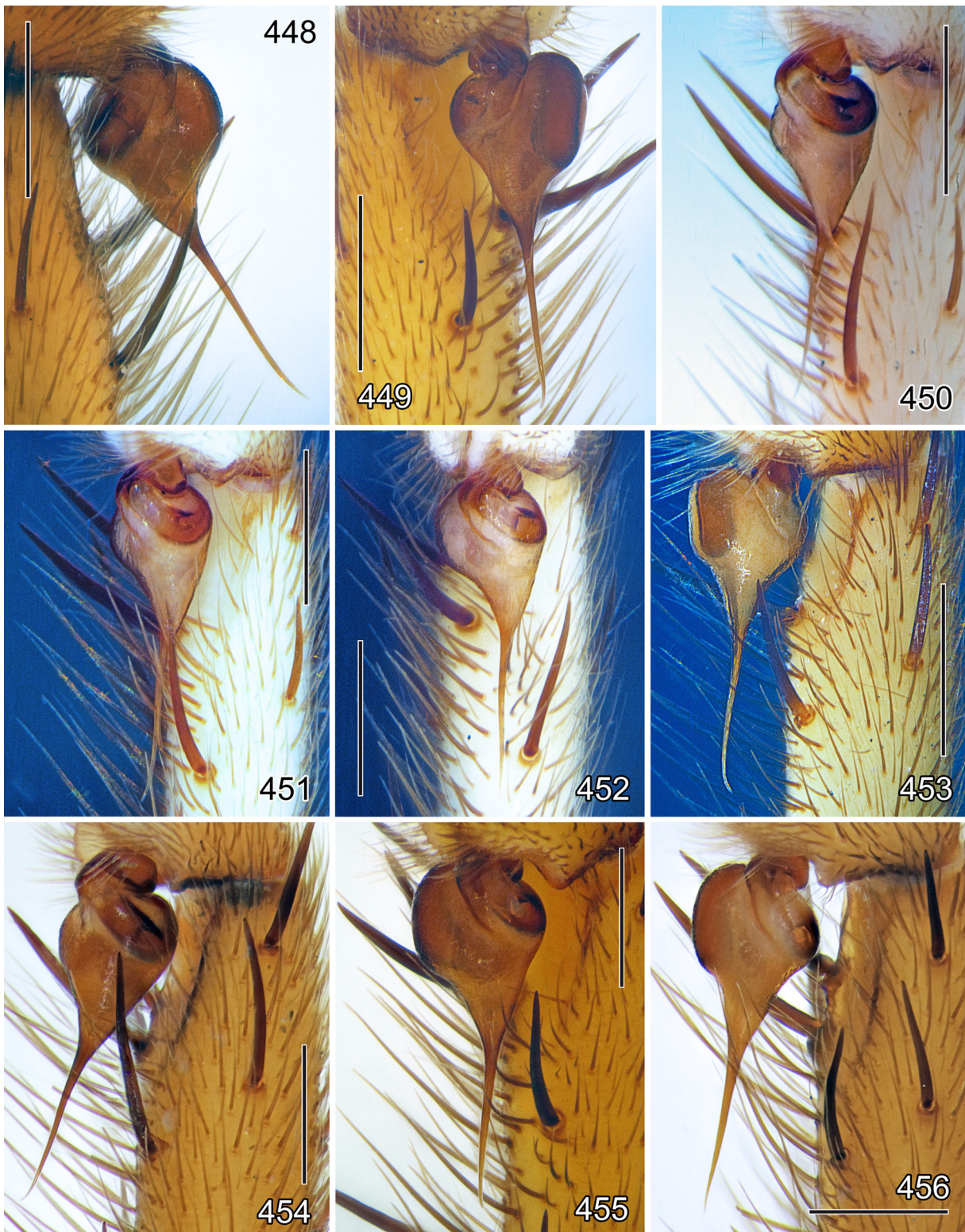
Figs 418–428. *Raveniola pamira* sp. nov., ♂♂, holotype (418–422) and two paratypes (423–426 and 427–428, respectively), details of copulatory bulb; retrolateral (418, 427), retroventral (419, 428), ventral (420, 423, 426), proventral (421, 425) and prolateral (422, 424) views (all SMNH). Scale bars: 0.5 mm.



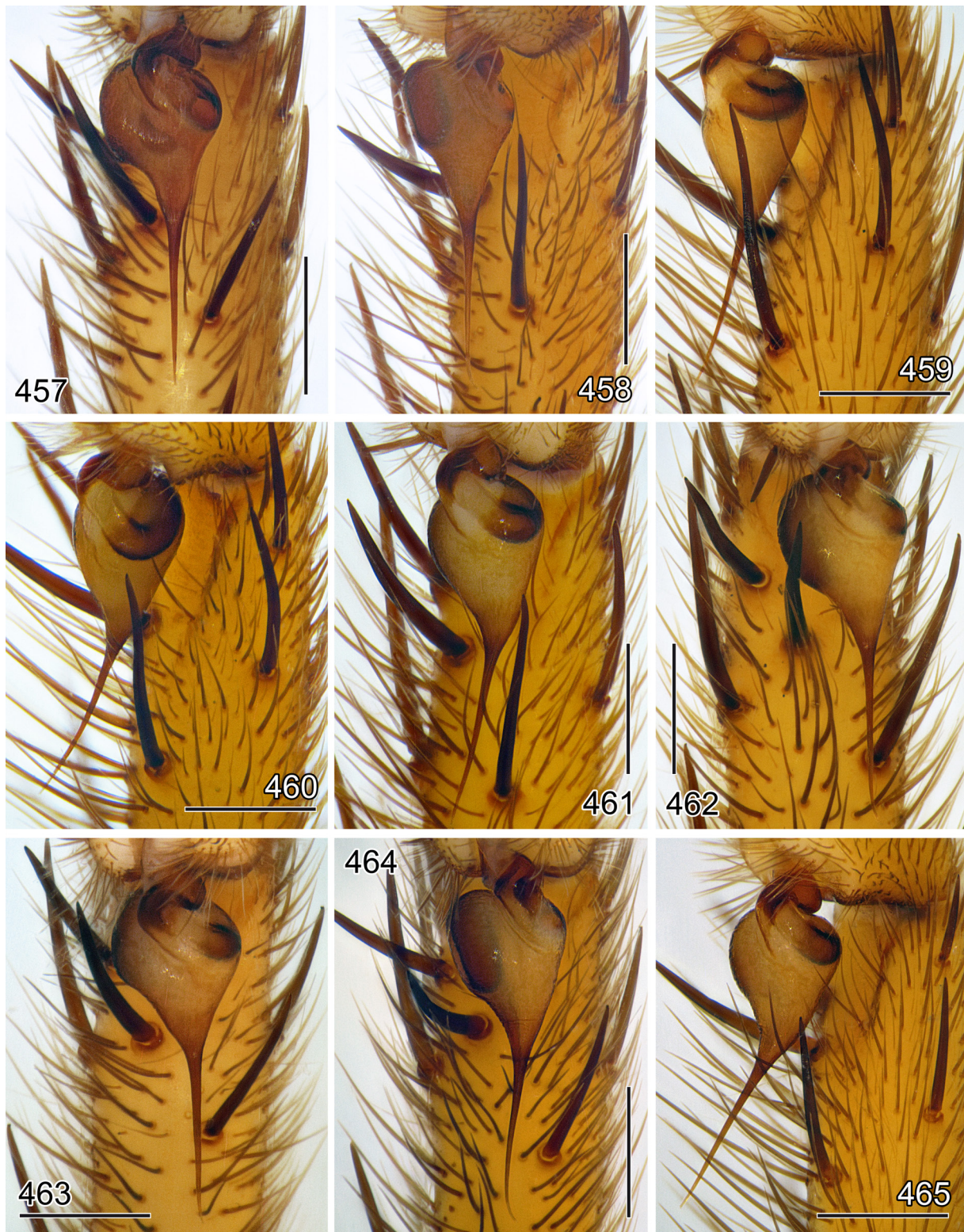
Figs 429–438. *Raveniola* spp., ♂♂, holotypes (except 432–433, 437–438), details of copulatory bulb, ventral (429, 435, 438), retroventral (430, 434), retrolateral (431, 436–437), proventral (432) and prolateral (433) views. **429–431.** *R. diluta* sp. nov. (SMNH). **432–433.** *R. fedotovi* (Charitonov, 1946), lectotype (ZMMU). **434–435.** *R. pallens* sp. nov. (SMNH). **436.** *R. zyuzini* sp. nov. (SMNH). **437–438.** *R. zyuzini*, paratype (SMNH). Scale bars: 0.5 mm.



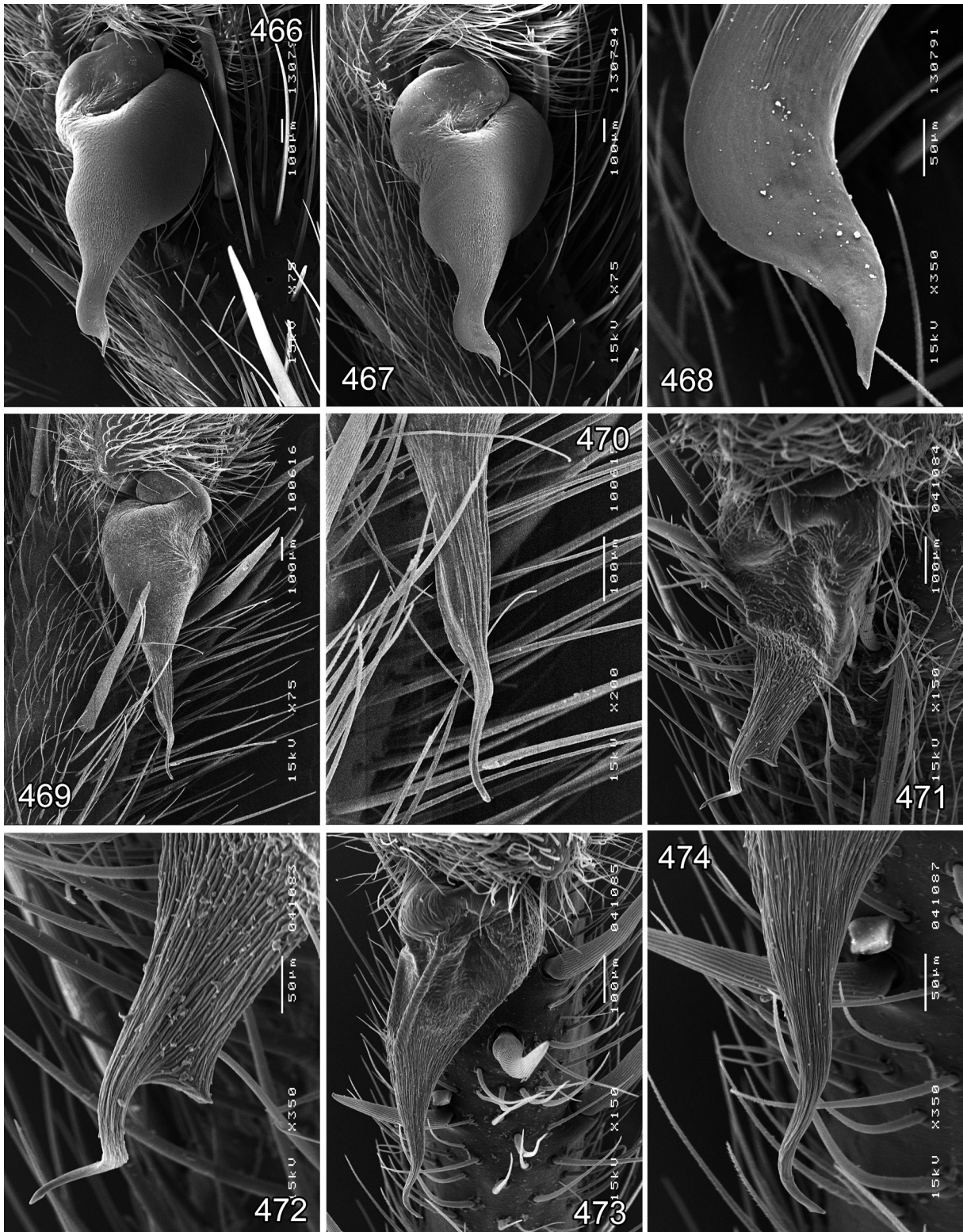
Figs 439–447. *Raveniola* spp., ♂♂, holotypes, details of copulatory bulb; retroventral (439, 441, 444–445), ventral (440, 442–443, 446) and proventral (447) views. **439–440.** *R. ferghanensis* (Zonstein, 1984) (ZISP). **441–442.** *R. kirgizica* sp. nov. (SMNH). **443–444.** *R. kopetdaghensis* (Fet, 1984) (ZISP). **445–447.** *R. mikhailovi* Zonstein, 2021 (SMNH). Scale bars: 0.5 mm.



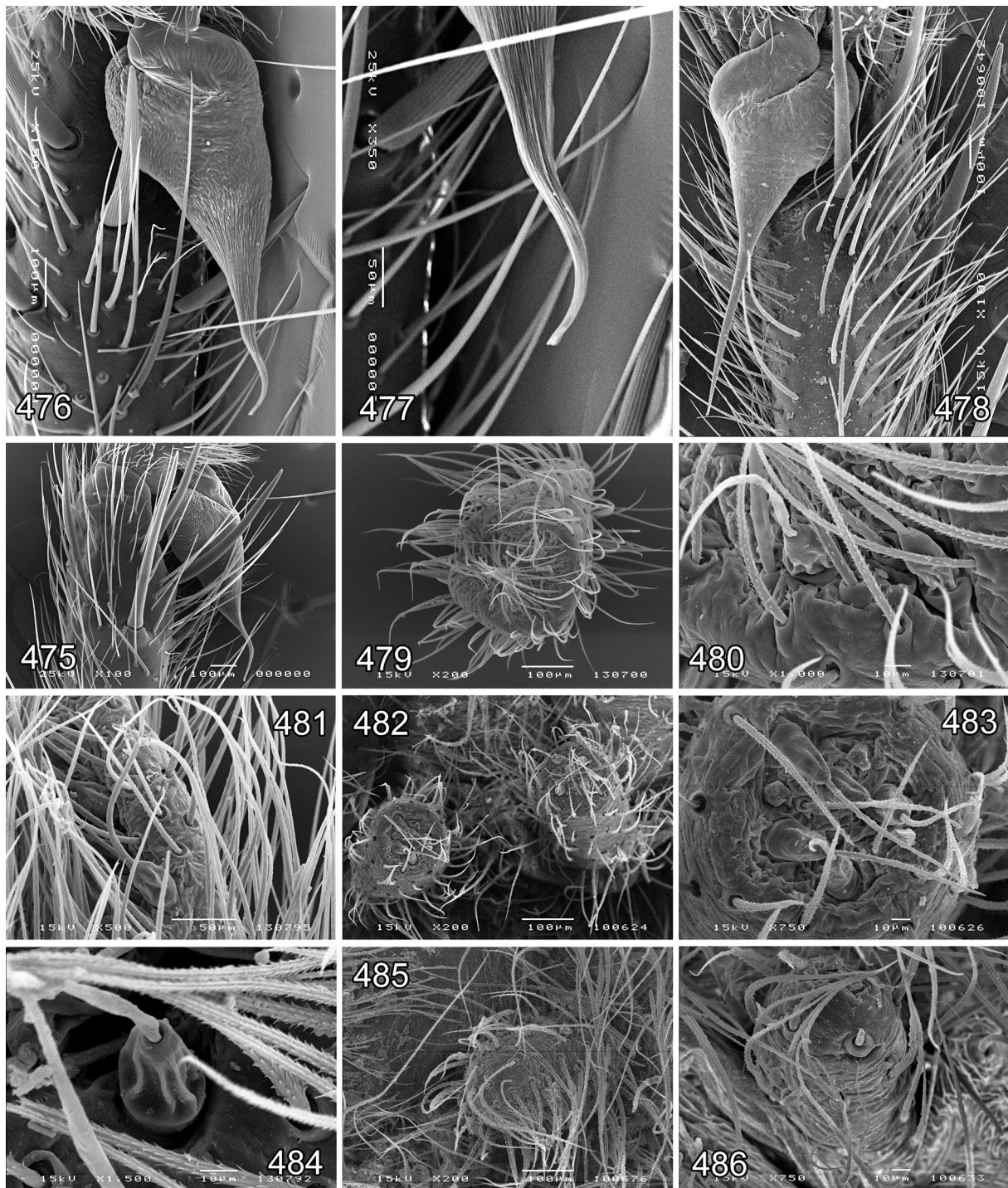
Figs 448–456. *Raveniola* spp., ♂♂, holotypes (except 453–456), details of copulatory bulb, retrolateral (448, 450–451, 454) and ventral (449, 452–453, 455–456) views. **448–449.** *R. nenilini* sp. nov. (SMNH). **450–452.** *R. ovchinnikovi* sp. nov. (SMNH). **453.** *R. ovchinnikovi*, paratype (SMNH). **454–455.** *R. virgata* (Simon, 1891), ♂ from vicinity of Arslanbob (SMNH). **456.** *R. virgata*, ♂ from Charvak (SMNH). Scale bars: 0.5 mm.



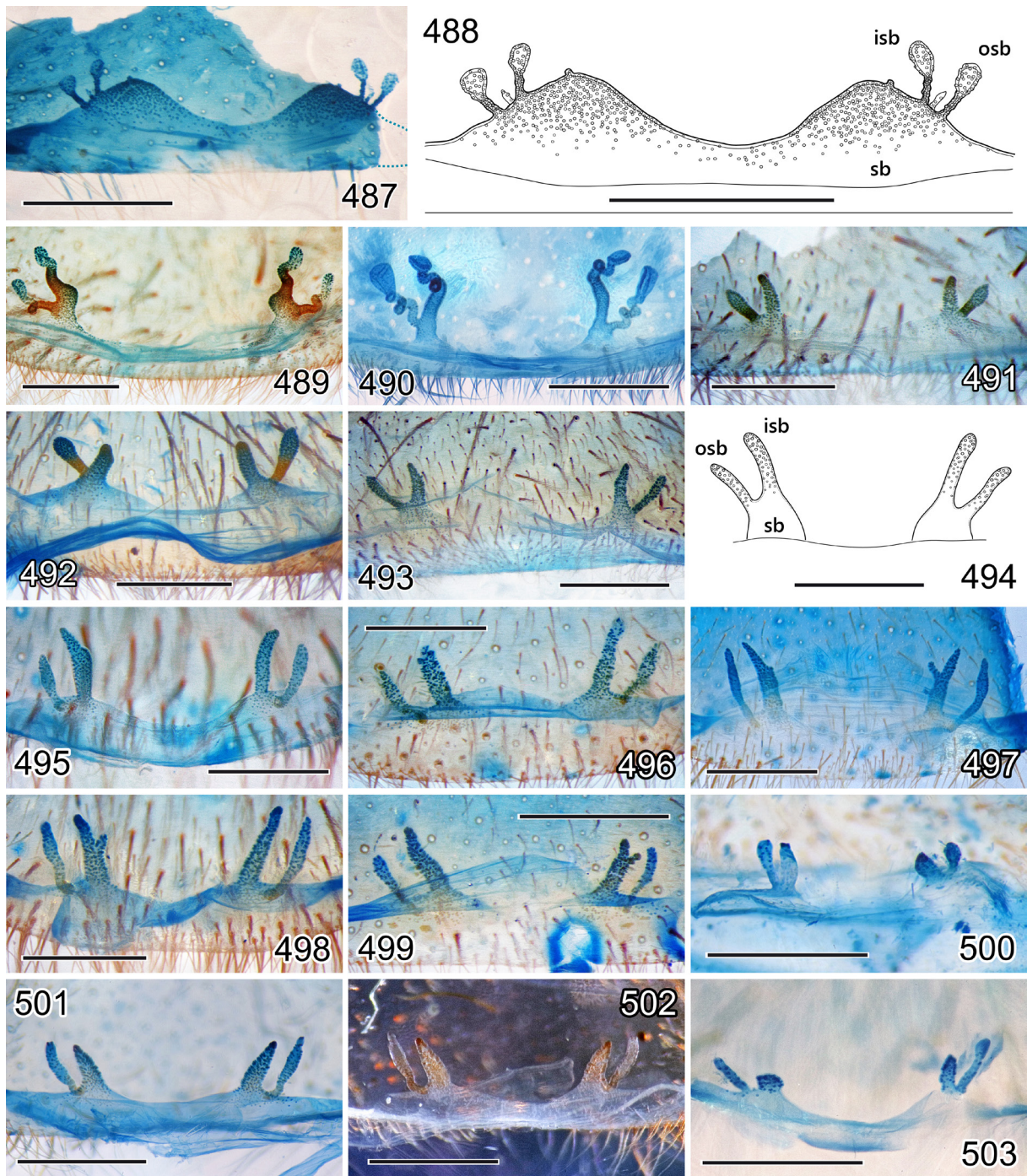
Figs 457–465. *Raveniola* spp., ♂♂, details of copulatory bulb, ventral (457–458, 462–464); retrolateral (459–460) and retroventral (461, 465) views. **457.** *R. virgata* (Simon, 1891), ♂ from Jaradar (SMNH). **458.** *R. virgata*, ♂ from Dashman (SMNH). **459–462.** *R. vulpina* sp. nov., holotype (SMNH). **463.** *R. vulpina*, paratype from Kyrgolot (SMNH). **464–465.** *R. vulpina*, paratype from Tereksai (SMNH). Scale bars: 0.5 mm.



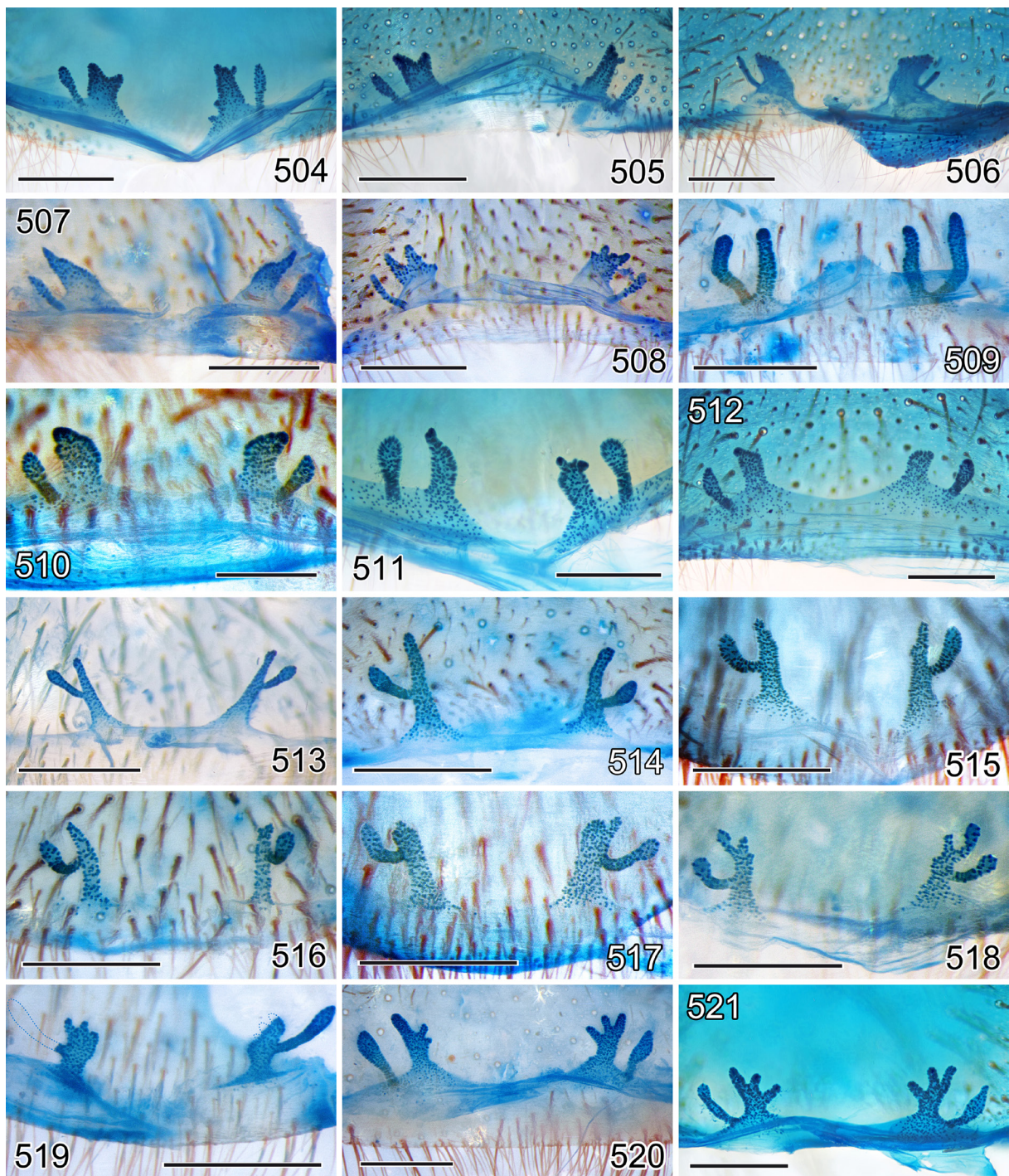
Figs 466–474. *Raveniola* spp., ♂♂, details of copulatory bulb (466–467, 469, 471, 473) and tip of embolus (468, 470, 472, 474), ventral (466, 473–474), retrolateral (467–468) and retroventral (469–472) views. **466–468.** *R. redikorzevi* (Spassky, 1937) (SMNH). **469–470.** *R. cucullata* sp. nov. (SMNH). **471–474.** *R. diluta* sp. nov. (SMNH).



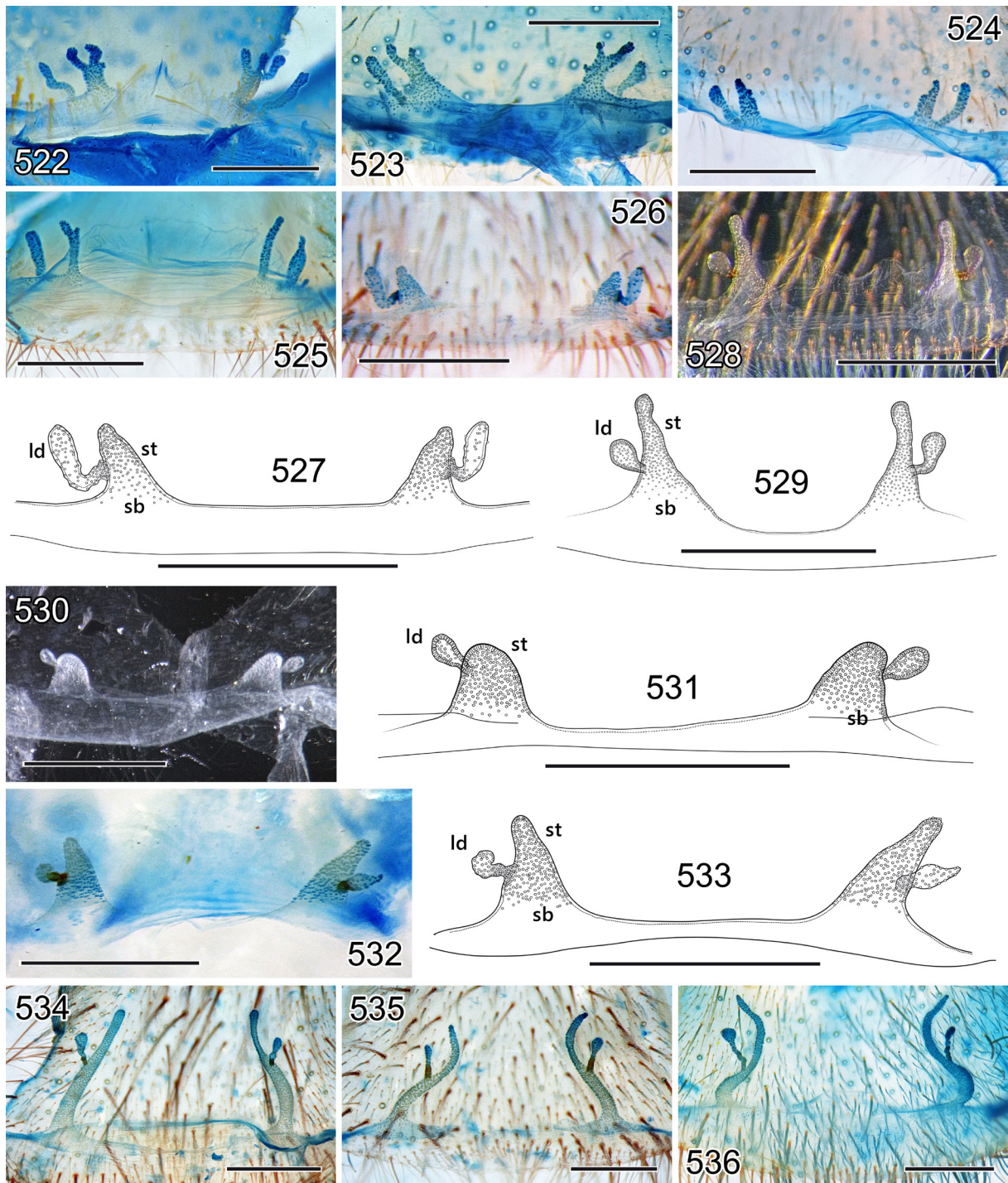
Figs 475–486. *Raveniola* spp., ♂♂, details of copulatory bulb (475–476, 478), tip of embolus (477), posterior median (479, 482–483, 485–486) and posterior lateral (481) spinnerets, and individual spigots (480, 484); prolateral (475) ventral (476–478, 481) and posterior (479–480, 482–486) views. **475–477.** *R. zyuzini* sp. nov. (SMNH). **478, 486.** *R. virgata* (Simon, 1891) (SMNH). **479–481.** *R. redikorzevi* (Spassky, 1937) (SMNH). **482–484.** *R. cucullata* sp. nov. (SMNH). **485.** *R. ferghanensis* (Zonstein, 1984) (SMNH).



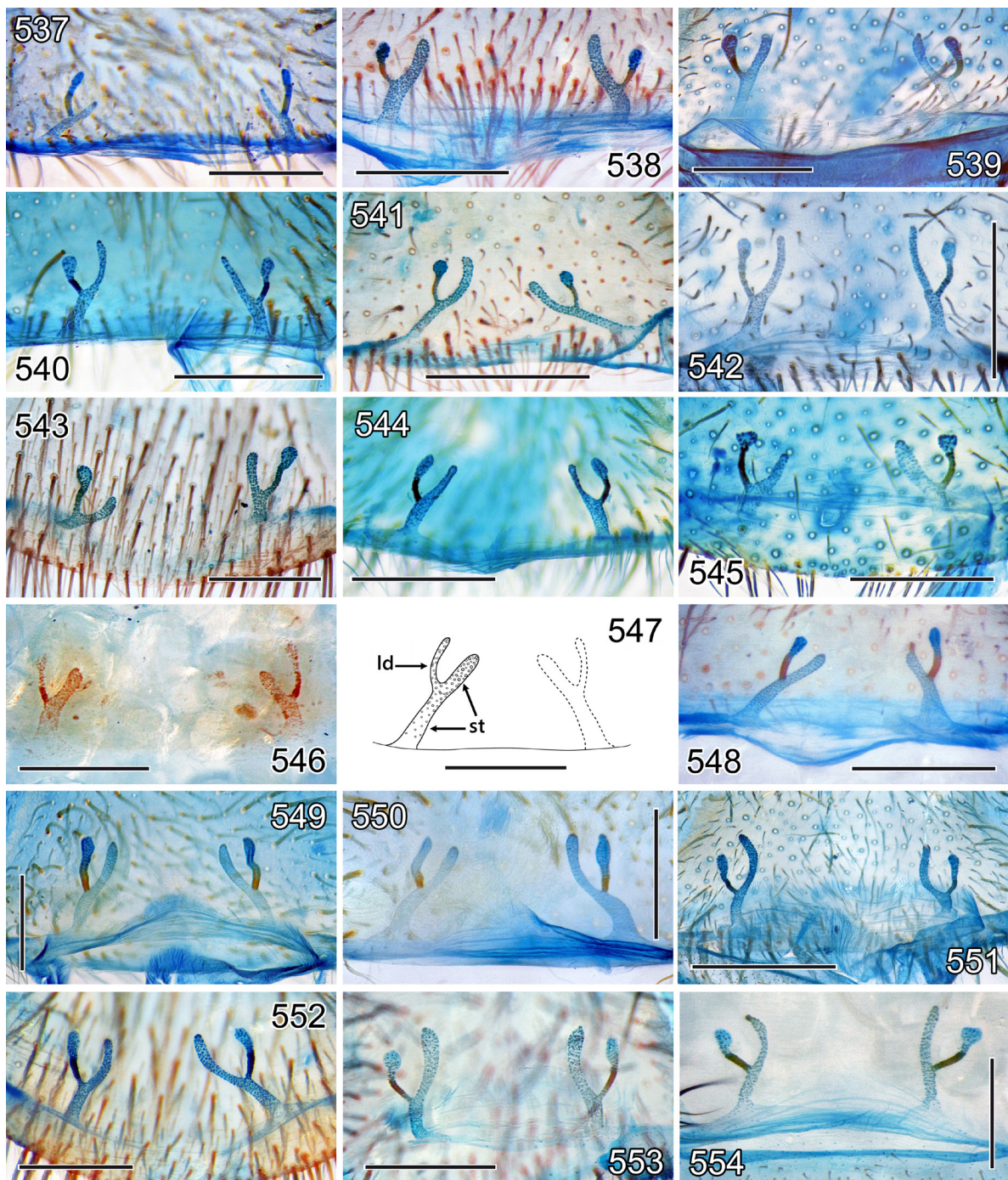
Figs 487–503. *Raveniola* spp., ♀♀, paratypes (except 487–489), spermathecae, dorsal views. 487–488. *R. redikorzevi* (Spassky, 1937), Kepele (SMNH). 489. *R. afghana* sp. nov. (NHMD). 490. Same, holotype. 491–493. *R. alajensis* sp. nov., Berksu. 494. *R. concolor* Zonstein, 2000 (MCSN AR 19). 495–496. *R. cucullata* sp. nov., Shikildara (SMNH). 497. *R. cucullata*, Shahob (SMNH). 498–499. *R. cucullata*, Sangdara (SMNH). 500–503. *R. dolosa* sp. nov. (SMNH). Abbreviations: isb = inner spermathecal branch; osb = outer spermathecal branch; sb = spermathecal base. Scale bars: 0.5 mm.



Figs 504–521. *Raveniola* spp., ♀♀, spermathecae, dorsal views. **504–508.** *R. hirta* sp. nov., paratypes (SMNH). **509.** *R. ignobilis* sp. nov., paratype (SMNH). **510.** *R. karategensis* sp. nov., holotype (SMNH). **511–512.** *R. karategensis*, paratypes (ZISP). **513–514.** *R. ornata* sp. nov., paratypes from Ganjina (SMNH). **515–516.** *R. ornata*, paratypes from Sanglok (SMNH). **517–519.** *R. ornatula* sp. nov., paratypes (SMNH). **520–521.** *R. pamira* sp. nov., paratypes (SMNH). Scale bars: 0.5 mm.



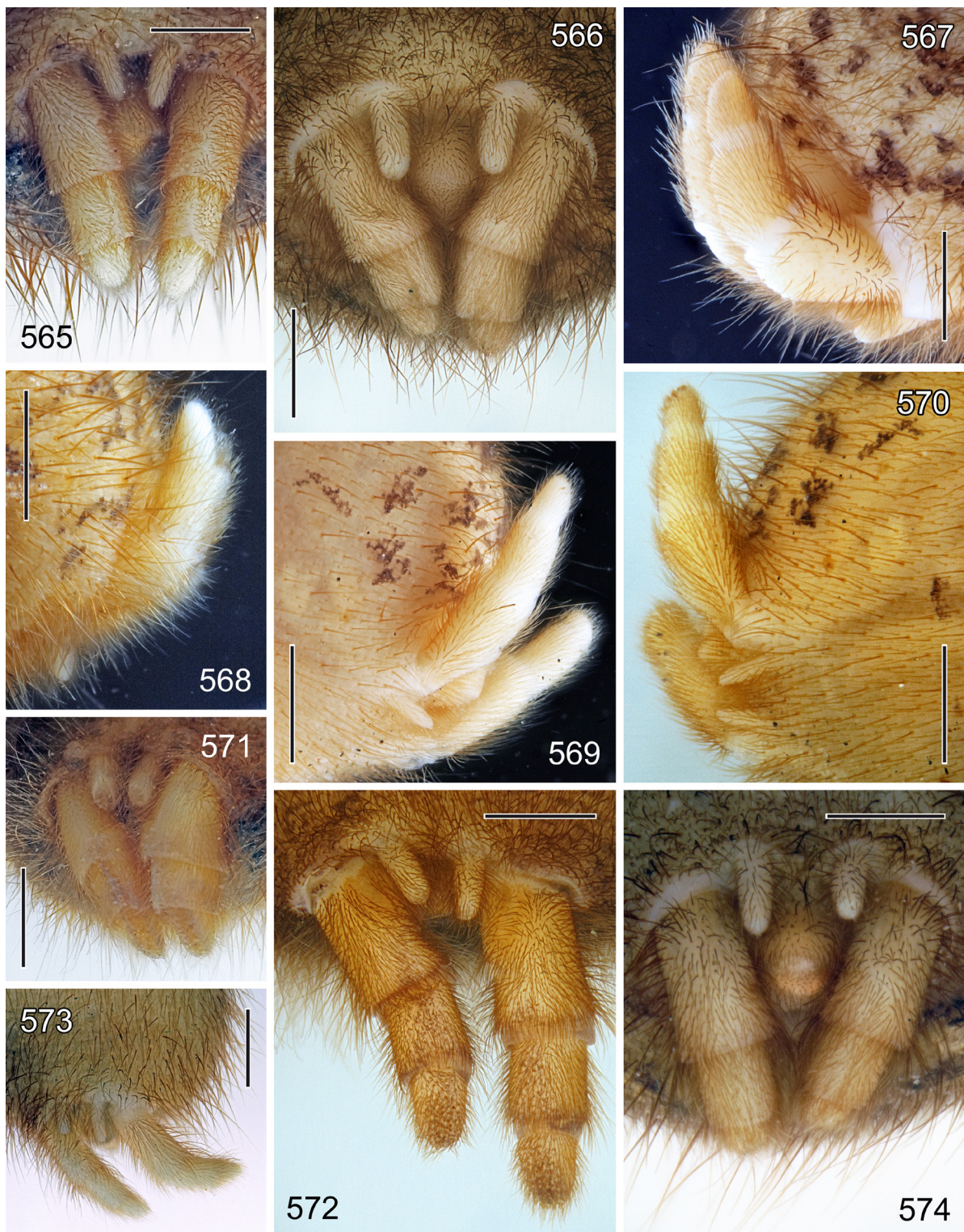
Figs 522–536. *Raveniola* spp., ♀♀, spermathecae, dorsal views. **522–523.** *R. pamira* sp. nov., paratype and female from Shahob, respectively (both SMNH). **524.** *R. sororcula* sp. nov., holotype (SMNH). **525.** *R. sororcula*, paratype (SMNH). **526–527.** *R. diluta* sp. nov., paratype from Kondara (SMNH). **528–529.** *R. fedotovi* (Charitonov, 1946), from Hojakurgan (SMNH). **530–531.** *R. pallens* sp. nov., paratype (SMNH). **532–533.** *R. zyuzini* sp. nov., paratype (SMNH). **534–536.** *R. ferghanensis* (Zonstein, 1984), from Andijan (SMNH), non-type specimen from environs of Jalal-Abad (SMNH), and paratype from Jalal-Abad (SMNH), respectively. Abbreviations: ld = lateral diverticulum; sb = spermathecal base; st = spermathecal trunk. Scale bars: 0.5 mm.



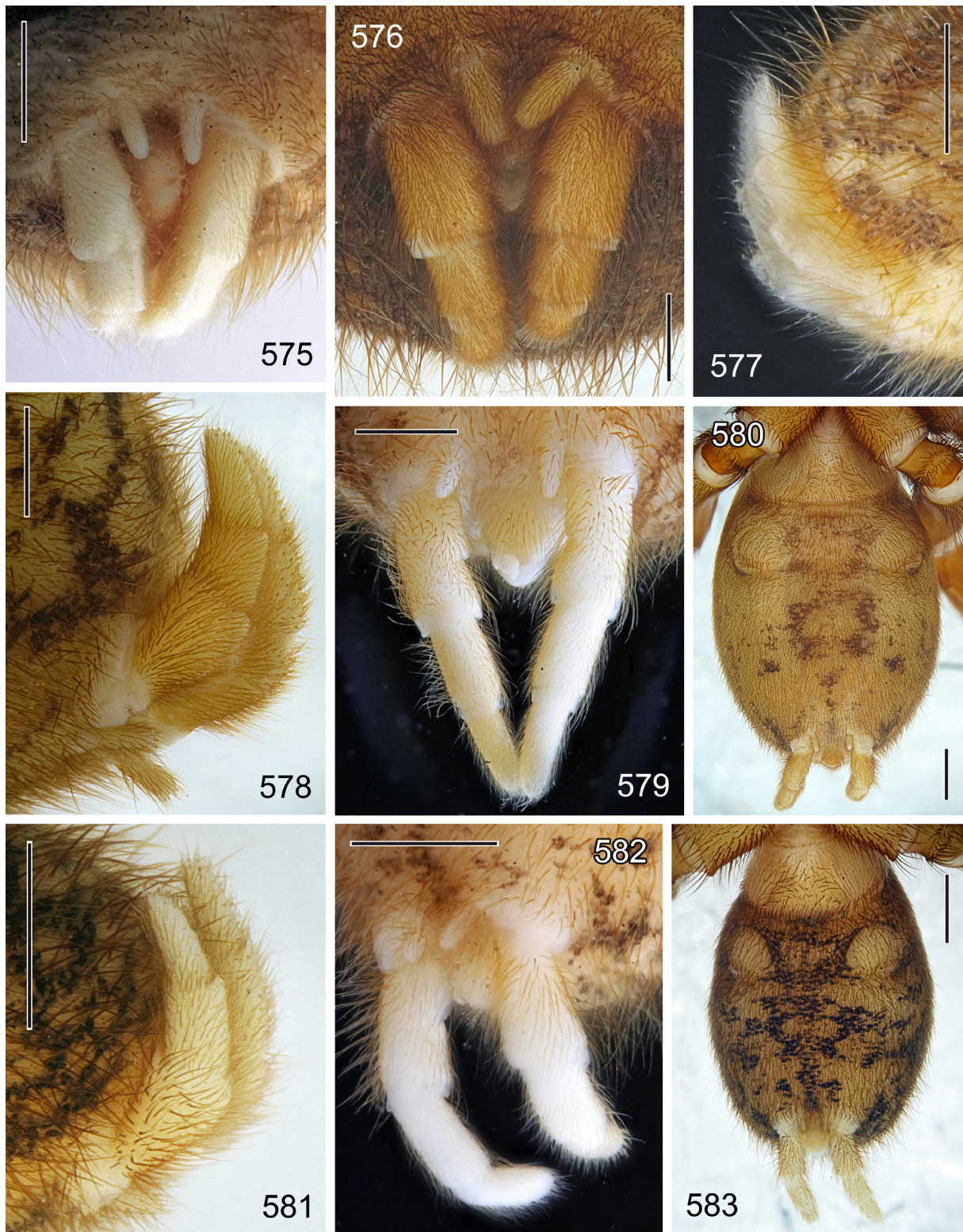
Figs 537–554. *Raveniola* spp., ♀♀, spermathecae, dorsal views. **537.** *R. kirgizica* sp. nov., paratype (SMNH). **538.** *R. mikhailovi* Zonstein, 2021, female from Chapchama Pass (SMNH). **539–540.** *R. mikhailovi*, paratypes from Aflatun (ZMMU) and Sary-Chelek Reserve (SMNH), respectively. **541.** *R. nenilini* sp. nov., female from Kamchik Pass (SMNH). **542–543.** *R. nenilini*, paratypes from Kainarsai (SMNH). **544.** *R. tarabaevi* sp. nov., holotype (SMNH). **545.** *R. tarabaevi*, paratype from Uzunbulak (SMNH). **546.** *R. tarabaevi*, paratype from Turgen (SMNH). **547.** *R. virgata* (Simon, 1891), paralectotype (MNHN 6506-B361). **548–550.** *R. virgata*, females from surroundings of Arslanbob (SMNH). **551–552.** *R. vulpina* sp. nov., paratypes from Tumanyak (SMNH). **553–554.** *R. vulpina*, from Tereksai (SMNH). Abbreviations: ld = lateral diverticulum; st = spermathecal trunk. Scale bars: 0.5 mm.



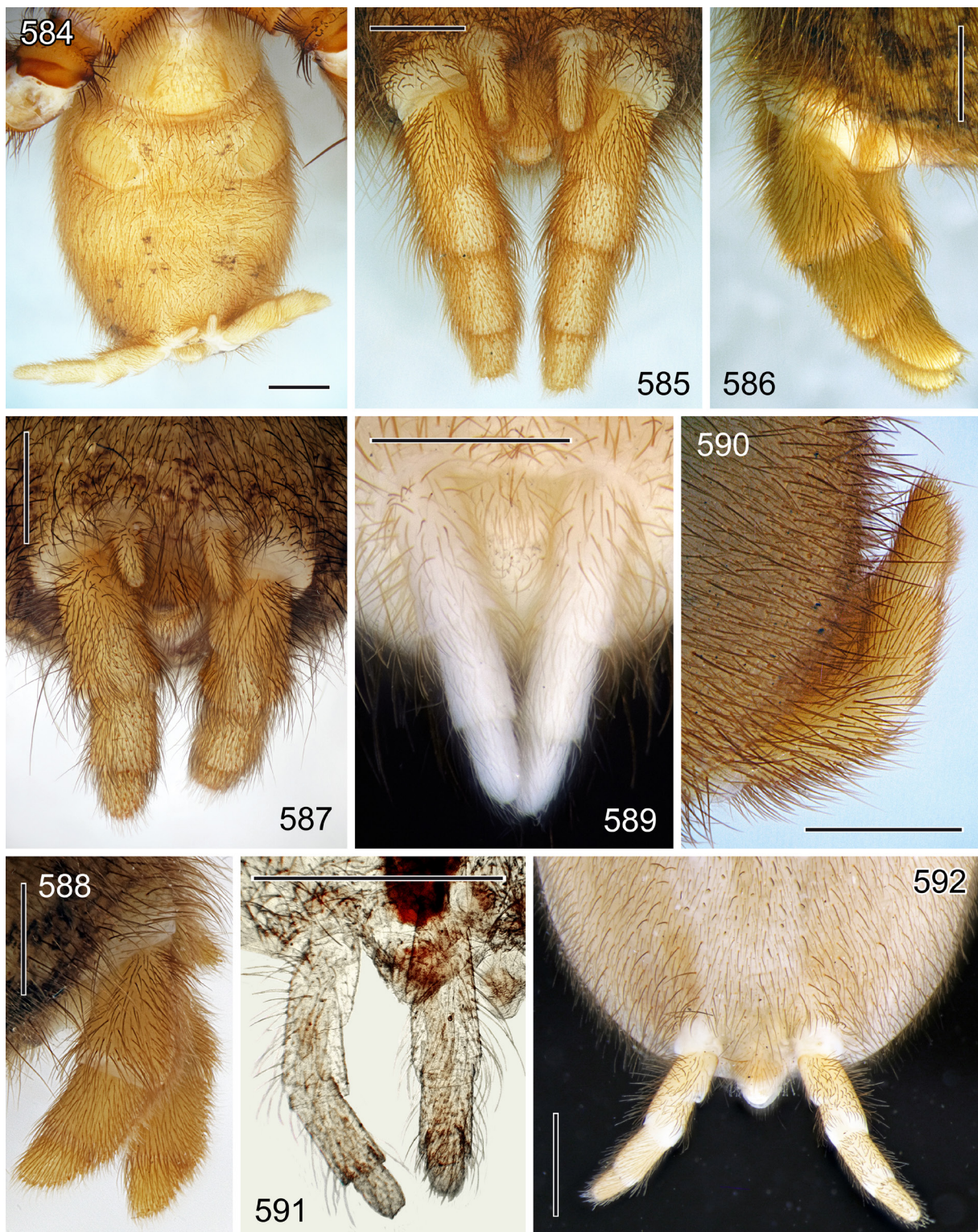
Figs 555–564. *Raveniola* spp., ♂♂ (555–557, 560, 563) and ♀♀ (558–559, 561–562, 564), holotypes (except 557, 558, 561, 562, 564). Spinnerets, ventral (555–558, 560–561, 563–564) and lateral (559, 562) views. **555.** *R. caudata* Zonstein, 2009, holotype (SMNH). **556.** *R. inopinata* sp. nov. (SMNH). **557–558.** *R. redikorzevi* (Spassky, 1937), ♂ from Akar-Cheshme and ♀ from Kepele, respectively (both SMNH). **559.** *R. afghana* sp. nov. (NHMD). **560.** *R. alajensis* sp. nov. (SMNH). **561–562.** *R. alajensis*, paratype (SMNH). **563.** *R. cucullata* sp. nov. (SMNH). **564.** *R. cucullata*, paratype from Shikildara (SMNH). Scale bars: 1.0 mm.



Figs 565–574. *Raveniola* spp., ♂♂ (565, 568, 571, 573) and ♀♀ (566–567, 569–570, 572), paratypes (except 568, 571, 573). Spinnerets, ventral (565–566, 571–574), lateral (567–568) and ventrolateral (569–570) views. **565–566.** *R. cucullata* sp. nov., paratypes from Shahob (SMNH). **567.** *R. cucullata*, from Sangdara (SMNH). **568.** *R. dolosa* sp. nov. (SMNH). **569–570.** *R. dolosa*, paratypes (SMNH). **571.** *R. hirta* sp. nov., holotype (SMNH). **572.** *R. hirta*, paratype (SMNH). **573.** *R. ignobilis* sp. nov. (SMNH). **574.** *R. ignobilis*, paratype (SMNH). Scale bars: 1.0 mm.



Figs 575–583. *Raveniola* spp., ♂♂ (575, 577, 581) and ♀♀ (576, 578–580, 582–583); holotypes (575–577, 581) and paratypes (578–580, 582–583). Spinnerets (575–579, 581–582) and entire abdomen (580, 583), ventral (575–576, 579–580, 582–583) and lateral (577–578, 581) views. **575.** *R. insolita* sp. nov. (ZISP). **576.** *R. karategensis* sp. nov. (SMNH). **577–580.** *R. ornata* sp. nov. (SMNH). **581–583.** *R. ornatula* sp. nov. (SMNH). Scale bars: 1.0 mm.



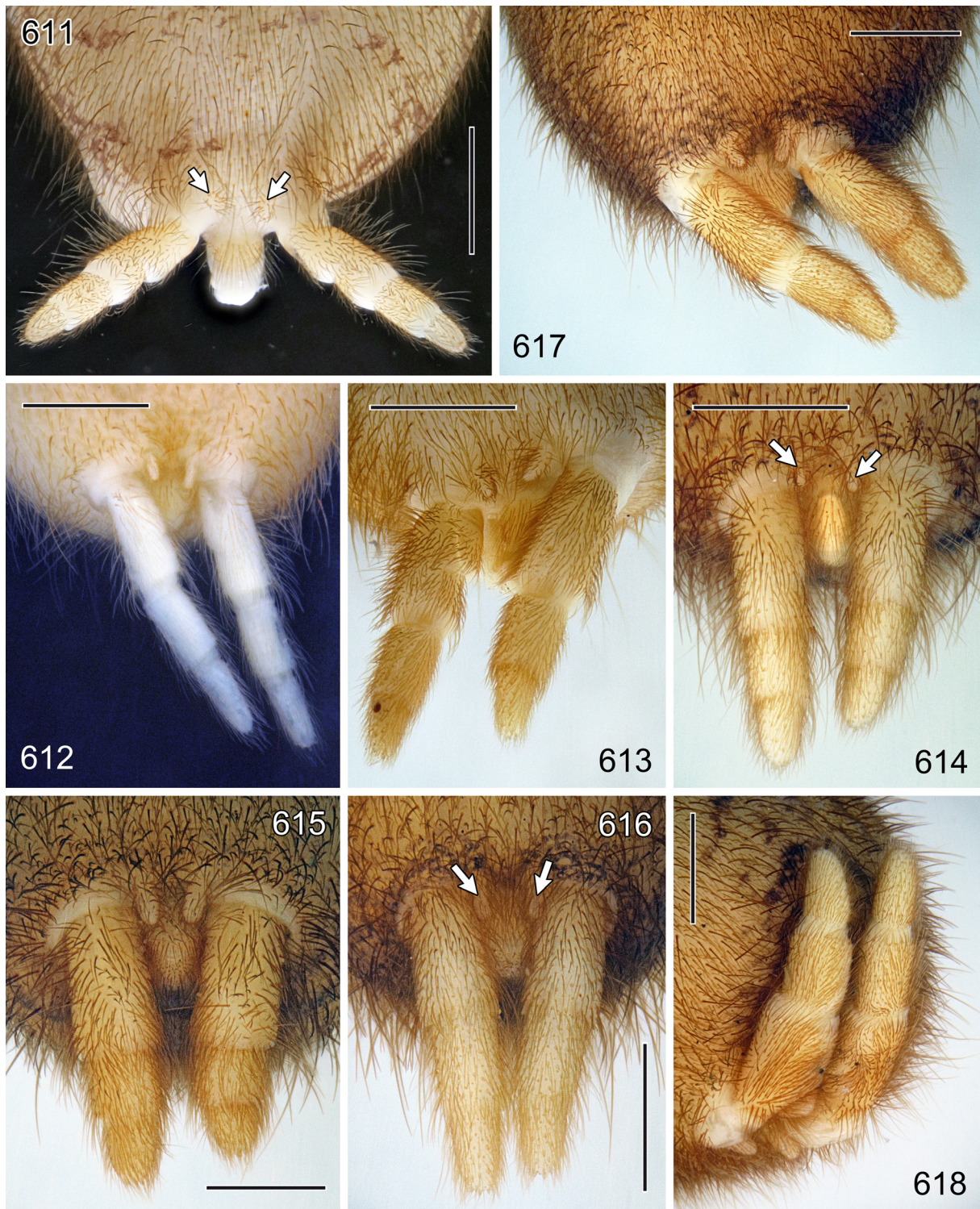
Figs 584–592. *Raveniola* spp., ♂♂ (584, 589, 591) and ♀♀ (585–588, 590, 592), holotypes (except 585–586, 590, 592). Spinnerets, ventral (584–585, 587, 589, 591–592) and lateral (586, 588, 590) views. **584.** *R. pamira* sp. nov. (SMNH). **585–586.** *R. pamira*, paratype (SMNH). **587–588.** *R. sororcula* sp. nov. (SMNH). **589.** *R. diluta* sp. nov. (SMNH). **590.** *R. diluta*, paratype (SMNH). **591.** *R. fedotovi* (Charitonov, 1946), paralectotype (PSU). **592.** *R. fedotovi*, ♀ from Hojakurgan (SMNH). Scale bars: 1.0 mm.



Figs 593–601. *Raveniola* spp., ♂♂, holotypes (593, 595, 597–598, 601) and ♀♀ paratypes (594, 596, 599–600). Spinnerets, lateral (593, 596–597), ventral (595, 598–599, 601) and posterior (594, 600) views. **593–594.** *R. pallens* sp. nov. (SMNH). **595–596.** *R. zyuzini* sp. nov. (SMNH). **597–600.** *R. ferghanensis* (Zonstein, 1984) (ZISP). **601.** *R. kirgizica* sp. nov. (SMNH). Strictly reduced PMS indicated by white arrows. Scale bars: 1.0 mm.



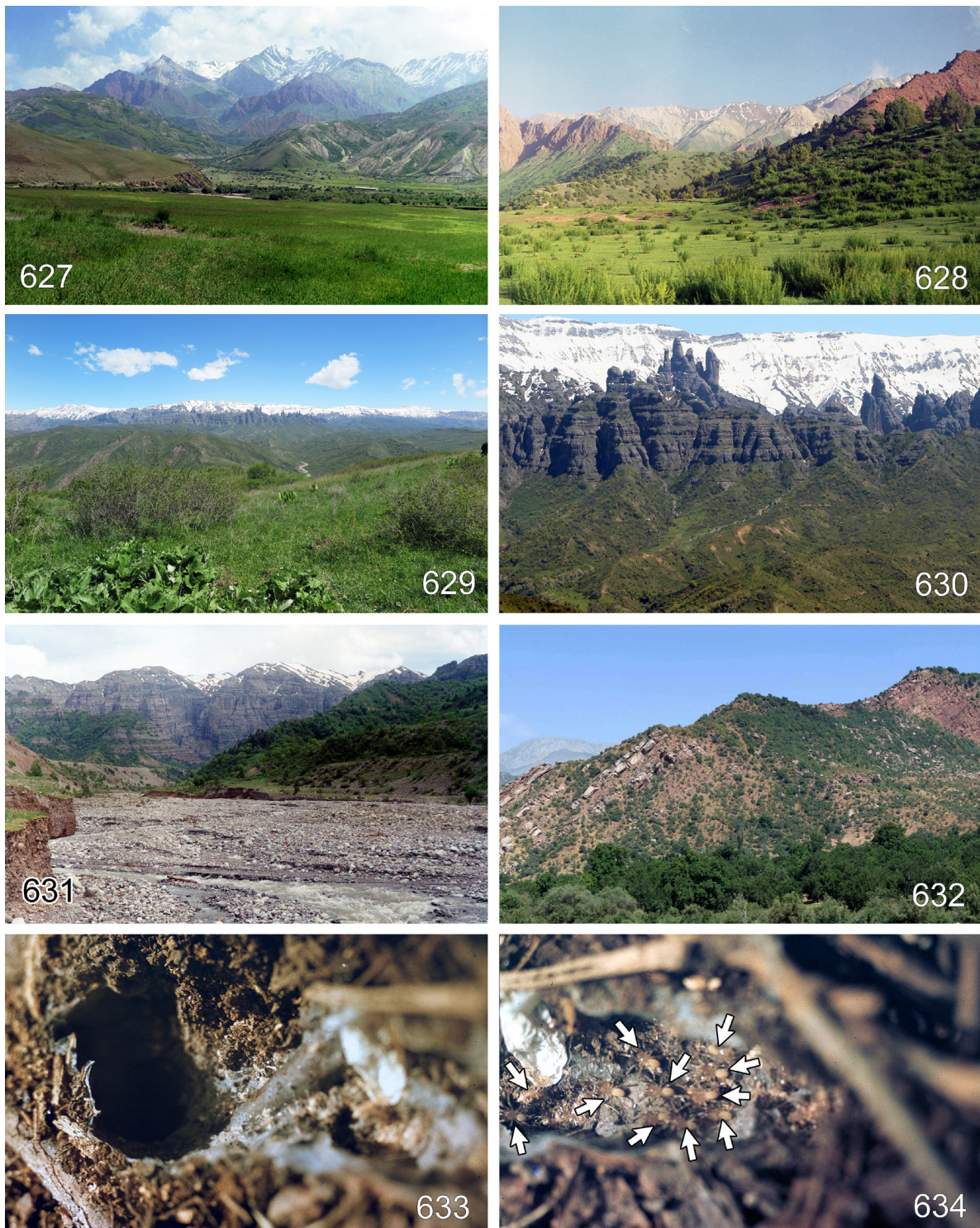
Figs 602–610. *Raveniola* spp., ♂♂, holotypes (602, 604–606, 609) and ♀♀ paratypes (603, 607–608, 610). Spinnerets, ventral (602–604, 606–610) and lateral (605) views. **602–603.** *R. kirgizica* sp. nov. (SMNH). **604.** *R. kopetdaghensis* (Fet, 1984) (ZISP). **605–608.** *R. mikhailovi* Zonstein, 2021 (SMNH). **609–610.** *R. nenilini* sp. nov. (SMNH). Scale bars: 1.0 mm.



Figs 611–618. *Raveniola* spp., ♀♀ (611, 613, 615, 617–618) and ♂♂ (612, 614, 616). Spinnerets, ventral (611–617) and subcaudal (618) views. **611.** *R. nenilini* sp. nov., paratype from Mazarsai (SMNH). **612.** *R. ovchinnikovi* sp. nov., holotype (SMNH). **613.** *R. tarabaevi* sp. nov., holotype (SMNH). **614–615.** *R. virgata* (Fet, 1984), from vicinity of Arslanbob (SMNH). **616.** *R. vulpina* sp. nov., holotype (SMNH). **617–618.** *R. vulpina*, paratype from Tumanyak (SMNH). Strictly reduced PMS indicated by white arrows. Scale bars: 1.0 mm.



Figs 619–626. *Raveniola* spp., habitats of *R. caudata* Zonstein, 2009 (619–621), *R. inopinata* sp. nov. (622, SMNH), and *R. redikorzevi* (Spassky, 1937) (623–626), Tajikistan (619–622), and Turkmenistan (623–626). **619–620.** Vahsh Karatau Mts and Aruktau Mts respectively. **621–622.** Panj Karatau Mts, midland slopes at 1120 m a.s.l., and flattened summit area at 1500–1600 m a.s.l., respectively. **623–624.** Zulfagar Mts, as seen from foothills and close to the top area, respectively. **625.** Badhyz Plateau, Kyzyl-Djar Canyon. **626.** Same, surroundings of Kepele Well (images courtesy of Victor Fet).



Figs 627–634. *Raveniola* spp., habitats of *R. alajensis* sp. nov. (627–628) and *R. cucullata* sp. nov. (629–634), together with a partially sympatric congener, *R. ignobilis* sp. nov. (629–631), Kyrgyzstan (627–628), and Tajikistan (629–634). **627–628.** Trans-Alay Mts, as seen from the Alay Valley, and highland biotopes, respectively. **629–630.** Hazratisho Mts, as seen from the neighboring montane slopes, and closer midland area, respectively. **631.** Same, Kapar (Sangdara) River valley. **632.** Vahsh Mts, Mullokoni Canyon. **633–634.** Same, a spider retreat under an overturned stone, showing spiderlings (indicated with white arrows).



Figs 635–642. Retreats of *Raveniola cucullata* sp. nov., Tajikistan, Peter I Mts, surroundings of Shahob. When distantly viewed, the depicted retreat and spider are indicated with a white arrow.



Figs 643–650. *Raveniola* spp., habitats of two sympatric congeners, *R. cucullata* sp. nov. and *R. dolosa* sp. nov. (643–646), and retreats used by representatives of the latter species (647–650). Tajikistan, Peter I Mts, surroundings of Shahob.



Figs 651–658. Habitats and burrows of *R. hirta* sp. Tajikistan, Darvaz Mts. **651.** Haburabot Pass, as seen from a road observation site, at 2500 m a.s.l. **652.** Same, the top pass area at 3300 m. **653–654.** Same, the collection site at 2850–2900 m a.s.l. **655–656.** Burrow entrance hidden in the grass. **657.** Same, decamouflaged. **658.** Same, the burrow was partially dug out and destroyed by a collector to demonstrate the absence of silk lining.



Figs 659–666. Habitats and burrows of *Raveniola karategensis* sp. nov. Tajikistan, Peter I Mts, Harvikush Canyon. 659–660, 663. Burrow entrances on the woodland floor. 661–662, 664–665. Same, close-up view. 666. A female dug out from its burrow. When distantly viewed, the depicted retreat and spider are indicated with a white arrow.



Figs 667–674. *Raveniola* spp., habitats of *R. ornata* sp. nov. (667–673) and *R. ornatula* sp. nov. (674), Tajikistan. **667–668.** Sanglok Mts, as seen from the Sharshar Pass at 1400 m a.s.l., and a table summit zone at 2000 m a.s.l., respectively. **669.** Gazimailik Mts, as seen from the surroundings of Ganjina at 800 m a.s.l. **670–671.** Same, a flattened summit part of the ridge (1800–2200 m a.s.l.). **672–673.** Babatagh Mts, the summit forested zone. **674.** Midland zone of Hazratisho Mts (Sangdara).



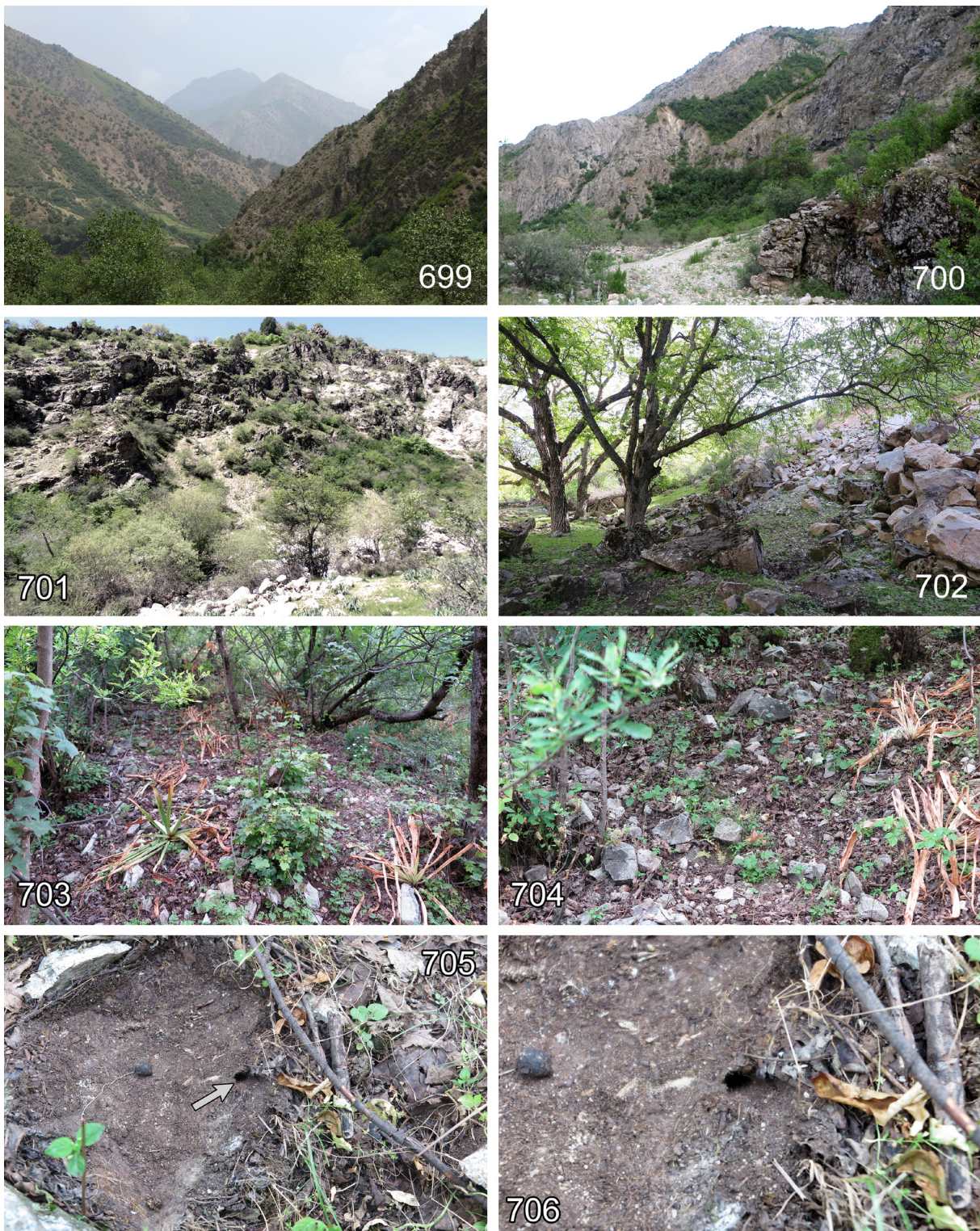
Figs 675–682. *Raveniola* spp., habitats of *R. insolita* sp. nov. (675, 677), *R. karategensis* sp. nov. (675, 678, 679), and *R. pamira* sp. nov. (676, 680–682), Tajikistan. **675.** Obihingou River valley, with Peter I Mts left and Darvaz Mts right. **676.** Darvaz Mts, near Miyonadu Village. **677.** Peter I Mts, highlands (2500–3500 m a.s.l.). **678.** Same, sparse juniper forest at 1800–2300 m a.s.l. **679.** Same, Harvikush Canyon (ca 1900 m a.s.l.). **680.** Same, surroundings of Childara (2100 m a.s.l.). **681.** Darvaz Mts, Obiviskharvi Canyon, riverside woodland at 2200 m a.s.l. **682.** Same, highland alpine meadows on rocky slopes (3000–3400 m a.s.l.).



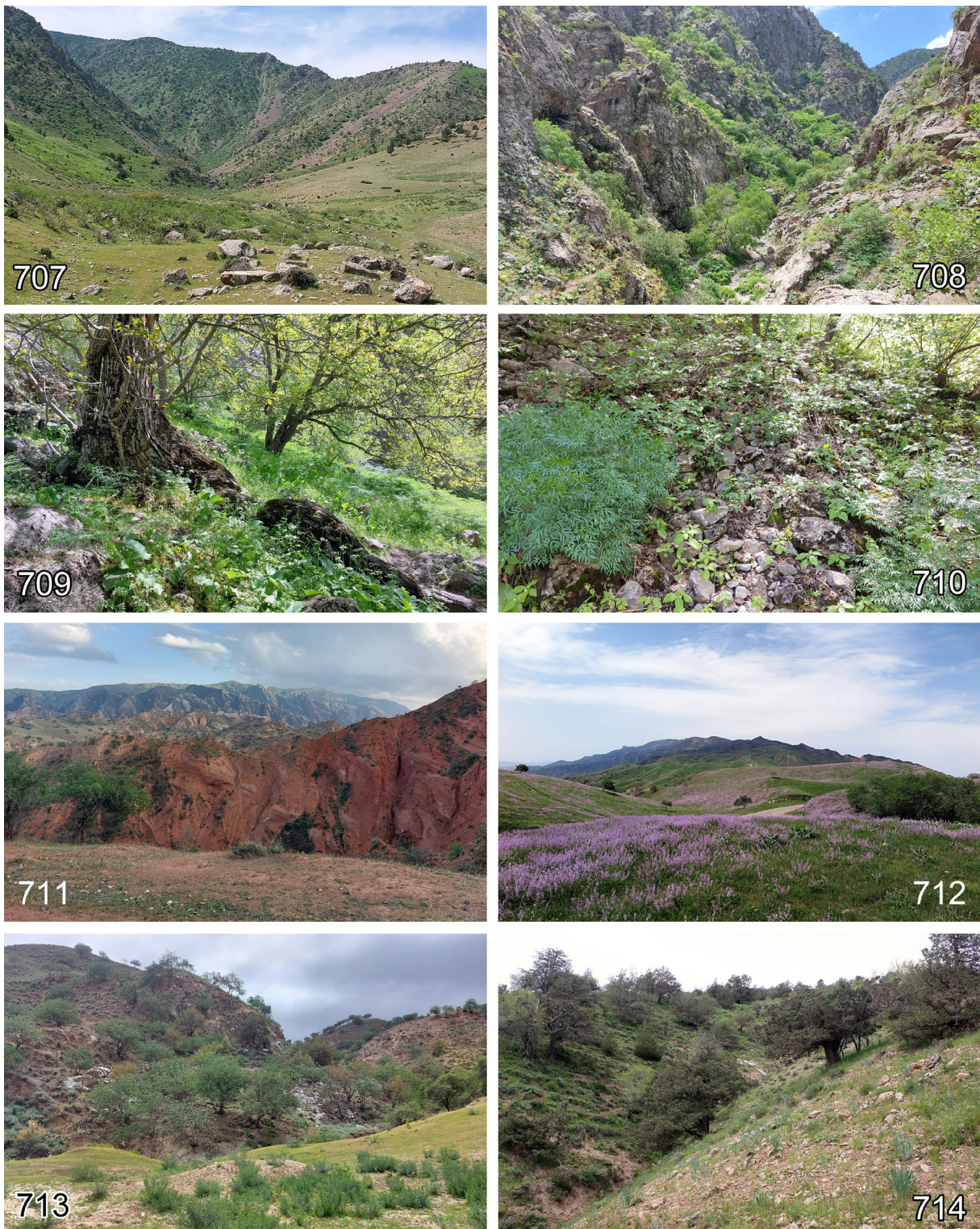
Figs 683–690. Retreats of *Raveniola pamira* sp. nov., Tajikistan, Darvaz Mts, Obiviskharvi Canyon, near abandoned Viskharvi-Bolo Village (2100 m a.s.l.). When distantly viewed/poorly visible, the depicted retreats and spiders are indicated with a white arrow.



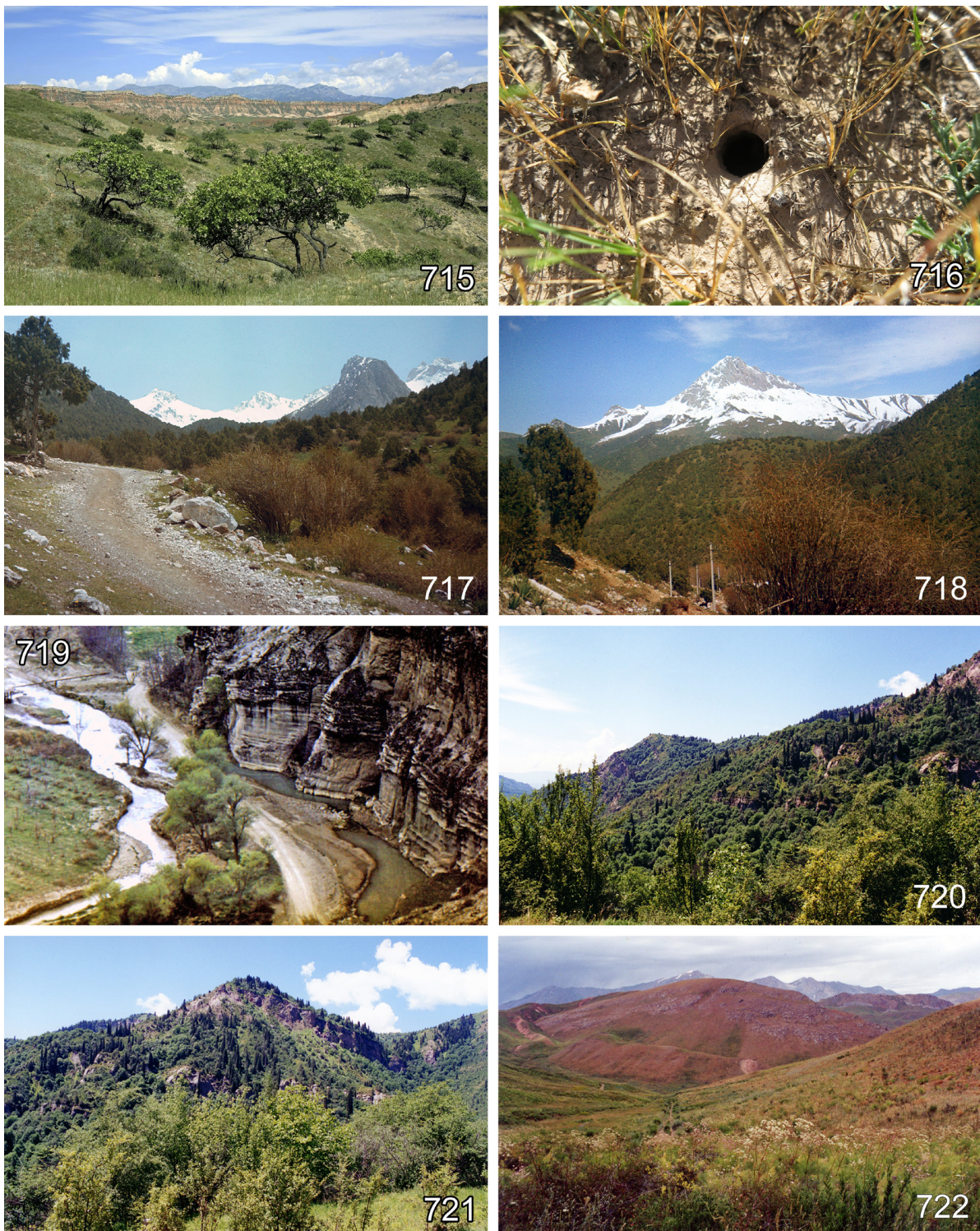
Figs 691–698. Retreats of *Raveniola sororcula* sp. nov. and live females protecting their egg sacs. Tajikistan, Darvaz Mts, Obiviskharvi Canyon, surroundings of Hurk Village (1700 m a.s.l.).



Figs 699–706. Habitats and retreats of *Raveniola diluta* sp. nov., Tajikistan, Hissar Mts (south slope). 699–700. Rocky slopes with shrubland and woodland fragments, Sorbo Canyon, 1500–1800 m a.s.l. 701–702. Same, Saidai-Miyona Canyon, 1400–1500 m. 703–704. A rocky forest floor under the tree canopy. 705. An aside opened spider retreat under an overturned stone (indicated with a white arrow). 706. Same, close-up view.



Figs 707–714. *Raveniola* spp., habitats of *R. fedotovi* (Charitonov, 1946) (707–710) and *R. zyuzini* sp. nov. (711–714), Uzbekistan. **707.** Hissar Mts (northwestern slope), montane slopes south of Ishkent Village. **708.** Zeravshan Mts, Kitab Reserve, Hojakurgan Canyon. **709–710.** Same, a rocky substrate under the tree canopy. **711.** Babatagh Mts, as seen from foothills. **712.** Same, as seen from the midland zone (ca 1200 m a.s.l.). **713–714.** Same, the collection sites at 1400 m and 1800 m a.s.l., respectively.



Figs 715–722. *Raveniola* spp., habitats of *R. ferghanensis* (Zonstein, 1984) (715–716), *R. kirgizica* sp. nov. (717–718), *R. kopetdaghensis* (Fet, 1984) (719) and *R. mikhailovi* Zonstein, 2021 (720–722); Kyrgyzstan (715, 717–718, 720–722), Uzbekistan (716) and Turkmenistan (719). **715.** Foothills on the loess substrate, surroundings of Tash-Kumyr Town (courtesy of Alexander Zhdanko). **716.** Burrow entrance, semi-desertous environs of Pap Town. **717–718.** Alay Mts (northern slope), montane juniper woodland. **719.** Kopetdagh Mts, Aidere Canyon (courtesy of Vera Rezheninova and Victor Fet). **720–721.** Chatkal Mts, Sary-Chelek Reserve. **722.** Same, surroundings of Chapchama Pass.



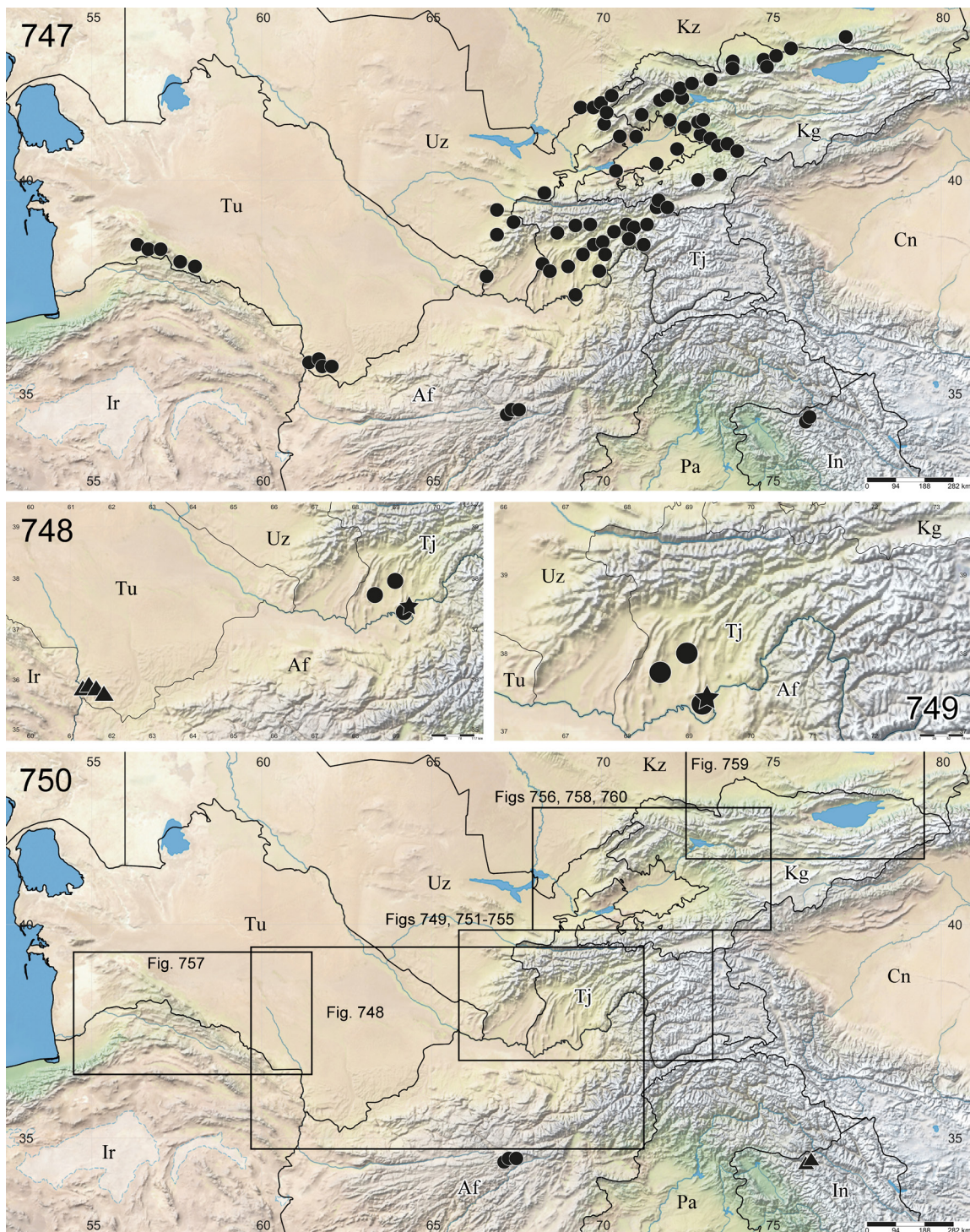
Figs 723–730. Habitats of *Raveniola nenilini* sp. nov., Uzbekistan. **723.** Pskem River valley and Charvak Reservoir, with Ugam Mts left and Pskem Mts right. **724.** Ugam Mts, Kainarsai Gorge. **725–726.** Same, a walnut forest growing in a ravine. **727.** Karzhantau Mts, Humsan Canyon. **728.** Chimgan Mts, Gulikamsai Gorge. **729.** Chatkal Mts (western slope), Aksakata Canyon, northwestern slope of Mt Syurenata. **730.** Same, midland juniper woodland on rocky slopes (ca 1700 m a.s.l.).



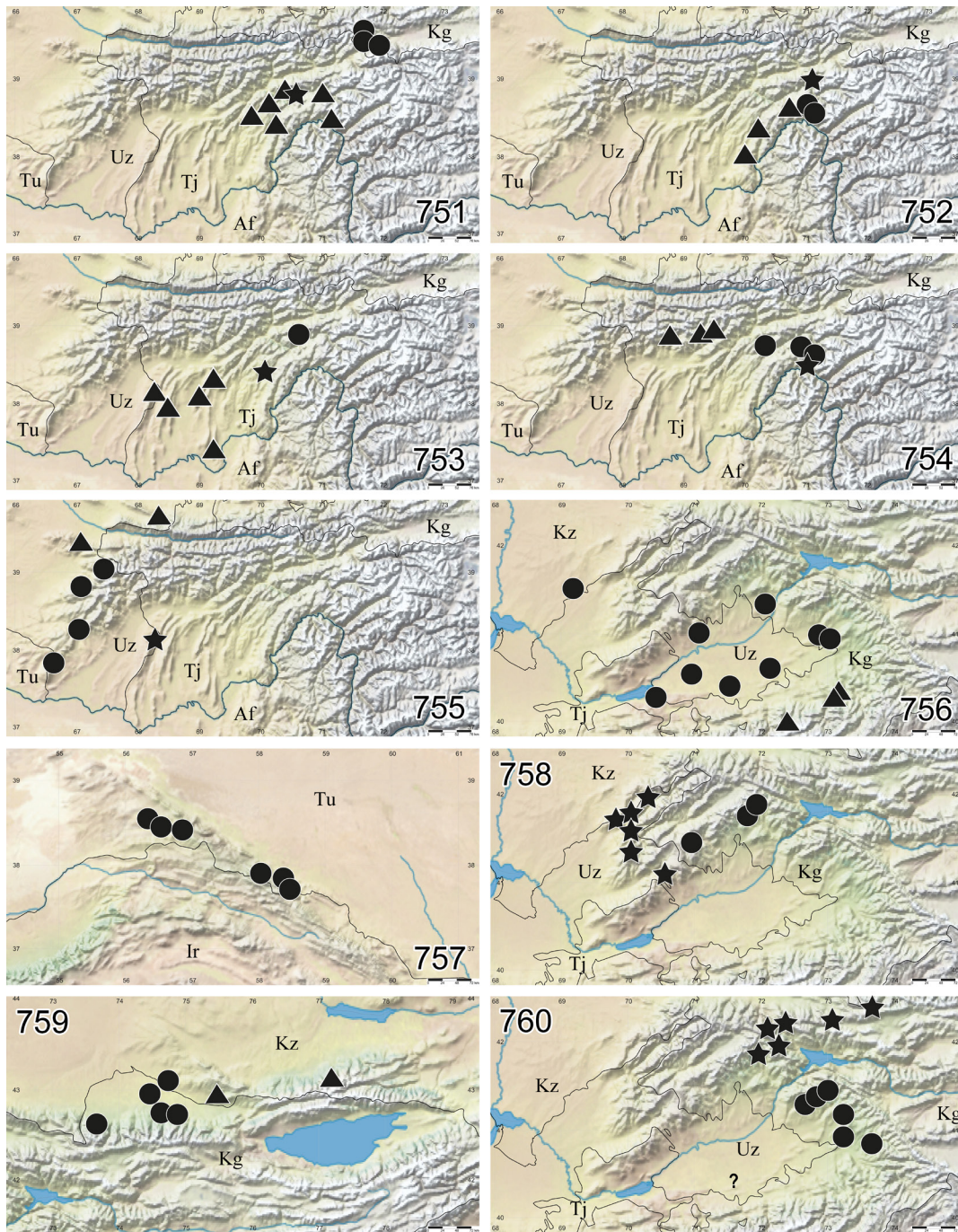
Figs 731–738. *Raveniola* spp. Habitats of *R. virgata* (Simon, 1891) (731–734), and *R. vulpina* sp. nov. (735–738), Kyrgyzstan. **731.** Ferghana Mts, forested slopes near Arslanbob Town. **732.** Same, a montane walnut forest. **733–734.** Same, the forest floor; a spider retreat under an overturned stone (showing a female and one of the protected juveniles indicated with white arrows). **735–737.** Chatkal Mts (southern slope), Sary-Chelek Reserve, spruce woodlands. **738.** Talas Mts (southern slope), Uzun-Akhmat Canyon, slopes with montane steppes and fir woodlands.



Figs 739–746. Copulation in *Raveniola virgata* (Simon, 1891). The depicted phases are explained in the text (p. 86).



Figs 747–750. Distribution records of *Raveniola* spp. **747.** Records of all known Central Asian species (●), showing the currently known limits of the genus distribution within the region. **748–749.** Records of *R. redikorzevi* (Spassky, 1937) (●), *R. caudata* Zonstein, 2009 (▲) and *R. inopinata* sp. nov. (★). **750.** Records of *R. afghana* sp. nov. (●) and *R. concolor* Zonstein, 2000 (▲). The terrain areas, corresponding to those shown in Figs 748–749, 751–760 are marked out and indicated according to the abovementioned figures. Country abbreviations: Af = Afghanistan; Cn = China; In = India; Ir = Iran; Kg = Kyrgyzstan; Kz = Kazakhstan; Pa = Pakistan; Tj = Tajikistan; Tu = Turkmenistan; Uz = Uzbekistan.



Figs 751–760. Distribution records of *Raveniola* spp. 751. *R. alajensis* sp. nov. (●), *R. cucullata* sp. nov. (▲) and *R. dolosa* sp. nov. (★). 752. *R. hirta* sp. nov. (●), *R. ignobilis* sp. nov. (▲) and *R. insolita* sp. nov. (★). 753. *R. karategensis* sp. nov. (●), *R. ornata* sp. nov. (▲) and *R. ornatula* sp. nov. (★). 754. *R. pamira* sp. nov. (●), *R. sororcula* sp. nov. (★) and *R. diluta* sp. nov. (▲). 755. *R. fedotovi* (Charitonov, 1946) (●), *R. pallens* sp. nov. (▲) and *R. zyzuni* sp. nov. (★). 756. *R. ferghanensis* (Zonstein, 1984) (●) and *R. kirgizica* sp. nov. (▲). 757. *R. kopetdaghensis* (Fet, 1984) (●). 758. *R. mikhailevi* Zonstein, 2021 (●) and *R. nenilini* sp. nov. (★). 759. *R. ovchinnikovi* sp. nov. (●) and *R. tarabaevi* sp. nov. (▲). 760. *R. virgata* (Simon, 1891) (●; ? = the questionable type locality) and *R. vulpina* sp. nov. (★). Country abbreviations as in Figs 747–750.