

**A NEW SPECIES OF THE FEATHER MITE GENUS ANALGES
NITZSCH, 1818 (ACARIFORMES: ANALGIDAE) FROM THE STREAKED
SPIDERHUNTER ARACHNOTHERA MAGNA (PASSERIFORMES:
NECTARINIIDAE), WITH A RENEWED DIAGNOSIS
AND WORLD CHECKLIST TO THE GENUS**

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ABSTRACT: A renewed generic diagnosis of the genus *Analges* Nitzsch, 1818 (Analgidae: Analginae) is proposed, and several corrections in the species content and taxonomic structure of the genus *Analges* are made. Designation of *Analges passerinus* (Linnaeus, 1758) as a type species of the genus *Analges* by von Heyden (1826) has indisputable priority over *A. chelopus* (Hermann, 1804) as designated by Trouessart (1916) and incorrectly used by many subsequent researchers. Therefore, the subgenus *Analgopsis* Trouessart, 1919, which was established with the same type species, *A. passerinus*, is here synonymized with the genus *Analges*. The monotypic genus *Plesialges* Trouessart 1919, placed by Gaud and Atyeo (1996) into the genus *Analges* Nitzsch, 1818 and so far treated as a subgenus, is removed from *Analges* and suggested to be a distinct genus. In the concept proposed herein, the genus *Analges* is not subdivided into subgenera, but several of its species are arranged into two newly established species groups: *chelopus* and *passerinus*. A new feather mite species *Analges arachnotherae* sp. n. is described from *Arachnothera magna* (Hodgson) (Nectariniidae) from Vietnam.

A world checklist of species of *Analges* is provided for the first time and includes 64 valid species names. It also includes synonyms and important misidentifications and provides comments to complicate taxonomic cases. Two valid species are given new names because their original names were preoccupied. *Analges chlorocichlae* nom. nov., stat. nov. is given to the subspecies *Analges corvinus minor* Gaud et Mouchet, 1959 nom. preocc. from *Chlorocichla simplex* (Hartlaub) (Pycnonotidae) in Cameroon (Gaud and Mouchet 1959), preoccupied by *A. macropus minor* Zimmermann, 1894 from *Pyrrhula pyrrhula* (Linnaeus) (Fringillidae) in Europe. *Analges trouessarti* nom. nov. is given to *Analges pollicipatus* Trouessart, 1899 nom. preocc. from *Coua caerulea* (Linnaeus) (Cuculidae) in Madagascar (Trouessart 1899), preoccupied by *Analges pollicipatus* Haller, 1882 from *Prunella modularis* (Linnaeus) (Prunellidae) in Europe (Haller 1882). Full species status is given to two subspecies: *Analges calcaratus* Trouessart, 1887 stat. nov., originally described as *A. bidentatus calcaratus* Trouessart, 1887 from *Eutoxares aquila* Reichenbach (Trochilidae) in "Nouvelle Grenada" (Colombia) (Trouessart 1887), and *Analges magellanicus* Cooreman, 1953 stat. nov., originally described as *A. corvinus magellanicus* Cooreman, 1953 from *Turdus falcklandii magellanicus* King (Turdidae) in Argentina (Cooreman 1953).

KEY WORDS: Feather mites, Analgidae, *Analges*, systematics, check list.

DOI: 10.21684/0132-8077-2019-27-1-19-43

INTRODUCTION

The genus *Analges* Nitzsch, 1818 (Analgidae: Analginae), the oldest feather mite genus, currently includes 64 described species and is the most species-rich in the family (Gaud 1974; Mironov 1985; Dabert *et al.* 2018; Pedroso and Hernandez 2018). Mites of this genus are typical inhabitants of down feathers and downy parts of contour feathers of the body and wings. As for most analgids, they are characterized in having a moderately flattened and rather poorly sclerotized body, a number of macrosetae on both dorsal and ventral sides, and spine-like ventral processes on tibiae and tarsi of the two first pairs of legs (Mironov 1987; Dabert and Mironov 1999).

Among other genera of the subfamily Analginae, males of this genus are almost unmistakable and clearly characterized by the following features. In males, legs III are hypertrophied with tibia, genu and femur strongly widened; tarsus III, in contrast to other leg segments, is small; seta *s* of tarsus III

is modified into a large claw, the pretarsus of this segment is reduced into a finger- or claw-like process usually lacking the ambulacral disc; and the bases of idiosomal macrosetae *c2* and *d2* of each side of the body are adjacent (in most species) and situated in the anterior angles of the hysteronotal shield. In females, the hysteronotal shield (in most species) is absent, and epimerites I, in contrast to the males, are always free. The females of *Analges* are very similar to those of the genera *Atelanalges* Gaud et Atyeo, 1991 and *Radfordialges* Gaud et Atyeo, 1967 in having epimerites I free; they only differ by the epigynum, shaped as a low arch and situated at the level of coxae III.

Males of the genus *Analges* are also characterized by very strong and continuous polymorphism (Jucci 1925; Dubinin 1951; Dabert *et al.* 2018), which is expressed in the extent of legs III hypertrophy and the general size of the body. In samples with a great number of mites, it is usually possible

to observe a row of male forms, where extreme forms are treated as hetero- and homeomorphs, and those with intermedial state of characters as mesomorphs. Hetero- and homeomorph males often look so different that in the end of 19th century these forms were described as different species even within the same work (Haller 1878; Zimmerman 1894). At the same time, females of different *Analges* species have a uniform general image. For these reasons, the taxonomy of the genus *Analges* is quite complicated and is practically based only on heteromorph males. With rare exceptions, homeomorph males can be used for reliable species identification.

Representatives of the genus *Analges* are predominantly associated with oscine passerines (recorded from hosts of 23 families) with only one species recorded from a suboscine host (Tyrannidae). Five species have been described from non-passerines, each from a single host from the orders Apodiformes, Columbiformes, Cuculiformes, Piciiformes and Psittaciformes, but all these reports are likely based on accidental contaminations (Table 1). Although nearly half of presently known species (30 species) are described from European passerines, and other continents have been explored very superficially regarding this genus, the genus *Analges* is expected to have a very broad distribution in all continents other than Antarctica.

Because of the intraspecific morphological variability in males of *Analges*, together with errors in identifications and incorrect taxonomic actions of experts in the end of 19th and beginning of 20th centuries, the taxonomy of this genus was for a long time strongly entangled. When the genus *Analges* was established, it included all known feather mites and its type species was not indicated (Nitzsch, 1818). Further, *Acarus passerinus* Linnaeus, 1758 was designated as the type species of *Analges* in a poorly known work by von Heyden (1826). Among six species originally referred to this genus, only two species actually belong to *Analges* from the modern point of view. The modern taxonomic limits of the genus *Analges* were outlined by Haller (1878, 1882), who made the first revision of this taxon. Trouessart (1916), for unknown reasons, designated another species, *A. chelopus* (Hermann 1804), as the type species of *Analges* and subsequently (Trouessart 1919) split this genus into two separate genera, *Analges* and *Analgopsis* Trouessart, 1919. Oudemans (1931, 1937) analyzed the taxonomic history of this genus, but did not make any

corrections. Subsequent researchers of the 20th century followed the concept of Trouessart regarding type species, but considered his two taxa as subgenera of *Analges* (Gaud 1958, 1974; Gaud and Mouchet 1959; Mironov 1985; Gaud and Atyeo 1996). Finally, Gaud and Atyeo (1982) included the monotypic genus *Plesialges* Trouessart, 1919 in *Analges* as a subgenus. The only key to European species of *Analges* was produced by Mironov (1985). Since that time, the genus *Analges* has not attracted much attention from acarologists, and only two short taxonomic papers were recently dedicated to this genus (see detailed historical account after the generic diagnosis).

The present work provides the following: a new generic diagnosis of the genus *Analges*; a world checklist of species with taxonomic comments; corrections in names and status of several previously described species; and the description of one new species from a sunbird host (Passeriformes: Nectariniidae) from Vietnam.

MATERIAL AND METHODS

The material used for description of a new species was collected from ethanol preserved specimens of *Arachnothera magna* (Hodgson) deposited in the Museum of Zoology of Moscow Lomonosov State University. Mites were collected by the washing technique described by Mironov and Galloway (2002). After washing of a bird specimen, the water passed through filter paper; mites were manually picked out under dissecting microscope and preserved in 70% ethanol. Collected mites were cleaned and softened in 10–15% lactic acid at the room temperature for 2–3 days, then mounted on microscopic slides using Hoyer's medium (Krantz and Walter 2009) and dried at 60 °C for 5–7 days. Drawings and measurements were made with Leica microscopes (DM2500, Leica Microsystems, Inc.) equipped with differential interference contrast optics (DIC) and a camera lucida.

Other comparative material used in the present work is located in Zoological Institute of the Russian Academy of Sciences (Saint Petersburg, Russia). Type specimens of *Analges* species described by Trouessart (1885; 1899) were loaned from the Museum National d'Histoire Naturelle (Paris, France).

Scientific names of birds and their supraspecific classification follow Gill and Donsker (2018). Abbreviations used in accession specimen numbers and depositories: UMMZ—Museum of Zoology of the University of Michigan (Ann Arbor, MI,

USA); ZISP—Zoological Institute of the Russian Academy of Sciences (Saint Petersburg, Russia).

SYSTEMATICS

Family **Analgidae Trouessart et Mégnin, 1884**
Subfamily **Analginae Trouessart et Mégnin, 1884**
Genus ***Analges* Nitzsch, 1818**

Analges Nitzsch, 1818: 250 (in part); Giebel 1871: 490 (in part); Robin and Mégnin 1877: 498 (in part); Haller 1878: 69, 1882: 50, 52, Tyrrell 1882: 44; Berlese 1882, fasc. 15, Nos. 1–3, Canestrini 1886: 283; Trouessart 1885: 54, 1899: 29, 1916: 219, 1919: 336; Mégnin and Trouessart 1887: 128; Canestrini and Kramer 1899: 87; Vitzthum 1929: 85; Oudemans 1931: 280, 1937: 2180; Gaud 1952: 82, 1958: 32, 1974: 728; Dubinin 1953: unnumbered page after 22; Gaud and Mouchet 1959: 153, 154; Gaud and Till 1961: 191; Mironov 1985: 159, Gaud and Atyeo 1981: 303, 1996: 53; Mironov and Kopij 1996: 258; Dabert *et al.* 2018: 2289; Pedroso and Hernandez 2018: 235.

Dermaleichus Koch, 1841: fasc. 33, Nos. 4–24 (in part), 1842: 122 (in part); Buchholz 1869: 4 (in part); Grube 1859: 64 (in part).

Analgopsis Trouessart, 1919: 336, Trouessart and Berlese 1919: 4; Vitzthum 1929: 86; Gaud 1958: 32 (subgen.); Gaud and Mouchet 1959: 156 (subgen.); Gaud and Till 1961: 191 (subgen.); Mironov 1985: 175 (subgen.), syn. n.

Type species: *Acarus passerinus* Linnaeus, 1758 from *Fringilla coelebs* Linnaeus, by subsequent designation (von Heyden 1826).

Diagnosis. *Both sexes.* Medium sized analgines. Prodorsal shield occupying median part of prodorsum, shaped as narrow trapezoid, with pair of longitudinal median ridges, with pair of acute suprategumental extensions on posterior margin (Figs. 1, 4A). Supracoxal setae setiform. Scapular shields with suprategumental triangular extension on inner margin. Hysteronotal setae *cl*, *hl* absent. Vertical setae *ve* rudimentary, represented by alveoli. Femur I with large hook-like lateral process rounded apically, trochanter I with tooth-like lateral process opposing to femoral process; femur II with or without small hook-like lateral process. Tarsi I, II with cuff-like ventral processes (“manchettes”). Tibiae I, II, each with spine-like hyaline ventral process. Tarsus I with 8 setae (*ba*, *d*, *e*, *f*, *la*, *ra*, *wa*, *s*); tarsus II with 7 setae, ventral seta *wa* absent (Figs. 5A, B).

Male. Males strongly polymorphic, variable in body size and especially in structure of legs III;

polymorphism continuous. Idiosoma moderately elongated, in some species widely ovate; lateral margins of opisthosoma monotonously attenuate posteriorly. Opisthosoma entire, widely rounded; with small median terminal lamella (semi-circular, rectangular, or bilobate in shape). Lateral membranes absent. Lateral margin of humeral shield with or without spine. Hysteronotal shield with acute and strongly elongate anterior angles; anterior margin deeply concave. Setae *c2* represented by macrosetae and situated on anterior ends of humeral shields. Setae *d2*, *e2* represented by macrosetae, usually touching at bases, both situated in anterior angles of hysteronotal shield anterior to level of humeral setae *cp* (except for *Analges cincli* Mironov, 1985 and *A. tyranni* Tyrrell, 1882, which have setae *e2* moved posteriorly and situated at level of trochanters III and IV). Setae *ps2*, *h2* and *h3* arranged in a short transverse row on posterior margin of opisthosoma. Setae *ps1* minute, situated postero-medial to bases of setae *h3*. Supranal concavity present.

Epimerites I fused into a Y with long sternum. Coxal field III closed, completely sclerotized and fused with corresponding scapular and humeral shields forming large rhomb-shaped shields on both sides of body. Genital apparatus at level of anterior margins of trochanters III. Epiandrum present, thin bow-shaped; paragenital apodemes absent. Genital shield absent. Adanal shield large, occupying area between genital apparatus and anal area, its posterior branches almost completely encircling anal field. Anal suckers circular, with smooth corolla. Cupules ih well developed.

Legs III hypertrophied, much thicker and longer than legs IV; trochanter, femur, genu and tibia enlarged, inner margin of femur III with 1–3 spine-like processes of various length and shape. Tarsus III small, much shorter and thinner than corresponding tibia, roughly cylindrical or with finger-like process bearing seta *w*; seta *s* modified into large claw-like, remaining setae filiform; pretarsus reduced into thin finger- or claw-like process stretching along seta *s*, ambulacral disc absent (in *A. cincli* present, minute circular). Tarsus IV elongate, subequal in length to tibia, with or without small apical process; modified setae *d* and *e* button-like or hemispherical; pretarsus IV developed as on legs I, II.

In homeomorph males, trochanter, femur, genu and tibia III moderately enlarged, inner margin of femur with smaller spines or lacking any spines. In heteromorph males, trochanter, femur, genu and tibia III even more strongly enlarged; inner margin

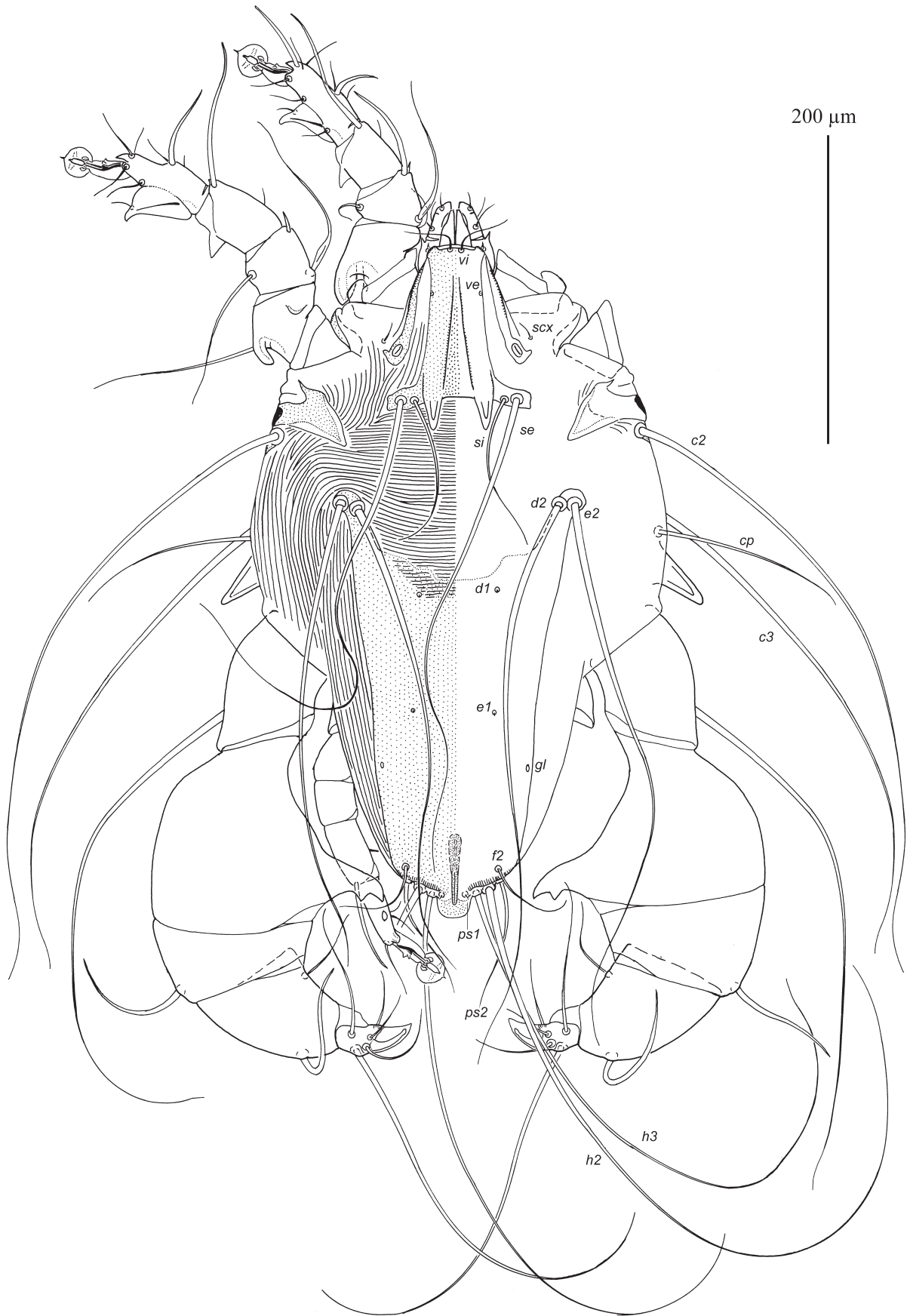


Fig. 1. *Analges arachnotherae* sp. n., dorsal view of heteromorph male.



Fig. 2. *Analges arachnotherae* sp. n., ventral view of heteromorph male.

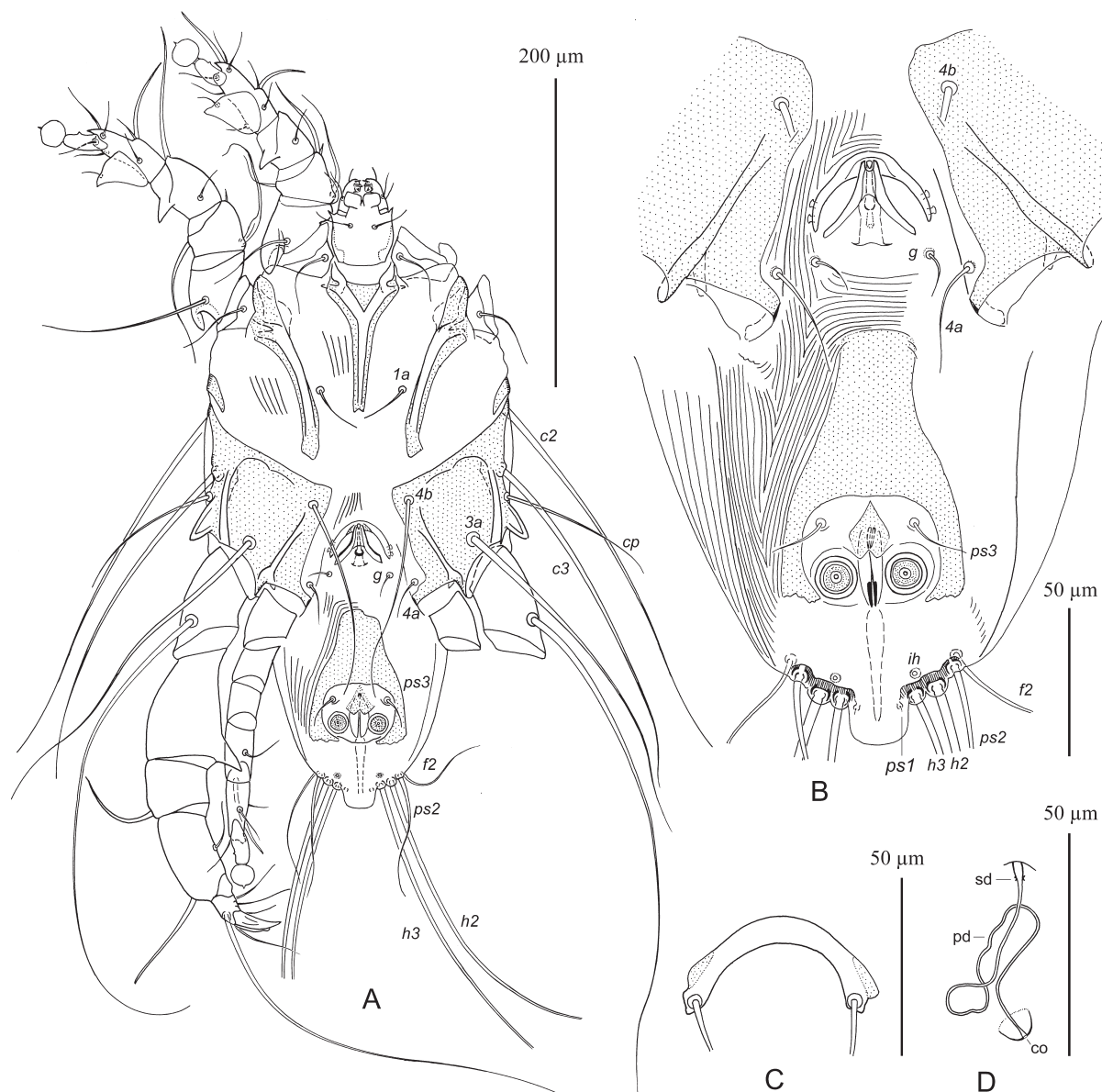


Fig. 3. *Analges arachnotherae* sp. n. A—ventral view of homeomorph male, B—opisthosoma of heteromorph male, ventral view, C—epigynum of female, D—spermaducts of female. Abbreviations: co—copulatory opening, pd—primary spermaduct, sd—bases of secondary spermaducts.

of femur usually with some spine- or spur-like processes; in some species with very long process of femur III opposing to genu, tibia and tarsus (*chelopus* group), legs III shaped as chelae (Fig. 1).

Female. Hysteronotal shield absent in most species, cuticle of hysterosoma finely striated. Setae *e1*, *d1* represented by microsetae or absent. Setae *c2*, *d2* and *e2* usually represented by macrosetae. Setae *ps1* absent. Epimerites I free. Oviporus situated at level of trochanters III. Epigynum small bow-shaped, free from epimerites III, distant from posterior tips of epimerites I, II. Lateral flaps of oviporus poorly sclerotized. Epimerites IIIa strongly reduced or absent. Anal opening ventral,

copulatory opening immediately posterior to anal opening.

Remarks. The genus *Analges* currently includes 64 valid species (Table 1). In the concept proposed for the genus herein (see *Historical account* below), the genus is not subdivided into subgenera, but several species are arranged into two species groups based on male morphology. Remaining species could be potentially arranged in the future into some groups, but this needs extensive investigations of biodiversity of this genus.

Group *chelopus*. *Males.* Tarsus III roughly cylindrical, without finger-like extension on inner margin, pretarsus rudimentary, shaped as narrow

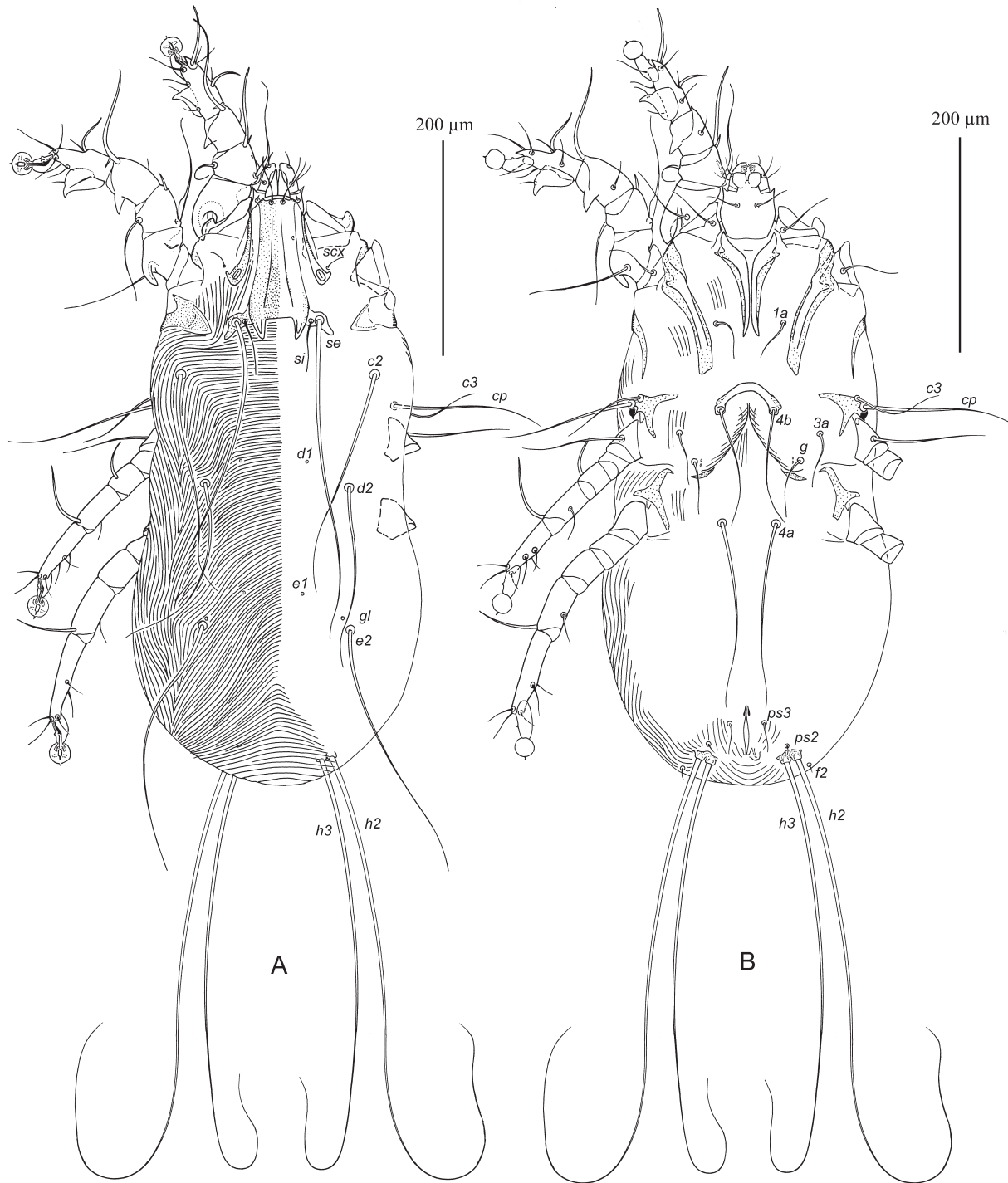


Fig. 4. *Analges arachnotherae* sp. n., female. A—dorsal view, B—ventral view.

and slightly curved finger or claw, ambulacral disc not developed. *Heteromorph male*. Femur, genu and tibia III strongly widened, femur I with very long median claw-like process opposing to genu, tibia, and tarsus III that makes entire leg III shaped as distinct chela (Fig. 1), length of tibia III approximately equal to its wide at base, claw-like seta *s* of tarsus III not longer than this segment. (6 species)

Group *passerinus*. *Males*. Tarsus III with finger-like extension bearing seta *w*, pretarsus rudimentary, shaped as narrow and slightly curved finger or claw, ambulacral disc not developed. *Heteromorph male*. Trochanter, femur, genu and tibia III enlarged, entire leg III not shaped as chela, femur I with 1–3 spines or tubercles, tibia III distinctly longer than wide at base, claw-like

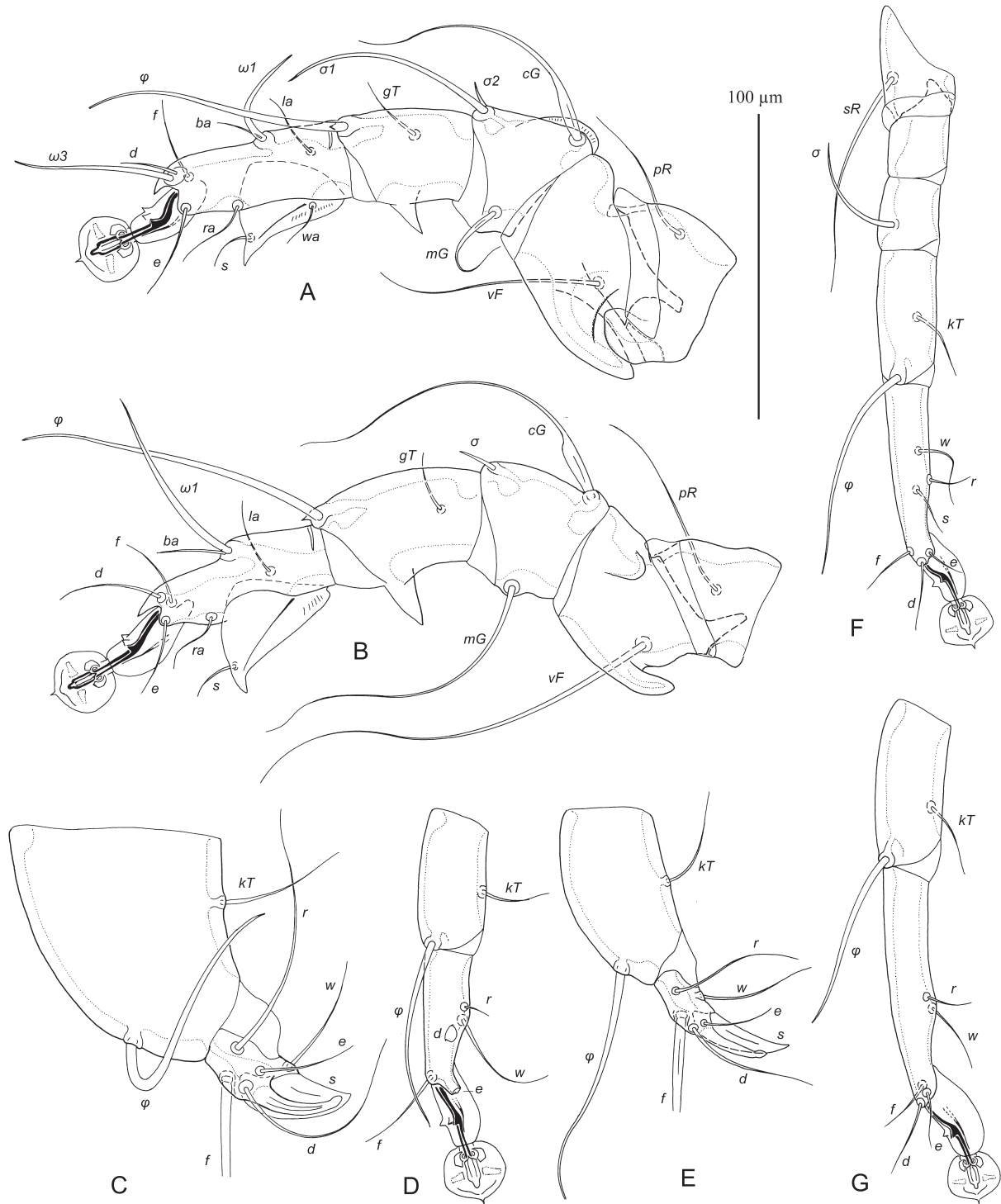


Fig. 5. *Analges arachnotherae* sp. n., legs. A–E—male, F, G—female. A, B—legs I and II of heteromorph male, respectively, C, D—tibia and tarsus III and IV of heteromorph male, respectively, E—tibia and tarsus III of homeomorph male, F—leg III of female, G—tibia and tarsus IV of female.

seta *s* of tarsus III longer than this segment (20 species).

Historical account and taxonomic remarks.

The first feather mite genus *Analges* Nitzsch 1818 was established by Nitzsch (1818) in an article on Acarina in “Allgemeine Encyclopädie der Wis-

senschaften und Künste”. All six species included in this genus were true feather mites, belonging from the modern point of view to the families Analgidae, Avenzoariidae, Proctophyllodidae and Pteronyssidae. Among them, only two species, originally established in the content of the genus

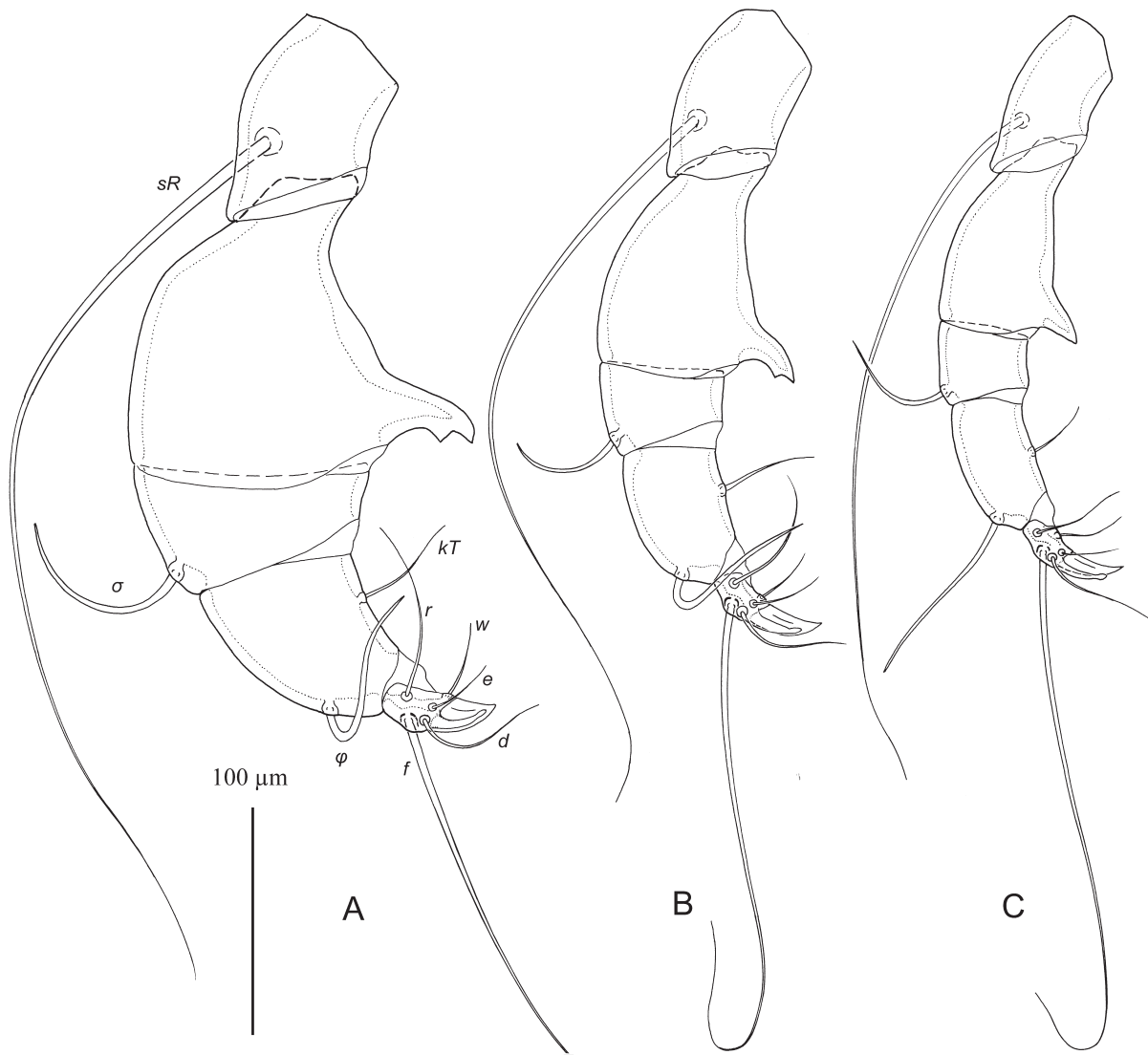


Fig. 6. *Analges arachnotherae* sp. n., legs III of males. A—heteromorph male, B, C—homeomorph males.

Acarus [*Analges passerinus* (Linnaeus, 1758) and *Analges chelopus* (Hermann, 1804)], really belonged to the genus *Analges* in the modern sense.

Nitzsch (1818) did not designate the type of the genus, but quite soon von Heyden (1826), in a poorly known issue of “*Isis*”, designated *Analges passerinus* (Linnaeus, 1758) as the type species. This subsequent designation has an indisputable priority over all later designations of a type species.

It is important to stress here that Nitzsch (1818) referred *Analges passerinus* to Linnaeus (1758, “*Systema Naturae*”, 10th edition), who in turn used the description of a mite “*Acarus avium*” by De Geer (1740: 351, fig. 2). In his subsequent papers, De Geer (1778: 109, pl. 6, fig. 12; 1783: 47, pl. 6, fig. 12) gave a good enough illustration of the heteromorph male of *Acarus passerinus* (simply repeated his primary drawing of 1740) allowing

unequivocal recognition of this species from the heteromorph male. The figured male had hypertrophied legs III with especially strongly widened trochanters and femora, tarsi III with a distinct finger-like process bearing seta *w*, and the opisthosoma with a pair of small leaf-like terminal lamellae with apices curved laterally. It is important to stress that legs III of the illustrated male are simply widened but not modified into some kind of chelae as in *A. chelopus*. The structure of terminal lamella is a unique feature of heteromorph and mesomorph males of *A. passerinus*. Among the old works from the end of 19th century, this species was quite well (for that time) redescribed by Robin and Mégnin (1877: 499, pl. 26, figs. 1–4).

In his primary work, De Geer (1740) mentioned only one host for “*Acarus avium*”—“*Bofincka (Fringilla)*” (the Common Chaffinch, *Fringilla*

coelebs Linnaeus) that is clear designation of the type host. In the “Systema Naturae” Linnaeus (1758) referred to De Geer’s work and characterized *Acarus passerinus* as a mite with “*femoribus tertiis crassissimus*”, but gave a rather uncertain range of hosts to this species—“*Passeribus variis*” (various passerines). It is interesting to note that De Geer (1778, 1783) in his later papers wrote, in contrast to his primary work, that in 1740 he collected the species *Acarus passerinus* described by Linnaeus (1758) “*sur des Moineaux et des Pinçons*” (on sparrows and chaffinches, i.e. on *Passer domesticus* (Linnaeus) and *F. coelebs*). The uncertain range of passerine hosts of *A. passerines* given by Linnaeus (1758) was apparently one of reasons for disagreements in determination of this mite species.

Koch (1841), not knowing about the establishment of the genus *Analges*, created a new genus *Dermaleichus* Koch, 1841, which incorporated various astigmatan mites, permanent symbionts of birds, mammals and insects. Among true feather mites included in this genus, there was also listed and figured *Dermaleichus passerinus*, referred to De Geer rather than to Linnaeus (Koch 1841: fasc. 33, Nos. 10, 11), and the hosts were listed as “*Finken, Ammern and Lerchen*” (=finches, buntings and larks), which means that the author certainly dealt with several different *Analges* species.

It is necessary to stress that *Dermaleichus passerinus* illustrated by Koch (1841, fasc. 33, No. 10) was quite certainly not *Acarus passerinus* sensu Linnaeus (1758) and De Geer (1778) but another *Analges* species without a finger-like process on tarsus III, with two teeth on the inner margin of femur III and without a pair of small terminal lamellae on the opisthosoma in males. Further, Haller (1878) was the first who noted that “*Dermaleichus passerinus*” sensu Koch (1841: fasc. 33, No. 10, 11) was another species, and he had synonymized it with *Analges chelopus* (Hermann, 1804).

The genus *Dermaleichus* was also established by Koch without designation of type species; however, further Koch (1842: pl. 13, figs. 70, 71) provided an illustrated example of the genus, a drawing of *Dermaleichus passerinus*, and gave a list of 34 species he included in this genus. It is necessary to note that the figure of the male given by Koch (1842: pl. 13, fig. 70) was different from that given in his previous work (Koch 1841: fasc. 33, No. 10) in having a distinct pair of small terminal lamellae, more or less recognizable finger-like process on tarsus III and only one short spine on the inner margin of femur III. This species-ex-

ample was subsequently considered by Oudemans (1931) as a designation of the type of the genus *Dermaleichus*. However, a “species-example” does not correspond to designation of type species (ICZN 1999: article 67.5.1.s). Additionally, much later, Oudemans (1904) fixed the type of *Dermaleichus* as *D. chrysomelinus* Koch 1841 (Canestriniidae). Thus, the genus *Dermaleichus* is only partly a synonym of *Analges*, and *Acarus passerinus* in any sense (either Linnaeus or Koch) is not a type species of *Dermaleichus*.

These two feather mite genera, *Analges* and *Dermaleichus*, co-existed in acarology almost 40 years. Giebel (1871) included 17 species of true feather mites in the genus *Analges*, and six of them actually belonged to *Analges* in the modern sense. In the interpretation of Buchholz (1869), the genus *Dermaleichus* included mostly true feather mites, 33 of 38 species considered in this genus, but only four of them, *D. passerinus* Koch, 1841 (sic!), *D. fringillarum* Koch, 1841, *D. mucronatus* Koch, 1841 and *D. oscinum* Koch, 1841, actually belonged to the genus *Analges*.

Robin and Mégnin (1877), apparently not knowing about the works of Buchholz (1869) and Giebel (1871), placed 11 species in *Analges*, whereas only two species, *A. passerinus*, and *A. corvinus* Mégnin, 1877, actually belonged to this genus, while the remaining species, referred by Robin and Mégnin to this genus, actually represented analgids of the subfamily Mégniniinae and also mites of the families Pteronyssidae and Xolalgidae. Nevertheless, these authors provided a really good redescription of *A. passerinus* clearly corresponding to that by De Geer (1740, 1778, 1783).

Haller (1878) made the first revision of the genus *Analges*, established its modern taxonomic limits and also transferred into it all corresponding species from *Dermaleichus*. This author arranged 17 *Analges* species into two “subgenera”, providing them with the names “*Analges chelopii*” and “*Analges pachynemici*”. The main diagnostic character of the first group was the chela-like legs III; it included species described from heteromorph males having this characteristic. This group corresponds well to the *chelopus* species group proposed in the present work. The second group included species, in which heteromorph males had simply enlarged proximal segments of legs III (trochanter–tibia), and “species” described from homeomorph males, which did not have strong enlargement of legs III. Thus, *Analges nitzschi* Haller, 1877 with chela-like legs III was referred

to the first group, while *A. coleopteroides* Haller, 1877, referred to the second group because of only slightly enlarged legs III, was actually a homeomorph male of the same species. In his subsequent paper, Haller (1882) described four more species in the content of the genus *Analges*.

Ignoring or not knowing about the paper of von Heyden (1826), Trouessart (1885) for unclear reasons designated *Analges chelopus* (Herman, 1804), the second true *Analges* species mentioned in the work of Nitzsch (1818), as the type species of this genus. Further, in his revision of feather mite genera, Trouessart (1916) made one more unexplainable action by declaring *Passer domesticus* as the type host of *Analges chelopus*, although all the previous publications dealing with this species, starting from Hermann, reported the Bluethroat, *Luscinia svecica* (Linnaeus), as the only host of this mite (Hermann 1804; Nitzsch 1818; Giebel 1871; Haller 1878).

Finally, Trouessart (1919) split the genus *Analges* in the sense of Haller (1878, 1882) into two genera. Although Trouessart did not list full species contents of these genera, as it is possible to understand the genus *Analges* Nitzsch, 1818, with the type species *A. chelopus*, included species with heteromorph males having chela-like legs III. The new genus *Analgopsis* Trouessart, 1919 with the type species *A. passerinus* (Linnaeus, 1758) incorporated species in which heteromorph males had simply widened legs III. It is interesting to note that in the same year, in another publication, Trouessart and Berlese (1919) established the genus *Analgopsis* once more but referred its type species *A. passerinus* to De Geer. It is necessary to add that in both papers (Trouessart 1919; Trouessart and Berlese 1919), a monotypic genus *Plesialges* with the type species *Plesialges mimus* Trouessart, 1919 was also established. Much later, this quite vaguely defined genus was tentatively placed by Gaud and Atyeo (1982) in the genus *Analges* as a subgenus.

Oudemans (1931: 280) summarized key points and disagreements in taxonomy of *Analges*, but without taxonomic resolution. He indicated that *Acarus passerinus* was designated as the type by von Heyden (1826), concluded that the “figure-example” of *A. passerinus* was a designation of the type for *Dermaleichus* in the work of Koch (1842) and finally noted that the genus *Analges* according to Trouessart (1916) has *A. chelopus* as a type.

In “Kritisch Historisch Overzicht der Acarologie”, Oudemans (1926, 1937) provided an almost exhaustive synonymy for most species of the genus

Analges known up to 1850, but much more entangled the matter with the type species of the genus not giving any final resolution. At first, Oudemans (1937: 2180) clearly indicated that the type species is named “*Analges passerinus*”, but surprisingly referred it to Nitzsch (1818) rather than to Linnaeus (1758) or De Geer (1778). In the current day it is possible only to guess why Oudemans concluded that Nitzsch (1818) likely dealt with another *Analges* species than De Geer and Linnaeus did. Then Oudemans (1937: 2181) wrote that *Analges avicularum* (De Geer, 1778), the species that is quite probably a senior synonym of *A. mucronatus* (Buchholz, 1869), was the type of *Analges*. And finally, considering specifically *Analges passerinus*, Oudemans (1937: 2187) referred this species to Linnaeus (1758) but stressed that it was not the type of *Analges*. Interestingly, but in this work he did not insist that *A. chelopus* is the type species of the genus *Analges*.

Acarologists of the second part of 20th century did not pay much attention to the earlier comments of Oudemans (1931), and relying on the authority of Trouessart (1885, 1916, 1919), they followed his concept in relation to type species of *Analges* and *Analgopsis*. However, Gaud and coauthors (Gaud and Mouchet 1959; Gaud and Till 1961; Gaud 1974; Gaud and Atyeo 1996) concluded that diagnostic characters of these taxa are not convenient for practical use and not strong enough for full generic rank, because they work well only for heteromorph males. Therefore, these taxa were treated only as subgenera of the genus *Analges*. In a taxonomic review of *Analges* species from European passerines, Mironov (1985) proposed new diagnostic features to discriminate these subgenera based on the structure of tarsi III in any forms of males. The subgenus *Analges* s. str., based on the type species *Analges chelopus*, included species with tarsus III simple, roughly cylindrical. With this criterion, it included not only species in which heteromorph males have chela-like legs III, but also a number of other species with simply widened legs III in heteromorph males. The subgenus *Analgopsis* included species in which all forms of the male had tarsus III with a finger-like process bearing the base of seta *w*. Mironov (1985) also proposed a key to all known European species of the genus *Analges* (34 species) based on heteromorph males.

The designation of *Acarus passerinus* Linnaeus 1758 by von Heyden (1826) as the type species of *Analges*, ignored by most contemporary researchers of the 19th century and missed by subsequent tax-

onomists, has an unquestionable priority and demands the following taxonomic actions. *Acarus passerinus* Linnaeus 1758 from the type-host *Fringilla coelebs* should be once and for all restored as the type species of the genus *Analges*. The subgenus *Analgopsis*, Trouessart, 1919, which was based on the same species, *A. passerinus*, therefore becomes a junior synonym of the genus *Analges*.

Regarding the monotypic genus *Plesialges* Trouessart, 1919, which was placed by Gaud and Atyeo (1982; 1996) in *Analges* as a subgenus, my study of the type specimen of *Plesialges mimus* Trouessart, 1919 (deposited in the Museum National d'Histoire Naturelle, Paris, France, MNHN, Trouessart collection, slide No. 30B1) has shown that this species is a representative of the subfamily Analginae but by no means belongs to the genus *Analges*. In both sexes of *P. mimus*, the prodorsal shield has a completely different structure from that of *Analges*, lacking medial ridges and posterior processes, and in males, seta *s* of tarsus III is simple setiform and not modified into a large claw, while this tarsus has a claw-like process that makes its superficial similarity with this leg segment in *Analges*. The redescription of this mite is suggested for a separate publication.

Thus, in the taxonomic concept proposed herein, the genus *Analges* is not subdivided into any subgenera. At the current state of knowledge on biodiversity of this genus, it seems to me most expedient and comfortable for systematics to recognize only morphological species groups, as it is in the huge feather genera *Proctophyllodes* Robin, 1868 and *Trouessartia* Canestrini, 1899 (Atyeo and Braasch 1966; Santana 1976; Klimov *et al.* 2017). It is necessary to add that preliminary results of our molecular based analysis (Dabert *et al.* in preparation) of this genus *Analges* also do not support its subdivision into any groupings that could be treated as subgenera.

***Analges arachnotherae* sp. n.**

(Figs. 1–6)

Type material. 1 heteromorph male holotype (ZISP 7734), paratypes: 3 heteromorph and 5 homeomorph males, and 3 females, from *Arachnothera magna* (Hodgson, 1836) (Passeriformes: Nectariniidae), Vietnam, Lam Dong Province [Lâm Đồng], Bao Loc [Bảo Lộc], 11°32'N, 107°47'E, 22 April 2012, I.V. Palko.

Depository. Holotype, 5 male and 2 female paratypes—ZISP, remaining paratypes—UMMZ.

Description. *Heteromorph male* (holotype, range of measurements for 3 paratypes in parentheses). (Figs. 1, 2, 3B, 5A–D, 6A). Idiosoma, length × width, 415 (390–415) × 265 (235–270), hysterosoma length 300 (265–300). Subcapitulum with lateral spines. Prodorsal shield: shaped as longitudinally trapezoid with a pair of median ridges, greatest length excluding posterior processes 103 (100–105), width at posterior margin 98 (85–97), posterior suprathegumental processes triangular (tooth-shaped), length 20 (18–20) (Fig. 1). Setae *vi* approximately half as long as prodorsal shield length. Setae *se* separated by 75 (67–75) and extending beyond posterior margin of opisthosoma; setae *si* extending beyond level of setae *d2* and *e2*. Postero-mesal part of scapular shields with large triangular suprathegumental extensions.

Hysteronotal shield: gradually expanded anteriorly; anterior angles bearing setae *d2* and *e2* rounded, anterior margin with roughly trapezoidal concavity about 1/6 of shield length; greatest length of shield 250 (235–255), greatest width (at level of anterior angles) 160 (150–165), most of the surface uniformly dotted, except area near concavity bearing transverse striae (Fig. 1). Posterior margin of opisthosoma regularly rounded, with nearly semi-circular terminal lamella 15 (10–15) long and 22 (18–23) wide. Supranal concavity narrow, groove-like, 45 (37–45) long. Setae *c2* situated on anterior margins of narrow and long humeral shields; setae approximately as long as hysterosoma. Short setae *d1* on hysteronotal shield near margin of anterior concavity. Bases of setae *d2* and *e2* adjoining and set on anterior angles of hysteronotal shield, both setae extending beyond posterior margin of opisthosoma. Setae *f2* approximately equal to distance between them. Distances between dorsal setae and openings: *c2:e2* 50 (45–50), *e2:h3* 250 (230–250), *d1:d2* 55 (52–56), *e1:e2* 135 (125–135), *e2:gl* 175 (155–175), *h2:h2* 43 (42–43), *h3:h3* 27 (26–28).

Epimerites I fused as a Y, posterior end of sternum expanded and with minute incision, area between free parts of epimerites sclerotized (Fig. 2). Posterior ends of epimerites II roughly rounded, not bifurcate. Humeral shields with large humeral spine 45 (42–45) long (from apex to base of seta *cp*). Coxal fields IV without suprathegumental processes in posterior angles.

Epiandrum bow-like, without suprathegumental processes, length × width, 27 (22–28) × 40 (40–45). Genital arch 27 (25–25) × 33 (32–35); aedeagus minute, much shorter than arch. Adanal shield narrowed in anterior part, anterior margin roughly

convex, posterior branches extending to posterior margin of adanal suckers, greatest length 97 (95–98), midline length 62 (55–63), width of anterior part 27 (26–28), greatest width (at level of anal field) 65 (62–65) (Fig. 3B). Adanal suckers 15 (14–15) in diameter. Cupules *ih* at level of setae *ps2*. Setae *g* situated slightly anterior to setae *4a*. Setae *4b* extending to bases of setae *ps3*; setae *3a* extending to level of tarsi III. Distances between ventral setae: *4b:3a* 30 (28–30), *4b:g* 57 (55–58), *4b:4a* 62 (52–63), *g:ps3* 95 (93–95), *ps3:h3* 63 (62–63), *ps3:ps3* 35 (33–35).

Femur II with hook-like triangular lateral process (Fig. 5B). Femur, genu and tibia III strongly widened; entire legs III chela-shaped, with movable digit formed by genu, tibia and tarsus and fixed digit formed by large claw-like process. Femur III 2–2.5 times wider apically than at base; large claw-like process on inner margin of femur curved backward apically and with small subapical spine on posterior margin of this process (Fig. 6A). Genu III approximately twice as wide as long. Tibia III slightly longer than wide at base. Tarsus III without projection bearing seta *w*; ambulacrum narrow finger-shaped, with indistinct ambulacral disc; claw-like seta *s* 27 (27–30), not exceeding length of tarsus (Fig. 5C). Setae *cG* on genua I and II similar in shape, widened basally, with distal long filiform part (Figs. 5A, B). Setae *sR* on trochanter III and *f* on tarsus III approximately as long as the whole leg III. Setae *e* and *d* of tarsus IV button-like (Fig. 5D). Legs IV with basal parts of tarsi reaching level of body terminus.

Homeomorph male (range for 5 paratypes) (Figs. 3A, 5E, 6B, C). Only features different to heteromorph male are presented. Idiosoma, length × width, 360–385 × 200–230, hysterosoma length 250–260. Prodorsal shield: 92–100 long and 72–80 wide, processes on posterior margin 17–20 long. Scapular *se* separated by 60–65, extending to or beyond posterior margin of opisthosoma. Hysteronotal shield 215–230 long and 125–140 wide. Setae *d2* and *e2* both approximately equal to body length. Supranal concavity 35–42 long. Terminal lamella 10–12 long and 17–18 wide. Distances between dorsal setae and openings: *c2:e2* 37–42, *e2:h3* 210–230, *d1:d2* 47–52, *e1:e2* 120–125, *e2:gl* 140–155, *h2:h2* 37–43, *h3:h3* 27–30.

Sternum with small triangular incision on posterior end. Humeral spine 27–27 long. Epiandrum 22–27 × 37–40. Genital arch 25–27 × 30–32. Length of aedeagus 16. Adanal shield shaped as in heteromorph male, greatest length 85–100, length along midline 50–57, wide in anterior part 27–30, greatest

width at level of anal field 60–62. Adanal suckers 12–13 in diameter.

Setae *3a* extending to level of tibia III. Distances between ventral setae: *4b:3a* 25–30, *4b:g* 47–50, *4b:4a* 52–58, *g:ps3* 80–90, *ps3:h3* 56–58, *ps3:ps3* 32–35.

Trochanter, femur, genu and tibia of legs III widened. Femur III in apical part about 1.5 times wider than in basal part; inner margin of femur with straight spine-like process or with slightly curved bidentate process (Fig. 6B, C). Genu III approximately 1.5 times wider than long. Tibia III 1.5–2 times longer than wide at base. Seta *s* of tarsus III 25–28, equal in length to this segment (Fig. 5E).

Female (range for 3 paratypes) (Figs. 3E–H, 4). Idiosoma, length × width, 490–520 × 225–235, length of hysterosoma 390–400. Prodorsal shield shaped as in male, greatest length excluding posterior processes 115–120, width at posterior margin 92–98, length of posterior supratרגumental processes 17–20, setae *se* separated by 72–74. Scapular shields as in male. Opisthosoma widely rounded, nearly semicircular. Hysteronotal shield absent. Scapular setae *se* and setae *d2* extending beyond level of setae *d2*; setae *c2* extending mid-level between levels of setae *d2* and *e2*; setae *e2* with distal half extending past end of opisthosoma. Setae *f2* minute, about 10. Hysteronotal gland openings *gl* antero-mesal to bases of setae *e2*. Setae *d1*, *e1* and *ps1* present. Distance between dorsal setae: *c2:d2* 97–105, *d2:e2* 120–125, *e2:h3* 110–120, *h2:h2* 82–88, *h3:h3* 67–70.

Epigynum bow-shaped, without supratרגumental processes, 22–28 long, 52–55 wide, setae *4b* situated on tips (Fig. 3C). Apodemes of oviporus represented by short bow-shaped sclerites posterior to bases of setae *g*. Genital papillae mesal to setae *g*. Setae *1a* short, not reaching the epigynum. Setae *4b* and setae *g* reaching level of setae *4a*; setae *4a* almost extending to anterior margin of anal opening. Setae *3a* extending beyond level of setae *g*. Setae *ps3* 20–25 long, not exceeding length of anal opening. Distances between ventral setae: *4b:3a* 16–18, *4b:g* 40–43, *g:4a* 52–58. Copulatory opening on small hemispherical extension slightly posterior to anal opening. Primary and secondary spermaducts as in Fig. 3D.

Legs I, II shaped as in male. Legs IV with ambulacral disc reaching midlevel of anal opening. Tarsi III, IV 54–55 and 72–75 long (Figs. 5F, G). Length of solenidia: σ I 62–68, σ III 32–35, ϕ III 57–62, ϕ IV 47–52.

Differential diagnosis. The new species *Analges arachnotherae* sp. n. belongs to the *chelopus* species group in having chela-shaped legs III in heteromorph males. Based on the structure of legs III in heteromorph males (rounded outer margin of trochanter, bidentate process of femur, distal end of femur nearly twice as wide as proximal end), this mite is closest to *Analges nitzschi* Haller, 1878. All forms of *Analges arachnotherae* males differ from *A. nitzschi* in having the adanal shield strongly narrowed anterior part (Figs. 2, 3A); heteromorph males differ in having a larger humeral spine, about half as long as trochanter III, and the additional spine of femoral process situated closer to the apex than to base of this process; females are distinguished by longer setae *4a* extending to anal opening. In males of *Analges nitzschi*, the adanal shield is strongly widened in the anterior part; in heteromorph males, the length of humeral spine is about one quarter the length of trochanter III, and the additional spine of femoral process is situated near its base; in females, setae *4a* do not reach the level of anal opening.

Comments on the check-list of *Analges* species

The checklist (Table 1) includes valid names of *Analges* species, new and previously established synonyms, and type hosts according to the recent list of the birds of the world (Gill and Donsker 2018). Comments given below discuss newly established synonyms, new names, some complicated taxonomic cases and questionable host associations. Names treated as synonyms are given in the original format, i.e. with an original generic name. The "References" column in Table 1 includes only references to corresponding original descriptions, except for a few special cases. Misidentifications are mentioned for those cases where mite species were carefully described and illustrated in well-known taxonomic works. For valid species, only type hosts are given; for redescriptions that are misidentifications, a reported host is indicated. The present work does not have the goal of providing an exhaustive list of references to all valid species; synonymies for most European species described in 19th century can be found in Canestrini and Kramer (1899), Oudemans (1937) and Mironov (1985). Species groups of mites are applied according to characters given in the generic diagnosis herein.

Analges bidentatus Giebel, 1871. This species, apparently restricted to the Dunnock *Prunella*

modularis (Linnaeus), was described independently by three different authors. It was the first described species in which heteromorph males have three spines on femur III, often visible as two spines, because contours of dorsal and ventral spines often overlap. That is why it was misidentified with other species (*A. pachycnemis*, *A. tridentulatus*, *A. sturninus*) having a similar structure of spines and reported from other hosts (Haller 1882 Berlese, 1886, Canestrini and Kramer 1899).

Analges calcaratus Mégnin et Trouessart, 1887 stat. n. originally described as *Analges bidentatus calcaratus* Mégnin et Trouessart, 1887 from *Eutoxares aquila* Reichenbach (Apodiformes: Trochilidae) is given here a full species status. Finding of this species on a hummingbird host is quite probably a case of accidental contamination.

Analges chlorocichlae nom. nov., stat. n. This species, provided here with a new name, was originally described as a subspecies *Analges corvinus minor* Gaud et Mouchet, 1959 nom. preocc. from *Chlorocichla simplex* (Hartlaub) (Pycnonotidae) in Cameroon (Gaud and Mouchet, 1959). This name *minor* was preoccupied by *Analges macropus minor* Zimmermann, 1894 from *Pyrrhula pyrrhula* (Linnaeus) (Fringillidae).

Analges corvinus Mégnin, 1877. This species originally described from the Black Crow *Corvus corone* Linnaeus (Corvidae) in France is widely distributed on various corvids of the genera *Corvus* Linnaeus and *Coloeus* Kaup (Robin and Mégnin 1877; Canestrini and Kramer 1899; Mironov, 1985). However, it cannot be excluded that it is a complex of cryptic species, and its junior synonym *A. mawkowskyi* Zimmermann 1894 might represent a separate species.

Analges hamatus Trouessart, 1899. Host association of this species with a pigeon *Ptilinopus pulchellus* (Temminck) (Columbiformes: Columbidae) in New Guinea (Trouessart 1899) is quite probably a case of accidental contamination.

Analges macropus Zimmermann, 1894. This species associated with the Bullfinch *Pyrrhula pyrrhula* was described independently by three different authors (Zimmermann 1894; Tafner 1905; Gaud 1974). Additionally, this species was misidentified when reported and figured by Sohn and Noh (1994) from the same host under the names *A. corvinus* Mégnin, 1877 and *A. sturnae* Fritsch, 1952. The latter name is unavailable, because it is used in an unpublished thesis of Fritsch (1952).

Analges magellanicus Cooreman, 1953 stat. n. This species was originally described as the subspe-

cies *A. corvinus magellanicus* Cooreman, 1953 from *Turdus falcklandii magellanicus* King (Turdidae) in Argentina (Cooreman 1953). Although only leg III of heteromorph male was figured, the structure of tarsus III with distinct process finger-like process bearing seta *w* indicates that this mite is obviously not related to *A. corvinus* but is probably very close to *A. turdinus* Mironov, 1985.

Analges mucronatus (Buchholz, 1869). This species was originally described from the azure tit *Cyanistes caeruleus* (Linnaeus) (Paridae) in Germany (Buchholz 1869). Heteromorph males of this species are unmistakable because the terminal membrane is modified into a narrow finger-like process with the tip curved ventrally. It is quite possible that *Acarus avicularum* De Geer, 1778, described only from females from *Parus major* Linnaeus (Paridae) (De Geer 1778), is the senior synonym of this species, because *A. mucronatus* is common on both host species in Europe (Mironov 1996, 1997).

Analges nitzschi Haller, 1878. This species was described twice in the same work; the homeomorph male was described as *A. coleopteroides* Haller, 1878 and even placed in another “subgenus” (Haller 1878: 70, 74). In subsequent papers, Haller (1882) and Trouessart (1885) used the incorrect spelling *A. coleopratus* for the latter “species”.

Analges passerinus (Linnaeus, 1758). This oldest feather mite species was established by Linnaeus (1758) based on the mite “*Acarus avium*” described by De Geer (1740: 351, tab. 1, figs. 1, 2) before publishing of the 10th edition of the “Systema Naturae”. In his primary work, De Geer (1740: 351, tab. 1, figs. 1, 2) mentioned only one host, “Bofincka (*Fringilla*)”, that in the old Swedish means the Chaffinch, *Fringilla coelebs*. Nevertheless, Linnaeus gave rather uncertain definition of host range as various passerines (“*Passeribus variis*”), which further introduced additional problems for experts in clear determination of this species. Later on, De Geer (1778: 109, pl. 6, fig. 12) redescribed this mite already under the name *Acarus passerinus* referring its authority to Linnaeus, confirmed its correspondence to his “*Acarus avium*” and provided suitable enough drawing of heteromorph male (repeated the drawing from the primary paper), allowing univocal recognition of this species even from the modern point of view. This male had hypertrophied legs III with rather strongly enlarged trochanter, femur and genu, tarsi III with distinct finger-like process bearing seta *w*, and opisthosoma with a pair of small leaf-

like terminal lamellae with acute apices and curved laterally. The latter character is a unique feature of *A. passerinus*. It is interesting to add, in this later publication, De Geer (1778) wrote that he found this mite in 1740 “*sur des Moineaux et des Pinçons*” that means: on the House Sparrow *Passer domesticus* and the Chaffinch *Fringilla coelebs*. Since, the Chaffinch was the only host of *A. passerinus* mentioned in the primary description, although before publishing of the “Systema Naturae” (Linnaeus, 1758), *F. coelebs* should be certainly considered as a type host.

In his work on the genus *Dermaleichus*, Koch (1841: heft 33, Nos. 11, 12) considered this mite species under the name “*Dermaleichus passerinus* (De Geer)” but his figures certainly showed some distinctly different *Analges* species that lacked a finger-like process on tarsi III. At the same time *Dermaleichus fringillarum* Koch, 1841, described in the same work from *Fringilla montifringilla* Linnaeus, clearly corresponded to *A. passerinus* in modern sense. Robin and Mégnin (1877: 499, pl. 26, 1–4) gave one more redescription of *A. passerinus* and noted the correspondence of its descriptions in both papers by De Geer (1740, 1778). Surprisingly, Robin and Mégnin applied their own names as the authors of *A. passerines*, although they clearly noted that their interpretation of this species was based on Linnaeus. Berlese (1882: fasc. 15, No. 1) also provided adequate drawings of *A. passerinus*, referred its authority to Linnaeus, and synonymized *D. fringillarum* Koch 1841 with it.

Nevertheless, Trouessart (1885) considered that *A. passerinus* should be referred to De Geer (1778) rather than to Linnaeus (1758). It is only possible to suggest that he considered the mites described by Linnaeus (1758) and De Geer (1778) to be different species. Considering complicated taxonomic cases in acarology of the 1805–1850s, Oudemans (1937) further entangled the situation by recognizing, in fact, two species named “*Analges passerines*”. The first *A. passerinus* was referred to Nitzsch (1818), who established the genus *Analges*, rather than to Linnaeus or De Geer, and the second was referred to Linnaeus (1758), but Oudemans stressed that it is not a type of the genus *Analges*. Further, when the genus *Analgopsis* was established twice in two different publications, in the work of Trouessart (1919) the type species was declared as *A. passerinus* (Linnaeus, 1758), and Trouessart and Berlese (1919) designated it as *A. passerinus* (De Geer, 1778). In spite of confusions in authorities and interpretations of *A. passerinus*

arisen in the 19th century, researchers of the 20th century, relying on relatively good descriptions that correspond well with each other (De Geer 1778; Robin and Mégnin 1877; Berlese 1882: fasc. 15, No. 1), have come to a clear understanding of *A. passerinus* (Gaud 1974; Mironov 1985).

Additionally, *A. passerinus* was figured and briefly described in the thesis of Su (2014: 37, 39) under the wrong names “*A. sittae* Mironov, 1985” and “*A. spini* Su, 2014”. The latter name is unavailable, because it was proposed in the thesis, which is considered an unpublished work.

Analges picicola Černý et Schumilo, 1973. This mite was described for the first time under the name *Analges unidentatus* Zimmermann, 1894 from *Sitta europaea* Linnaeus (Sittidae) in Germany (Zimmermann, 1894). However, this name was preoccupied by *A. unidentatus* Berlese, 1886 described from *Monticola solitarius* (Linnaeus) (Muscicapidae) in Italy (Berlese 1886). Trouessart (1894) suggested that the species described by Zimmermann could be a junior synonym of *A. digitatus* Haller, 1882 because both of them had a very characteristic long spur on femora III in heteromorph males. Much later, this mite was described under the name *Analges picicola* from the Grey-headed Woodpecker *Picus canus* Gmelin, JF (Piciformes: Picidae) in Moldova (Černý and Schumilo 1973) that was obviously the result of accidental or natural contamination. Finally, it was described once more under the name *A. sittae* Mironov, 1885 from its common host, *S. europaea*.

Analges sphaeropus Zimmermann, 1894. This species was described from the Hawfinch *Coccothraustes coccothraustes* (Linnaeus) in Germany (Zimmermann 1894). Trouessart (1894) criticized the species descriptions by this author, which were not accompanied by any drawings, and synonymized this name with *A. corvinus* Mégnin, 1877, a species distributed on corvids. It is interesting to note that Trouessart (1894: fig. C) figured leg III of his “*A. corvinus*” from the hawfinch with a large hemispherical lateral inflation of the femur, which is a very characteristic diagnostic feature in heteromorph males of *A. sphaeropus*.

Analges spiniger Giebel, 1871. This species was originally described from *Hippolais icterina* (Vieillot) (Acrocephalidae) (= *Sylvia hippolais*) in Germany (Giebel 1871) based on a heteromorph male. Surprisingly, this species is also widely distributed on warblers of the genus *Sylvia* Scopoli (Sylviidae) (Gaud, Till 1961; Mironov 1985, 1996, 1997). Heteromorph males of this species easily

differ from other species of the *chelopus* group in having a very long hook-shaped humeral spine comparable in length to trochanter III. Further, this species was described once more as *A. clavipes* Berlese, 1882 from a heteromorph male collected in Italy from *Motacilla ficedula* Linnaeus nom. dubium, perhaps, meaning some flycatcher (Muscicapidae) or sylviid babbler (Sylviidae); homeomorph males of this species were described under the name *A. incertus* Berlese, 1882 from the same host (Berlese 1882: fasc. 15, Nos. 3 and 4, respectively). Dubinin (1953: 60, fig. 8δ) used the wrong spelling “*A. claviger*” for the first species of Berlese. Canestrini and Kramer (1899: 87) erroneously suggested that *A. clavipes* and *A. incertus* are junior synonyms of *Analges chelopus*. However, the descriptions of *A. spiniger* by Giebel (1871: 496, pl. 7, fig. 6) and *A. clavipes* by Berlese (1882: fasc. 15, No. 3) clearly show a large hook-shaped humeral spine and femur III with a very thin neck-like base, while in *A. chelopus*, restricted to the Bluethroat *Luscinia svecica*, the humeral spine is very short and the base of femur III is approximately half as wide as distal part of this segment (Mironov 1985: 163, fig. 1).

Analges tetracentros Trouessart, 1899. Host association of this species with a parrot *Psephotus haematonotus* (Gould) (Psittaciformes: Psittaculidae) in Australia (Trouessart 1899) is quite probably a case of accidental contamination.

Analges trouessarti Mironov nom. n. This species, provided here with a new name, was originally described as *Analges pollicipatus* Trouessart, 1899 nom. preocc. from *Cooua caerulea* (Linnaeus) (Cuculiformes: Cuculidae) in Madagascar (Trouessart 1899). This specific name is preoccupied by *Analges pollicipatus* Haller, 1882 described from *Prunella modularis* (Linnaeus) (Prunellidae) (Haller, 1882) (see above comments on *A. bidentatus*). Finding of this species on a cuckoo of is quite probably a case of accidental contamination.

In addition to valid names and synonyms listed above and in Table 1, it is necessary to list here some unavailable names of new species, which were provided with relatively good description and illustrations, to avoid their subsequent using by investigators.

Unavailable names:

Analges alba Su, 2014 from *Motacilla alba* Linnaeus (Motacillidae) in China (Su 2014: 39, fig. XIIIc, d).

Analges argentauris Su, 2014 from *Leiothrix argentaurus* (Hodgson) (Leiothrichidae), China (Su 2014: 36, fig. XIIIa, b).

Analges humulus Trouessart in: Gaud and Petitot (1948) from *Dicaeum* sp. (Dicaeidae) in Vietnam (Gaud and Petitot 1948: 340).

Analges merula Su, 2014 from *Turdus merula* Linnaeus (Turdidae) in China (Su 2014: 38, figs. XIIIa, b, XXXb, c, d, XXXIa, b, c, d).

Analges monticolus Su, 2014 from *Pardaliparus venustulus* (Swinhoe) (Paridae) in China (Su 2014: 40, figs. IIc, d, XXXVIIb, c, XXXIXa, b, c, d).

Analges spinus Su, 2014 from *Spinus spinus* (Linnaeus) (Fringillidae) in China (Su 2014: 37, figs. VII c, d, f).

Analges sturnae Fritsch, 1952 from *Sturnus vulgaris* Linnaeus (Sturnidae) in Germany (Fritsch 1952: 110, figs. 43d, e).

ACKNOWLEDGEMENTS

The author thanks Prof. Barry M. OConnor (Museum of Zoology of the University of Michigan, Ann Arbor, USA) for his useful comments on some taxonomic questions, Dr. Mark Judson (the Museum National d'Histoire Naturelle, Paris, France) for lending specimens from the Trouessart collection and Dr. Heather C. Proctor (University of Alberta, Edmonton, Canada) for critically reviewing the manuscript. The study was supported by the Russian Foundation for Basic Research (RFBR Grant № 16-04-00486).

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Table 1
World checklist of *Analges* species

	Species	Species group	Type host	Host family	Type locality	Reference
1	<i>A. acanthitibius</i> Mironov, 1985	—	<i>Acrocephalus schoenobaenus</i> (Linnaeus)	Acrocephalidae	Russia: Kaliningrad Region	Mironov 1985: 169, fig. 4 (3, 4)
2	<i>A. affinis</i> Haller, 1878	—	<i>Tichodroma muraria</i> (Linnaeus)	Tichodromidae	Germany	Haller 1878: 75, fig. 15
3	<i>A. allourus</i> Gaud, 1977	—	<i>Acridotheres tristis</i> (Linnaeus)	Sturnidae	St. Helene Island	Gaud 1977: 261, figs. 102, 103a–c
4	<i>A. anthi</i> Mironov, 1985	p	<i>Anthus trivialis</i> (Linnaeus)	Motacillidae	Russia: Kaliningrad Region	Mironov 1985: 183, fig. 11 (1, 2)
5	<i>A. arachnotherae</i> sp. n.	ch	<i>Arachnothera magna</i> (Hodgson)	Nectariniidae	Vietnam	Present work
6	<i>A. beaucournui</i> Gaud, 1974	—	<i>Troglodytes troglodytes</i> (Linnaeus)	Troglodytidae	France	Gaud 1974: 721, fig. 1a, b
7	<i>A. behbehanii</i> Gaud et Al-Taqi, 1975	p	<i>Locustella luscinioides</i> (Savi)	Locustellidae	Kuwait	Gaud and Al-Taqi 1975: 166, fig. 1
8	<i>A. berlesii</i> Mironov, 1985 ¹	—	<i>Acrocephalus arundinaceus</i> (Linnaeus)	Acarocephalidae	Russia: Kaliningrad Region	Mironov, 1985: 168, fig. 3 (7, 8)
	= <i>A. bidentatus</i> Giebel, 1871 (misident.)	—	<i>Acrocephalus arundinaceus</i> (Linnaeus)	Acarocephalidae	Italy	Berlese 1882: fasc. 24, No. 9
9	<i>A. bidentatus</i> Giebel, 1871 ¹	—	<i>Prunella modularis</i> (Linnaeus)	Prunellidae	Germany	Giebel 1871: 496
	= <i>A. pollicipatus</i> Haller, 1882	—	<i>Prunella modularis</i> (Linnaeus)	Prunellidae	Germany	Haller 1882: 54, taf. V, fig. 5
	= <i>A. accentorinus</i> Jucci, 1925	—	<i>Prunella modularis</i> (Linnaeus)	Prunellidae	Italy	Jucci 1925: 80, figs. I–III
	= <i>A. pachycnemis</i> Giebel, 1871 (misident.)	—	<i>Prunella modularis</i> (Linnaeus)	Prunellidae	Italy	Berlese 1886: fasc. 24, No. 10
10	<i>A. calcaratus</i> Méglin et Trouessart, 1887 stat. n. ¹	ch	<i>Eutoxares aquila</i> Reichenbach ²	Trochilidae	”Nouvelle Grenade”	Méglin and Trouessart 1887: 130
11	<i>A. cercodons</i> Gaud et Mouchet, 1959	p	<i>Cossypha cyano-campter</i> (Bonaparte)	Muscicapidae	Cameroon	Gaud and Mouchet 1959 : 156, fig. 3B
12	<i>A. certhiae</i> Haller, 1878	p	<i>Certhia familiaris</i> Linnaeus	Certhiidae	Germany	Haller 1878:76
13	<i>A. cettiae</i> Sohn, 1995	—	<i>Horornis borealis</i> (Campbell, CW) (= <i>Cettia diphone borealis</i>)	Certhiidae	South Korea	Sohn 1995: 27, figs. 1–4, 13

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14	<i>A. chelopus</i> (Hermann, 1804)	ch	<i>Luscinia svecica</i> (Linnaeus)	Muscicapidae	Germany	Hermann 1804: 82, taf. 3, fig. 7; Giebel 1871: 494, taf. V, fig. 5
15	<i>A. chlorocichlae</i> Mironov nom. n. ¹	—	<i>Chlorocichla</i> <i>simplex</i> (Hartlaub)	Pycnonotidae	Cameroon	Present work
	= <i>A. corvinus minor</i> Gaud et Mouchet, 1959 nom. preoc. – non <i>A. minor</i> Zimmermann, 1894	—	<i>Chlorocichla</i> <i>simplex</i> (Hartlaub)	Pycnonotidae	Cameroon	Gaud and Mouchet, 1959: 157, fig. 4A
16	<i>A. cincli</i> Mironov, 1985	—	<i>Cinclus cinclus</i> (Linnaeus)	Cinclidae	Russia: Kaliningrad Region	Mironov 1985: 161, fig. 1 (1–3)
17	<i>A. corvinus</i> Méglin, 1877 (in: Robin and Méglin) ¹	—	<i>Corvus corone</i> Linnaeus	Corvidae	France	Robin and Méglin 1877: 503
	= <i>A. makowski</i> Zimmermann, 1894	—	<i>Coloeus monedula</i> (Linnaeus)	Corvidae	Germany	Zimmermann 1894: 219
18	<i>A. cnemidotus</i> Trouessart, 1899	—	<i>Pipilo maculatus</i> <i>megalonyx</i> Baird, SF (= <i>Pipilo megalonyx</i>)	Passerellidae	USA: California	Trouessart 1899: 29
19	<i>A. digitatus</i> Haller, 1882	p	<i>Setophaga striata</i> (Forster, JR)	Parulidae	Canada	Haller 1882: 52, pl. 5, figs. 1–5
20	<i>A. dubinini</i> Mironov, 1985	p	<i>Panurus biarmicus</i> (Linnaeus)	Panuridae	Moldova	Mironov 1985: 180, fig. 9 (3, 4)
21	<i>A. emarginatus</i> Trouessart, 1899	—	<i>Hartlaubius auratus</i> (Statius Müller, PL) (= <i>H. madagas-</i> <i>cariensis</i>)	Sturnidae	Madagascar	Trouessart 1899: 29
22	<i>A. eophoniae</i> Sohn, 1995	—	<i>Eophona migratoria</i> <i>migratoria</i> Hartert	Fringillidae	South Korea	Sohn 1995: 28, fig. 5–8, 14
23	<i>A. eurygaster</i> Gaud et Mouchet, 1959	—	<i>Dicrurus adsimilis</i> (Bechstein)	Dicruridae	Cameroon	Gaud and Mouchet 1959 : 158, fig. 5A
24	<i>A. faraji</i> Gaud, 1958	p	<i>Hippolais polyglotta</i> (Vieillot)	Acrocephalidae	Morocco	Gaud 1958: 35, fig. 7D
25	<i>A. hamatus</i> Trouessart, 1899	—	<i>Ptilinopus pulchellus</i> (Temminck) ²	Columbidae	New Guinea	Trouessart 1899: 29
26	<i>A. himalayanus</i> Dabert, Mironov et Janiga, 2018	—	<i>Prunella himalayana</i> (Blyth)	Prunellidae	Kirghizstan	Dabert <i>et al.</i> 2018: 2290, figs. 1–3, 5A, D, 7C
27	<i>A. hoplophorus</i> Trouessart et Neumann, 1888	—	<i>Gracula robusta</i> Salvadori	Sturnidae	New Guinea	Trouessart and Neumann 1888: 360
28	<i>A. integer</i> Giebel, 1871	—	<i>Lanius excubitor</i> Linnaeus	Laniidae	Germany	Giebel, 1871: 496
	= <i>Dermaleichus</i> <i>laniorum</i> Koch, 1842 nom. nud. (?)	—	<i>Lanius excubitor</i> Linnaeus	Laniidae	Germany	Koch 1842: 125; Giebel 1871: 496

29	<i>A. lanii</i> Sohn, 1995	p	<i>Lanius cristatus lucionensis</i> Linnaeus	Laniidae	South Korea	Sohn 1995: 31, figs. 9–12,15
30	<i>A. leiops</i> Gaud et Mouchet, 1959	—	<i>Bleda eximius</i> (Hartlaub)	Pycnonotidae	Cameroon	Gaud and Mouchet 1959: 159, fig. 5B
31	<i>A. longispinosus</i> Tyrrell, 1882	ch	<i>Plectrophenax nivalis</i> (Linnaeus)	Calcariidae	Canada	Tyrrell 1882: 45, pl. 1, figs. 1, 2
32	<i>A. lusciniae</i> Mironov, 1985	—	<i>Luscinia luscinia</i> (Linnaeus)	Muscicapidae	Russia: Kaliningrad Region	Mironov 1985: 169, fig. 4 (1, 2)
33	<i>A. macropus</i> Zimmermann, 1894 ¹	—	<i>Pyrrhula pyrrhula</i> (Linnaeus)	Fringillidae	Germany	Zimmermann 1894: 215
	= <i>A. macropus minor</i> Zimmermann, 1894	—	<i>Pyrrhula pyrrhula</i> (Linnaeus)	Fringillidae	Germany	Zimmermann 1894: 216
	= <i>A. intermedius</i> Tafner, 1905	—	<i>Pyrrhula pyrrhula</i> (Linnaeus)	Fringillidae	Hungary	Tafner 1905: 140, figs. 1, 2
	= <i>A. pachysphyrus</i> Gaud, 1974	—	<i>Pyrrhula pyrrhula</i> (Linnaeus)	Fringillidae	France	Gaud 1974: 733, figs. 3b, 4b
	= <i>A. corvinus</i> Méglin, 1877 (misident.)	—	<i>P. pyrrhula rosacea</i> Seebohm	Fringillidae	South Korea	Sohn and Noh 1994: 82, figs. 5–10
	= <i>A. sturnae</i> Fritsch, 1952 unavailable name (misident.)	—	<i>P. pyrrhula rosacea</i> Seebohm	Fringillidae	South Korea	Sohn and Noh 1994: 84, figs. 23, 24
34	<i>A. magellanicus</i> Cooreman, 1953 stat. n. ¹	p	<i>Turdus falcklandii magellanicus</i> King, PP	Turdidae	Argentina: Tierra de Fuego	Cooreman 1953: 3, fig. 2
35	<i>A. metallicus</i> Shereef et Rakha, 1981	—	<i>Hedydipna metallica</i> (Lichtenstein, MHK)	Nectariniidae	Egypt	Shereef and Rakha 1981: 78, figs. 1, 2
36	<i>A. microaspis</i> Chirov et Mironov, 1983	—	<i>Phoenicurus erythrogastrus</i> (Güldenstädt)	Muscicapidae	Kirghizia	Chirov and Mironov 1983: 47, fig. 1a-b
37	<i>A. mucronatus</i> (Buchholz, 1869) ¹	p	<i>Cyanistes caeruleus</i> (Linnaeus)	Paridae	Germany	Buchholz 1869: 46, figs. 32, 33
	= <i>Acarus avicularum</i> De Geer, 1778 (?)	—	<i>Parus major</i> Linnaeus	Paridae	Europe (Netherlands, Sweden?)	De Geer 1778: 107, pl. 6, fig. 9.
38	<i>A. nitzschi</i> Haller, 1878 ¹	ch	<i>Emberiza citrinella</i> Linnaeus	Emberizidae	Germany	Haller 1878: 70, fig. 12
	= <i>A. coleopteroides</i> Haller, 1878	ch	<i>Emberiza citrinella</i> Linnaeus	Emberizidae	Germany	Haller 1878: 74, fig. 14
	= <i>A. coleopratus</i> Haller, 1878 (lapsus)	ch	<i>Emberiza citrinella</i> Linnaeus	Emberizidae	Germany	Haller 1882: 54; Trouessart, 1885: 54
39	<i>A. odontothyrus</i> Gaud, 1974	—	<i>Saxicola torquatus</i> (Linnaeus)	Muscicapidae	France	Gaud 1974: 733, figs. 3a, 4a
40	<i>A. opisthostriatus</i> Mironov, 1985	—	<i>Acrocephalus scirpaceus</i> (Hermann)	Acrocephalidae	Russia: Kaliningrad Region	Mironov 1985: 172, fig. 5 (1, 2)

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41	<i>A. oscinum</i> Koch, 1841 ¹	—	<i>Motacilla alba</i> Linnaeus	Motacillidae	Germany	Koch 1841: heft 33, No. 14, 15
	= <i>A. pachycnemis</i> Giebel, 1871	—	<i>Motacilla alba</i> Linnaeus	Motacillidae	Germany	Giebel 1871: 495
	= <i>A. socialis</i> Giebel, 1871 (?)	—	<i>Motacilla alba</i> Linnaeus	Motacillidae	Germany	Giebel 1871: 498
42	<i>A. pallula</i> Trouessart, 1899	p	<i>Humblotia flavirostris</i> Milne-Edwards et Oustalet	Muscicapidae	Madagascar	Trouessart 1899: 30
43	<i>A. paricola</i> Chirov et Mironov, 1983	p	<i>Cyanistes cyanus</i> (Pallas)	Paridae	Kirghizia	Chirov and Mironov 1983: 50, fig. 2a-b.
44	<i>A. passerinus</i> (Linnaeus, 1758) ¹	p	<i>Fringilla coelebs</i> Linnaeus	Fringillidae	Europe	Linnaeus 1758: 616; De Geer 1778: 109, pl. 6, fig. 12; 1783: 47, pl. 6, fig. 12; Robin and Mégnin 1877: 499, pl. XXVI, figs. 1–4; Mironov 1985:175, fig. 7 (1, 2)
	= <i>A. fringillarum</i> (Koch, 1841)	p	<i>Fringilla montifringilla</i> Linnaeus	Fringillidae	Germany	Koch 1841: heft 33, No. 12, 13
	= <i>A. sitta</i> Mironov, 1985 (misident.)	p	<i>Fringilla montifringilla</i> Linnaeus	Fringillidae	China	Su 2014: 39, fig. XVI a–d
	= <i>A. spinus</i> Su, 2014 unavailable name (misident.)	p	<i>Spinus spinus</i> (Linnaeus)	Fringillidae	China	Su 2014: 37, fig. VII c, d, f
45	<i>A. pauliani</i> Gaud, 1952	p	<i>Copsychus albospecularis pica</i> Pelzeln	Muscicapidae	Madagascar	Gaud 1952: 82, fig. II
46	<i>A. picicola</i> Černý et Schumilo, 1973 ¹	p	<i>Picus canus</i> Gmelin, JF ²	Picidae	Moldova	Černý and Schumilo 1973: 327, fig. 1
	= <i>A. unidentatus</i> Zimmermann, 1894 nom. preoc. – non <i>A.</i> <i>unidentatus</i> Berlese, 1886	p	<i>Sitta europaea</i> Linnaeus	Sittidae	Germany	Zimmermann 1894: 213
	= <i>A. sitta</i> Mironov, 1985	p	<i>Sitta europaea</i> Linnaeus	Sittidae	Russia: Kaliningrad Region	Mironov 1985: 182. fig. 9 (1, 2)
47	<i>A. pinicoli</i> Mironov, 1985	p	<i>Pinicola enucleator</i> (Linnaeus)	Fringillidae	Russia: Kaliningrad Region	Mironov 1985: 175, fig. 8 (1, 2)
48	<i>A. poppei</i> Haller, 1882	p	<i>Loxia pytyopsittacus</i> von Borkhausen	Fringillidae	Germany	Haller 1882: 53
49	<i>A. roseate</i> Su, Wang et Liu, 2013	p	<i>Anthus roseatus</i> Blyth	Motacillidae	China	Su <i>et al.</i> 2013: 807, figs. 1–13

50	<i>A. schumiloae</i> Mironov, 1985	p	<i>Nucifraga</i> <i>caryocatactes</i> (Linnaeus)	Corvidae	Moldova	Mironov 1985: 177, fig. 8 (3, 4)
51	<i>A. scleropus</i> Gaud, 1974	ch	<i>Galerida cristata</i> (Linnaeus)	Alaudidae	Morocco	Gaud 1974: 734, fig. 4c
52	<i>A. slovakensis</i> Dabert, Mironov et Janiga 2018	—	<i>Prunella collaris</i> (Scopoli)	Prunellidae	Slovakia	Dabert <i>et al.</i> 2018: 2294, figs. 4, 5B, 6B-G, 7B
53	<i>A. sphaeropus</i> Zimmermann, 1894 ¹	—	<i>Coccothraustes</i> <i>coccothraustes</i> (Linnaeus)	Fringillidae	Germany	Zimmermann 1894: 219
	= <i>A. corvinus</i> (Méglin, 1877) (mesident.)	—	<i>Coccothraustes</i> <i>coccothraustes</i> (Linnaeus)	Fringillidae	Germany	Trouessart 1894: CCXLVI, fig. c
54	<i>A. spiniger</i> Giebel, 1871 ¹	ch	<i>Hippolais icterina</i> (Vieillot)	Acrocephalidae	Germany	Giebel 1871: 496, taf. V, figs. 6, 7.
	= <i>A. clavipes</i> Berlese, 1882	ch	<i>Motacilla ficedula</i> Linnaeus nom. dubium	Muscicapidae	Italy	Berlese 1882: fasc. 15, No. 3
	= <i>A. incertus</i> Berlese, 1882	ch	<i>Motacilla ficedula</i> Linnaeus nom. dubium	Muscicapidae	Italy	Berlese 1882: fasc. 15, No. 4
	= <i>A. claviger</i> Berlese, 1882 (lapsus)	ch	not mentioned	—	—	Dubinina 1953: 60, fig. 86
55	<i>A. sturninus</i> Gaud, 1974	—	<i>Sturnus vulgaris</i> Linnaeus	Sturnidae	France	Gaud 1974: 735, fig. 3d, 4d
	= <i>A. sturnae</i> Fritsch, 1952 unavailable name	—	<i>Sturnus vulgaris</i> Linnaeus	Sturnidae	Germany	Sohn and Noh 1994: 83, figs. 23, 24
56	<i>A. tergisetis</i> (Grube, 1859)	—	<i>Pica pica</i> (Linnaeus)	Corvidae	Germany	Grube 1859: 64, fig. 7, 8
57	<i>A. tetracentros</i> Trouessart, 1899	p	<i>Psephotus haema-</i> <i>tonotus</i> (Gould) ²	Psittaculidae	Australia	Trouessart 1899: 30
58	<i>A. ticotico</i> Pedroso et Hernandes, 2018	—	<i>Zonotrichia capensis</i> (Statius Muller)	Passerellidae	Brazil	Pedroso and Hernandes 2018: 235, figs. 1–3
59	<i>A. tridentulatus</i> Haller, 1882	—	<i>Alauda arvensis</i> Linnaeus	Alaudidae	Germany	Haller 1882: 54, taf. 5, fig. 4
	= <i>A. bidentatus</i> Giebel, 1861 (misident.)	—	<i>Alauda arvensis</i> Linnaeus	Alaudidae	Germany	Haller 1882: 54, taf. 5, fig. 2
60	<i>A. trouessarti</i> Mironov nom.n. ¹	—	<i>Coua caerulea</i> (Linnaeus) ²	Cuculidae	Madagascar	Present work
	= <i>Analges pollicipatus</i> Trouessart, 1899 nom. preocc. – non <i>A. pollicipatus</i> Haller, 1882	—	<i>Coua caerulea</i> (Linnaeus) ²	Cuculidae	Madagascar	Trouessart 1899: 31

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61	<i>A. turdinus</i> Mironov, 1985	p	<i>Turdus merula</i> Linnaeus	Turdidae	Moldova	Mironov 1985: 185, fig. 11 (3, 4)
	= <i>Dermaleichus turdinus</i> Koch, 1842 nom. nud. (?)	—	<i>Turdus viscivorus</i> Linnaeus	Turdidae	Germany	Koch 1842: 125
62	<i>A. tyranni</i> Tyrrell, 1882	—	<i>Tyrannus tyrannus</i> (Linnaeus) (= <i>T. carolinensis</i>)	Tyrannidae	Canada	Tyrrell 1882: 45, pl. 1, fig. 3
63	<i>A. unidentatus</i> Berlese, 1886	p	<i>Monticola solitarius</i> (Linnaeus) (= <i>Petrocyncla cyanea</i>)	Muscicapidae	Italy	Berlese, 1886: fasc. 24, No. 5
64	<i>A. vanasi</i> Mironov et Kopij, 1996	—	<i>Spreo bicolor</i> (Gmelin, JF)	Sturnidae	South Africa	Mironov and Kopij 1996: 259, figs. 1–3

Notes: ¹mite species provided with comments; ²questionable host association, (?)—questionable synonym. Species group designations: ch—*chelopus*, p—*passerinus*, dash (—)—species, presently not referred to any group.