Further observations on the Cheyletidae (Acari), with a key to the genera of the Cheyletinae and a list of all known species in the family

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Summary

A revised key to separate the subfamilies of the family Cheyletidae is provided and the subfamily Chelonotinae is newly defined. The genera of the Cheyletidae are defined, their habitats noted, and all known species are listed. A key to separate the genera of the Cheyletinae is presented. Problems relating to some of the genera are discussed but no new taxa are proposed.

Introduction

The family Cheyletidae LEACH, 1815, may roughly be separated into two assemblages, the free living predators and the animal associates, of which many are parasites. Although the dividing line between these groups is indeterminate, the obviously parasitic Acari can be recognized by bizarre modifications to their mouthparts and legs and by their reduced, or enhanced, setation (hypotrichy or neotrichy). Animal-associated species occur on birds, mammals or arthropods, and may damage birds, cats and dogs. Further, some induce allergies and papular dermatitis in humans (BRONSKINK and DE KREEK, 1976; KEH et al., 1987). Most parasitic, highly-derived forms have been assigned to seven subfamilies (FAIN et al., 1997). The predatory forms possess a more generalized body. They occur on plants, in the soil, in stored products and vertebrate nests, feeding on many mites and small insects. A few cheyletids are considered to be biological control agents, and one, Cheyletus eruditus (SCHRANK), is being used in commerce (GERSON and SMILEY, 1990). The Cheyletidae are cosmopolitan in distribution.

The modern taxonomic edifice of the Cheyletidae has been erected by BAKER (1949), VOLGIN (1969; English translation, 1987), and by SUMMERS and PRICE (1970). This robust construct, broadened and deepened during the intervening years, has remained vigorous to this day. SUMMERS and PRICE (1970) counted ca 50 genera and close to 190 species in the family; the total has since risen to about 75 genera and to more than 400 species. Of special note are the dozen vertebrate-associated genera described by FAIN (for their revision, see FAIN et al., 1997). Several regional treatments [TSENG (1977) for Formosa; CORPUZ-RAROS (1988 and former papers) for the Philippines; GERSON (1994) for Australia] were published. However, no recent revisions or summations of the family are at hand, nor is a key to all described genera available to interested students. Furthermore, the relevant literature is scattered in many, sometimes hard-to-get periodicals, placing yet another onus on the students. In a previous paper (FAIN et al., 1997) we studied the solenidiotaxy and chaetotaxy of the Cheyletidae and provided a key to its eight subfamilies. We also revised seven of these subfamilies and included keys to all their genera. The present paper deals with the largest subfamily, the Cheyletinae, includes brief diagnoses of all genera and provides a key for them. We also list all species in the family.

SUMMERS and PRICE (1970) remarked on the large number of monospecific genera in the family, believing that this may reflect on the small sample of the world cheyletid fauna which had been collected. Their hypothesis is strongly supported by two developments. Additional species in many of those genera are now known, and most of the genera described in the intervening period are monospecific. Many of those genera were collected off vertebrates, suggesting that their unique body forms may represent specific adaptations. Most radiation, however, seems to have taken place in the less specialized genera, e.g. Cheyletus with over 65 named species, Hemicheyletia with ca 35.

The Cheyletidae are best recognized by their fused chelicerae and the robust gnathosoma with a palpal thumb-claw complex (Fig 1a). The palpal tarsus often carries two comb-like (Fig 1b) and/or two sickle-like setae as well as a minute solenidion (Fig 1c). The palptibial claws (with or without teeth) are usually oriented horizontally. The palpfemur is the largest segment and is elbowed in midsection. The segmented peritremes are located on the stylophore; their individual segments are called links. SUMMERS and PRICE (1970) named the region behind the peritremes “tegmen” and the area in front of them “protegmen” (Figs 1a and 35). The dorsum of the Cheyletidae may, or may not, carry a pair of anterior eyes (Figs 27a; 31; 45b). The dorsum is usually covered by one or more plates or shields (Fig 1a), which bear setae showing a bewildering diversity of form. Some are sim-
ple, slender (Fig 16b; 17; 21; 23), others are lanceolate or spatulate (Fig 1a); sometimes they occur in the shape of fans (fan-like or shell-like, Figs 12; 14; 28; 51), some appear squamiform (Figs 26 and 55), and there may also be setae which look like the horns of stags (Figs 15, 49 and 53). In most cases the shape of the dorsal setae is relatively uniform for each species, although they may be heteromorphic or dissimilar (Figs 15; 26; 48). Tarsus I carries a solenidion (oi) which is often accompanied by a guard seta (Fig 1e). Solenidia (without guard setae and much reduced in size) also occur on tarsus II; tibiae I and II (op), and at least on genu I (o). In some genera of Cheyletinae the males carry an additional large solenidion (oo) on tarsi III and IV. Most species bear claws and/or empodia on their tarsi (Fig 1a); exceptions to this rule are of major taxonomic importance (Figs 51 and 52). The aedeagus is usually posterodorsal, sometimes dorsal in parasitic species. As noted, the vertebrate-associated genera may show considerable divergence from this generalized scheme.

Many problems remain for future students. SUMMERS and PRICE (1970) noted the difficulties of assigning appropriate signatures to the dorsal setae. This stems from the considerable neotrichy prevalent in many species. GERSON (1994), SMILEY (1996) and CORPUS-Z-RAROS (1998) tried to apply the segmentally-based setal system proposed by KETHLEY (1990). However, it is not fully satisfactory (especially with neotrichous taxa) and was abandoned in favor of the former system developed by FAIN (1979d); the reader is referred to FAIN et al. (1997) for details of the system’s application to the cheyletids. Although this system of signatures is used in the present contribution, we believe that a thorough study of the cheyletid setal homology, as it develops through the immature stages, should be conducted. Another confounding problem is the occurrence of two forms of males in several cheyletids, especially in the genus Cheyletus. These are the homeomorph, similar to the female, and the heteromorph, which may be dissimilar. The latter possesses strongly elongated palpi within its greatly expanded mouthparts and seems to have a more sclerotized body. REGE (1974) argued that the aspect of the heteromorphic male in Cheyletus malaccensis Oudemans results from a post-ecdysis developmental anomaly, manifested as variable palp femur expansion. One of us (A.F.) has observed heteromorphic males of different sizes in the same habitat, suggesting continuous elongation and growth after ecdysis, including modifications of the gnathosoma. The matter becomes of systematic interest because several species (e.g. Cheyletus intrepidus Oudemans; C. truculentus Volgin and others) are known only as heteromorphic males. A different variation occurs in the male of Chelaracopsis moorei BAKER, which bears a hysteronal shield; that is absent in the female (Fig. 22c) (LEKPRAYOON and SMILEY, 1986).

One of us (A.F.) recently obtained and examined the type specimens of Dubininiola polelepis Volgin, formerly known only from Volgin’s brief 1969 description, and of Thiewkachela ratufi IDE and KETHLEY. This enables us to present the first-ever figure of D. polelepis (Fig. 45) and to provide additional data on both genera. Dubininiola has well-developed eyes. The peritremes are slightly arched, with four links on each side. All tarsi carry a unique, large and setulose, branched seta and two claws, those on leg I are minute. There are five pairs of delicately-setose genital setae, two pairs of similar anal setae, and two extra pairs of apparently-neotrichous, post-anal, squamate setae. Thiewkachela (formerly placed in the subfamily Chelonotinae, along with Chelonotus, Muricheyla and Promuricheyla) is similar to the latter two genera, but differs from both by lacking strong dorsal triangular processes on tarsi III-IV. This examination lead us to restrict the Chelonotinae to Chelonotus and to place the other three genera, temporarily, in the Cheyletinae. Additional problematic genera (Atrasachylus, Cheletoides and Metacheletoides) are also keyed out with the Cheyletinae. Other problems, restricted to specific genera, will be discussed in their appropriate context.

We begin by providing a key to the subfamilies of the Cheyletidae, slightly revised from FAIN et al. (1997). Only females are considered in these keys, because males are relatively rare and due to the dimorphism noted above. The importance of character-states like the shape of the dorsal setae and the presence/absence of dorsal shields for female systematics thus detracts from their application to the males.

Each genus and its habitat are then briefly characterized in standard terms and figured, and a list of all its named species is added. Genera and their species are arranged in alphabetical order. It must be emphasized that the present contribution is not intended to be a revision of the family, and we have abstained from making any formal changes (although pertinent suggestions were added). This paper is intended to be a “stocktaking” of the family Cheyletidae, as currently known. We deem this contribution to be a scaffold, compiled in order to encourage future work.

Key to the subfamilies of the family Cheyletidae (*)

1. Body with four pairs of well-developed legs ... 2
   - Body with three pairs of well-developed legs; legs IV vestigial or absent ....... Metacheyletinidae FAIN; only one genus, Metacheyletia FAIN (Fig. 65)
2. (1) Tarsi II with paired claws and rayed empodia; tarsi III and IV either with claws and rayed empodia or with empodia only; tarsus I with or without paired claws and empodia; tibia I with solenidion φ (except Apodicheles, which lacks this seta) .......... 3
   - Tarsi I-IV without claws but with feather-like empodia; tibia I without solenidion φ .............. Cheyletiellinae Volgin (Figs 76-78)
3. (2) Tarsi IV with paired claws and rayed empodia; dorsum with or without one or two median shields; idiosoma distally without lobe-like projections ... 4
- Tarsi IV with empodia but without claws; dorsum with three median shields; idiosoma distally with lobe-like projections .......................... Teinocheylinae FAIN; only one genus, *Teinocheylus* FAIN (Fig. 63)

4. (3) Idiosoma without contiguous dorsal shields covering or overlapping part of the ventral hysterosoma   ................................................................. 5

- Idiosoma with very large contiguous dorsal shields covering or overlapping part of the ventral hysterosoma. Chelonotinae VOLGIN; only one genus, Chelonotus BERLESE (Fig. 64)

5. (4) Gnathosoma modified, with ventral basal hooks and/or lateral hooks on palpal segments, or palpal segments reduced; solenidion cII on genu I replaced by a stellate seta ................................. 6

- Gnathosoma unmodified; without basal hooks (except in *Apodicheles*, Ornithocheylettinae, which has ventral hooks at the base of the gnathosoma); palpal segments normal, never reduced; genu I with solenidion cII ................................. 7

6. (5) Gnathosoma with very large lateral hook-like processes; palpi small, narrow, their tibiae and tarsi fused, forming a short segment with a thick comb-like seta; idiosoma and legs without processes; dorsum without neotrichial setae .......................... Criokerontinae SMILEY; only one genus, *Criokeron* VOLGIN (Fig. 79)

- Gnathosoma not as above; palpal tibial claw strongly hooked; without comb-like setae; palpi, idiosoma and legs with processes; dorsum may bear neotrichial setae ................................. Niheliae SMILEY (Figs 72-75)

7. (5) Gnathosoma poorly developed, but palpal claw strongly curved; no comb-like setae and/or eyes ........................ Ornithocheylettinae SMILEY (Figs 66-71)

- Gnathosoma well developed; palpal claw at most moderately curved, often with comb-like setae and/or eyes ........................ Cheyletinae VOLGIN

(*) The genera *Alliea* YUNKER (Fig. 19) and *Thryonomycheyla* FAIN were excluded from the above and the following keys. The former because only a male (for both *A. laruei* YUNKER and *A. prasadi* CORPUZ-RAROS) and an incomplete female (without gnathosoma, for *A. laruei*) were available, the latter because the female is unknown.

**Subfamily Cheyletinae FAIN**

The Cheyletinae is the largest subfamily in the family Cheyletidae. Its members occur on plants, in the soil, in bee hives, in the nests of rodents and birds, on the bodies of arthropods and commonly occur in stored food. The following key was constructed only to facilitate the separation of the genera, and does not reflect any perceived relationships.

1. With one pair of eyes ................................. 18
   - Without eyes ................................. 2

2. (1) Palpal tarsus with 1-2 comb-like setae ........................ 5
   - Palpal tarsus without comb-like setae ........................ 3

3. (2) Palpal claw with teeth; body ovoid; dorsum with one dorsal median shield and several ultralong setae ........................................ 4
   - Palpal claw edentate; body fusiform; without dorsal median shields, without ultralong setae ........................................ *Atarsachelys* THEWKE (Fig. 17)

4. (3) Palpal claw with a single tooth; palpal tarsus with a single stiff seta bearing vestigial teeth ................................. Cheletoidea ODEMANS (Figs 3-4)
   - Palpal claw with 2-7 basal teeth; stiff seta on palpal tarsus without vestigial teeth ................................. *Metacheletoidea* FAIN (Fig. 2)

5. (2) Tarsi III-IV without strong dorsal triangular processes ................................. 7
   - Tarsi III-IV with strong dorsal triangular processes ................................. 6

6. Palpal tarsus with 1 comb-like seta ................................. *Muricheyla* FAIN (Fig. 10)
   - Palpal tarsus with 2 comb-like setae ................................. *Promuricheyla* FAIN (Fig. 9)

7. (5) Palpal tarsus with 2 comb-like setae ........................ 13
   - Palpal tarsus with 1 comb-like seta ........................ 8

8. (7) Coxae I-II without lateral or posterior lobes ........................ 9
   - Coxae I-II with lateral or posterior lobes ........................ *Thewkachela* IDE and KETHLEY (Fig. 8)

9. (8) Dorsum with a propodosomal and a hysterosomal shield ................................. 11
   - Dorsum with only a propodosomal shield ................................. 10

10. (9) Coxae III and IV separated; solenidion cIII lacking ........................ *Eucheletopsis* VOLGIN (Fig. 5)
    - Coxae III and IV contiguous; solenidion cIII present ........................ *Cheletoopsis* ODEMANS (Fig. 6)

11. (9) Hysteronotal shield large, on entire hysteronotum, bearing regular and neotrichous setae ........................ 12
    - Hysteronotal shield small, restricted to suranal area, bearing only 2 pairs of slender setae ................................. *Cheletosoma* ODEMANS (Fig. 7)

12. (11) Lateral and median dorsal setae dissimilar; anus ventral; inner comb-like seta of palpal tarsus replaced by a small spinulate seta ................................. *Camincheyletus* SMILEY and WHITAKER (Fig. 13)
    - All dorsal setae similar; anus on a caudal lobe; inner comb-like seta of palpal tarsus replaced by a small smooth seta ................................. *Caudachelles* GERSON (Fig. 14)

13. (7) Body ovoid, peritremes arched forward or with short transverse arms, curving and descending backwards .................... *M. m. shajed.* ................................. 14
    - Body elongated, peritremes M-shaped ................................. *FAIN* YUNKER (Fig. 18)

14. (13) Dorsum with 2 shields, one on propodosoma, other on hysterosoma, peritremes arched or with short transverse links ................................. 15
    - Dorsum with only 1 shield, on propodosoma; peritremes not arched but with short transverse links ................................. *Cheletonella* WOMERSLEY (Fig. 11)
15. (14) Tarsus I with claws; palpal claw with at least 1 tooth, peritremes not arched forward, with short transverse links, descending backwards. 16 - Tarsus I without claws; palpal claws toothless; peritremes arched forward, curving backwards. Eutogenes BAKER (Fig. 12)

16. (15) Peritremes M-shaped or forming an inverted U; lateral dorsal setae slender to narrowly-spataulate. 17 - Peritremes usually with 3 short transverse links; lateral dorsal setae fan-like. Eucheyletia BAKER (Fig. 15)

17. (16) Posterior peritremal link abruptly bent inwards; tibial claw with 4-7 teeth. Hyllocheyleta FAiN (Fig. 16) - Posterior peritremal link not abruptly bent turned inwards; tibial claw with 1-4 teeth. Chelaeheles BAKER (*) (Fig. 21)

18. (1) Palpal tarsus with 2 comb-like setae. 29 - Palpal tarsus with 1 comb-like seta. 19

19. (18) Dorsum with at least 1 shield. 21 - Dorsum without shields, entirely striated. 20

20. (19) Body ovoid, coxae II and III separated by less than body width. Chelacheclaropsis ATTIAH (Fig. 20) - Body fusiform, coxae II and III separated by about body width. Chelaeheles BAKER (*) (Fig. 21)

21. (19) Dorsum with propodosomal and hysteronotal shields. 22 - Dorsum only with a propodosomal shield. Chelacaropsis BAKER (Fig. 22)

22. (21) Median hysteronotal shield large, bears several setae. 24 - Median hysteronotal shield small, without setae. 23

23. (22) Dorsal setae spatulate to fan-like; humerals similar to other dorsal setae. Chaletonata Womersley (Fig. 25) - Dorsal setae slender; humeral setae ultralong. Paracaropsis VOLGIN (Fig. 23)

24. (22) All tarsi with empodia and claws. 25 - All tarsi with empodia but without claws. Paramicrocheylea OLIVIER and THERON (Fig. 28)

25. (24) Body ovoid, coxae II and III separated by less than body width. 26 - Body fusiform, coxae II and III separated by more than body width. Neochelacheles Smiley and Williams (Fig. 27)

26. (25) Claws on legs II-IV with smooth hooks. 27 - Claws on legs II-IV with a basal process. Neocaropsis VOLGIN (Fig. 24)

27. (26) Claws on all tarsi of regular size; dorsal lateral and median setae similar. 28 - Claws on all tarsi minute or absent; dorsal and lateral setae dissimilar. Microcheylea VOLGIN (Fig. 26)

28. (27) Humeral setae similar to dorsal setae. Acaropsella VOLGIN (Fig. 30) - Humeral setae ultralong. Acaropsellina SUMMERS (Fig. 29)

29. (18) Dorsum with at least one shield. 30 - Dorsum without shields. Chelacheles BAKER (*) (Fig. 21)

30. (29) Dorsum with 2 or 3 shields. 32 - Dorsum with 1 shield. 31

31. (30) Palpal claw toothed only along basal half; dorsal setae mostly rodlike. Philippicheylea CORPUZ-RAROS (Fig. 31) - Palpal claw toothed along entire inner margin; dorsal setae mostly fanlike. Chelactacarus VOLGIN (Fig. 32)

32. (30) Dorsum with 2 shields. 36 - Dorsum with 3 shields. 33

33. (32) Palpal claw toothed. 34 - Palpal claw edentate. Aegyptochyleyta YOUSEF (Fig. 33)

34. (33) Each hysteronotal shield with 1-2 setae. 35 - Each hysteronotal shield with 5-7 setae. Oudemansitcheleyta VOLGIN (Fig. 34)

35. (34) All tarsi with long solenidia (subequal in length to segment). Parachyletiella KuznetzOV (Fig. 36) - Only tarsi I-II with solenidia; if solenidia present on tarsi II-IV, then shorter than width of segment. Cheletoiminus Oudemans (Fig. 35)

36. (32) Palpal claw with 1 or more teeth. 40 - Palpal claw edentate. 37

37. (36) With sickle-like setae; median dorsal setae similar to lateral setae. 38 - Without sickle-like setae; median dorsal setae dissimilar to lateral setae. Columbicheckya THEWKE and ENNS (Fig. 37)

38. (37) Leg I with claws. 39 - Leg I without claws. Chiapacheylus DE LEON (Fig. 38)

39. (38) Dorsal body and tegmen with coarse reticulation. Ker MUMA (Fig. 40) - Dorsal body and tegmen without reticulation. Pavlovskicheyleta VOLGIN (Fig. 39)

40. (36) Palpal claw with more than 3 teeth. 46 - Palpal claw with 1-3 teeth. 41

41. (40) Leg I shorter (ca 70%) than idiosoma. 43 - Leg I as long as idiosoma or longer. 42

42. (41) Dorsal shields separated; claws on leg I minute or absent. Cheletomorphpha Oudemans (Fig. 41) - Dorsal shields indeterminately separated; claws on leg I normal. Nodele MUMA (Fig. 42)

43. (41) Hysteronotal shield covers most of hysterosoma; peritremes forming an inverted U. 44 - Hysteronotal shield confined to opisthosomal region; peritremes M-shaped. Cheletophysy Oudemans (Fig. 43)

44. (43) With a single large basal tooth on palpal claw. 45 - With 2 basal teeth on palpal claw. Polychyleletus Vajvanikul (Fig. 44)
45. (44) Dorsum with up to 21 pairs of setae; median dorsal and lateral setae dissimilar...
   - Dorsum with more than 30 pairs of setae; dorsal median and lateral setae similar...
   - Hoffmannia PELAEZ (Fig. 48)
   - Dorsum with more than 30 pairs of setae; dorsal median and lateral setae similar...
   - Dubininiola VOLGIN (Fig. 45)

46. (40) Gnathosoma not overhung by propodosoma...
   - Gnathosoma partly covered by overhanging propodosoma...
   - Samostania VOLGIN (Fig. 46)

47. (46) Inner sickle-like seta on palpal tarsus normal, seta-like...
   - Inner sickle-like seta on palpal tarsus inflated...
   - Claws on leg I as long as idiosoma; some dorsal setae...
   - Claws on leg I shorter than idiosoma (ca 70%); no centric striae around dorsal setae...

48. (47) Posterior links of peritremes straight, devoid of vesicular chamber...
   - Posterior links of peritremes straight or looped, terminating at vesicular chambers...
   - Neoechyleta RADFORD (Fig. 52)
   - Posterior links of peritremes straight or looped, terminating at vesicular chambers...
   - Cunifjella VOLGIN (Fig. 47)

49. (47) Claws on leg I normal, similar to claws on other legs...
   - Claws on leg I shorter, smaller than other claws, or absent...
   - Claws on leg I minute, smaller than other legs...

50. (49) Claws on leg I minute...
   - Claws on leg I absent...

51. (50) Tarsus I with 2 conspicuous terminal setae...
   - Tarsus I with 4 conspicuous terminal setae...
   - Cheletogenes Oudemans (Fig. 51)
   - Tarsus I with 4 conspicuous terminal setae...
   - Prosocheyleta VOLGIN (Fig. 50)

52. (50) Leg I shorter (ca 70%) than idiosoma...
   - Leg I as long as idiosoma or longer...
   - Paracheyleta VOLGIN (Fig. 49)

53. (49) All anterior prodorsal setae similar...
   - Anterior prodorsal setae dissimilar...
   - Mexcheles DE LEON (Fig. 53)

54. (53) Dorsal lateral setae similar to dorsal median setae...
   - Dorsal lateral setae dissimilar to dorsal median setae...
   - Cheletophaenes Oudemans (Fig. 57)

55. (54) Palpal claw toothed only along basal half...
   - Palpal claw toothed along entire length...
   - Chelytina Haller (Fig. 56)
   - Chelytina VOLGIN (Fig. 55)

56. (54) Leg I shorter than idiosoma (ca 70%); no concentric striae around dorsal setae...
   - Leg I as long as idiosoma; some dorsal setae surrounded by concentric striae...
   - Chelatephanes Oudemans (Fig. 57)

57. (56) Hysterosoma rounded posteriorly...
   - Hysterosoma tapering posteriorly...
   - Lepidocheyleta VOLGIN (Fig. 58)

58. (57) Anus not placed on a caudal lobe...
   - Anus placed on a caudal lobe...
   - Anthribicheyleta THEWKE (Fig. 59)

59. (58) Peritremes forming an inverted U...
   - Peritremes M-shaped...
   - Tutacheyleta CORPUZ-RAROS (Fig. 60)

60. (59) Dorsal setae mostly fan-like; humeral setae on dorsum...
   - Dorsal setae rod-like; humeral setae on pleuroventrally displaced platelets...
   - Hemicheyletia VOLGIN (Fig. 61)
   - Dorsal setae rod-like; humeral setae on pleuroventrally displaced platelets...
   - Laeliocheyletia SUMMERS and PRICE (Fig. 62)

(*) Due to different definitions of Cheleacheles, the genus is keyed out twice; see remarks to this genus.

The genera and species of the Cheyletidae

1. Genus Acaropsella VOLGIN 1962

Type species: Neaoacaropsis rohdendorfi VOLGIN 1962

Diagnosis: Eyes present; palpal tarsus with 1 comb-like seta and 2 sickle-like setae; palpal claw with more than 3 teeth; peritremes with at least 3 links; body ovoid; dorsum with a propodosomal and a hysteronal shield, both with lanceolate setae; humerals similar; legs II and III separated by less than body width; all legs shorter than body; all tarsi with smooth claws and empodia.

Other species
A. aegyptiaca (WAFA and SOLIMAN) 1968
A. filipina CORPUZ-RAROS 1988
A. kinshasensis FAIN 1972
A. konoi TSENG 1977
A. kulagini (RHODENDORF) 1940
A. nobilis RASOOL et al., 1980
A. schmittdaus PRICE 1972
A. volgini (GERSON) 1967
A. verrugosus XU et al. 1997

Habitat: Stored products, bird nests, soil. Cosmopolitan.

2. Genus Acaropsellina SUMMERS 1976

(= Acaropsis MOQUIN-TANDON 1862)

Type species: Acaropsis solliers RHODENDORF 1940

Diagnosis: Eyes present; palpal tarsus with 1 comb-like seta and 2 sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid; dorsum with a propodosomal and a hysteronal shield, both with slender to spatulate setae; humeral setae ultra-long, slender; legs II and III separated by less than body width; all legs shorter than body; all tarsi with smooth claws and empodia.

Other species
A. anarsia SUMMERS 1976
A. clamoa QAYYUM and CHAUDHRI* 1979
A. docta (BERLESE) 1886
Fig. 1 — Cheyletus misolelei FAIN and LUKOSCHUS. Female, dorsum (a); palpal tarsus and tibia, dorsal (b) and ventral (c); gnathosoma, ventral (d); tarsus I, dorso-lateral (e); genito-anal region (f). Abbreviations: proponotal shield (ps); hysteronotal shield (hs); palpal tarsus (pt); palpal tibia (pti); comb-like setae (cs); palpal claw (pcl); sickle-like setae (ss); tegmen (teg); protegmen (pteg); palpal femur (pf); rostrum (r); solenidion omega of tarsus I: (ω); guard seta (gs) (from FAIN and LUKOSCHUS, 1981a).

A. opsis RASOOL et al.,* 1980
A. orbis QAYYUM and CHAUDHRI* 1979
A. philippinensis (CORPUZ-RAROS and SOTTO) 1977
A. platessa AHEER et al.,* 1991
A. portà QAYYUM and CHAUDHRI* 1979
A. shorkoiensis AKBAR, et al.* 1988

A. summersi SMILEY and WHITAKER 1981
A. tyrophagus ELBADRY* 1969
A. vitrus AHEER, AKBAR and CHAUDHRI* 1991

Habitat: Stored products, plants, flying squirrels (Glaucomys). Cosmopolitan.
1. Genus *Aegyptocheyla* YOUSEF 1978
   \[ \text{Type species: } Aegyptocheyla \text{ summersi YOUSEF 1978} \]

*Diagnosis:* Eyes present; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw edentate; peritremes with more than 3 links; body ovoid; dorsum with a single propodosomal shield and a pair of hysteronotal shields, placed side-by-side, all with fan-like setae; humerals alike; legs II and III separated by less than body width; all legs shorter than body; all tarsi with smooth claws and empodia.

*Habitat:* Plant. Egypt.

2. Genus *Alliea* YUNKER 1960
   \[ \text{Type species: } Alliea \text{ laruei YUNKER 1960} \]

*Diagnosis:* Eyes absent; gnathosoma not seen; body ovoid, dorsum with large propodosomal and hysteronotal shields, each bearing 16 pairs of squamatiform or fan-like setae; humerals similar; legs II and III separated by less than body width; all legs shorter than body; all tarsi with smooth claws and empodia, claws on tarsus I slightly smaller.


3. Other species
   *A. prasadi* CORPUS-RAROS 1998

*Remarks:* The above diagnosis is based only on a single damaged female specimen, and the lack of the gnathosoma did not allow us to place this genus in the key. Nevertheless, there are sufficient characters to separate *Alliea* from two other cheletine genera, namely *Euto­genes* and *Caudacheles*, which also lack eyes and bear numerous fan-like setae on their extensive dorsal shields. Tarsus I of *Euto­genes* is devoid of claws and bears four long setae, whereas the anus of *Caudacheles* is borne on a projecting caudal lobe. The only other named species, *A. prasadi*, is likewise known only as a male, and like *A. laruei*, it bears an inflated seta on the palpal tarsus.

4. Genus *Anthribicheyla* THEWKE 1980
   \[ \text{Type species: Anthribicheyla bocki THEWKE 1980} \]

*Diagnosis:* Eyes present; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, dorsum with a propodosomal and a hysteronotal shield, both with spatulate, barbed setae; humerals similar; anus on stalked caudal lobe; legs II and III separated by less than body width; all legs shorter than body; all tarsi with smooth claws and empodia.

*Habitat:* Anthribid beetles. USA.

5. Genus *Apodicheles* FAIN 1979
   \[ \text{Type species: } Apodicheles \text{ cypsiurus FAIN 1979} \]

*Diagnosis:* Eyes absent; without comb-like setae but with 1-2 sickle-like setae; tibial claw edentate; each palpal femur bears 2 pairs of retrorse, ventral processes; peritremes M-shaped, with more than 3 broad links; body ovoid, dorsum with an ill-defined, finely striated shield which extends from legs II to beyond legs IV; dorsal setae slender, barbed; some, including humerals, ultralong; anal setae reduced to one pair or missing; legs II and III separated by less than body width; all legs shorter than body; coxae III and IV with I seta; all tarsi with smooth claws and empodia; tibia I without solenidion; coxae III and IV with 1 seta.

*Habitat:* Tree bark. USA.

   \[ \text{Type species: } Atarsacheylus \text{ vichi THEWKE 1980} \]

*Diagnosis:* Eyes absent; palpal tarsus absent (thus lacking comb-like and sickle-like setae); palpal claw edentate; peritremes with more than 3 links; body fusiform, legs II and III separated by more than body width; dorsum devoid of shields, all dorsal setae slender, barbed; humerals alike; all legs shorter than body; all tarsi with smooth claws and empodia.

*Habitat:* Tree bark. USA.

7. Genus *Bak* YUNKER 1961
   \[ \text{Type species: } Bak \text{ sanctaehelenae YUNKER 1961} \]

*Diagnosis:* Eyes absent; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw with 1-3 teeth; peritremes M-shaped, with more than 3 links; body fusiform, legs II and III separated by more than body width; dorsum with one propodosomal shield, hysteronotum with several platelets; all dorsal setae slender or barbed; humerals similar; all legs shorter than body; all tarsi with smooth claws and empodia.

*Habitat:* Birds (swifts). Africa.
Figs 2-4 — Fig. 2. Metacheletoides numidae FAIN. Female, dorsum (a) and venter (b); palpal tarsus and tibia, ventral (c) and dorsal (d) (this and the next Fig. from FAIN, 1979e). Fig. 3. Cheletoides chirunduensis FAIN. Female, dorsum (a); palpal tarsus and tibia, ventral (b) and dorsal (c). Fig. 4. Cheletoides uncinitus (Heller). Female, dorsum (a) (from OUDEMANS, 1906) (a); palpal tarsus and tibia, ventral (b) and dorsal (c) (from FAIN, 1979e).
Further observations on the Cheyletidae

Figs 5-7 — Fig. 5. Eucheletopsis major (TROUSSART). Female, dorsum (a) and venter (b); palpal tarsus and tibia, dorsal (c); apex of tarsus I (d) (this and the next two Figs from OUDEMANS, 1906). Fig. 6. Cheletopsis norneri (Poppe). Female, dorsum (a) and venter (b); palpal tarsus and tibia, dorsal (c); apex of tarsus I (d); a dorsal seta (e). Fig. 7. Cheletosoma tyrannus OUDEMANS. Female, dorsum (a) and venter (b); palpal tarsus and tibia, dorsal (c); apex of tarsus I (d).

B. ligyscutatus FLECHTMANN 1979(**)
B. micidus SUMMERS and PRICE 1970
B. ozarkensis THEWKE and ENNS 1974
B. payatus CORPUZ-RAROS and SOTTO 1977
B. truncatus CORPUZ-RAROS and SOTTO 1977.

Habitats: Decomposing plants, soil, bee hive debris; cosmopolitan.

(**) May be an illegal name because published only in a thesis.
Figs 8-10 — Fig. 8. *Thewkachela ratufl* IDE and KETHLEY. Female, dorsum (a); leg I (b); coxae I-II (c); palpal tarsus and tibia, venter (d) (from IDE and KETHLEY, 1977). Fig. 9. *Promuricheyla lukoschusi* FAIN. Female, dorsum (a); palpal tarsus and tibia, dorsal (b); ventral (c); tarsus I (d); tarsus IV in lateral view (e) (this and the next Fig. from FAIN, 1979f). Fig. 10. *Muricheyla sicista* FAIN. Female, dorsum (a); palpal tarsus and tibia, dorsal (b); leg I, dorsal (c); tarsus III, lateral (d); leg IV, lateral (e).
1. **Genus Bakericheyla Volgin 1966**

*Type species: Cheyletiella chanayi Berlese and Trouessart 1889*

*Diagnosis:* Eyes absent; palpal tarsus devoid of comb-like setae but with 1-2 sickle-like setae; tibial claw edentate; no retrorse processes on palpal femora; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a delicate propodosomal shield which may be discernible only by more delicate striae; dorsal setae slender, some, including humerals, ultralong; all legs shorter than body; coxae III and IV contiguous, coxa IV with 2 setae; tibia I with solenidion; all tarsi with smooth claws and empodia.

**Other species**
- *B. afriicana Fain 1979*
- *B. benoi Fain 1980*
- *B. rufilaginata (Lawrence) 1959*
- *B. subquadrata (Lawrence) 1959*
- *B. transvaalica (Lawrence) 1959*

*Habitat:* Birds. Cosmopolitan.

**Further observations on the Cheyletidae**

2. **Genus Caudacheles Gerson 1968**

*Type species: Caudacheles khayae Gerson 1968*

*Diagnosis:* Eyes absent; palpal tarsus with 1 comb-like seta, other seta short, smooth, and 2 sickle-like setae; palpal claw edentate; peritremes with 2-5 links; body ovoid, legs II and III separated by less than body width; dorsum carries a propodosomal and a hysteronotal shield, both neotrichous; all dorsal setae similar, fan-like; humerals alike; anus on caudal lobe; all legs shorter than body; all tarsi with smooth claws and empodia.

**Other species**
- *C. lieni Tseng 1977*
- *C. rufilaginata Liu-Kan et al. 1987*

*Habitat:* Plants. Israel, Taiwan.

3. **Genus Chelacaropsis Baker 1949**

*Type species: Chelacaropsis moorei Baker 1949*

*Diagnosis:* Eyes present; palpal tarsus with 1 comb-like seta, other seta similar to the 2 sickle-like setae; palpal claw with 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; idiosoma carries only a propodosomal shield; all dorsal setae spatulate-barbed, humerals similar or slightly longer; all legs shorter than body, all tarsi with smooth claws and empodia.

**Other species**
- *C. apus Fain 1972*
- *C. reticulata Soliman 1975 (C. andana Fain 1972)*
- *C. rwandana Fain 1972*
- *C. terrestris Corpuz-Raros and Sotto 1977*

*Habitat:* Glaucomys; nests of rodents and birds; food stores; soil. USA, Asia, Africa.

Remarks: The concept of this genus was changed by Lekprayoon and Smiley (1986), who examined the types of *Chelacaropsis moorei* and noted that, contrary to the original description (Baker, 1949), the female bears a propodosomal shield. This suggests that the four other species presently placed in *Chelacaropsis* should be accommodated elsewhere.

4. **Genus Chelechecaropsis Attiah 1973**

*Type species: Chelachechecaropsis bakeri Attiah 1973*

*Diagnosis:* Eyes present; palpal tarsus with 1 comb-like seta, other seta similar to the 2 sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less
Figs 11-13 — Fig. 11. *Cheletonella vespertilionis* Womersley. Female, dorsum (this and the next Fig. from Summers and Price, 1970). Fig. 12. *Eutogenes foxi* Baker. Female, dorsum. Fig. 13. *Camincheyletus glaucomys* Smiley and Whitaker. Female, dorsum (a) and venter (b) (from Smiley and Whitaker, 1981).
than body width; idiosoma striated, without shields; all dorsal setae slender to barbed, humerals ultralong; all legs shorter than body; all tarsi with smooth claws and empodia.

Other species
C. stigmaeoides Barilo 1989

Habitat: Rice mill, soil. Egypt; Uzbekistan.

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Genus Chelacheles Baker 1958

Type species: Chelacheles strabismus Baker 1958.

Diagnosis: Eyes present; palpal tarsus with 2 comb-like setae; one of the comb-like setae may be similar to the 2 sickle-like setae; palpal claw with 3 or more teeth; peritremes with more than 3 links; body fusiform, legs II and III separated by about body width; dorsum striated, without shields; all dorsal setae slender, may be barbed, humerals same shape but ultralong; all legs shorter than body; all tarsi with smooth claws and empodia.

Other species
C. alexandrinus Hassan and Gomaa 1981
C. bacchusi Bochkov, Haustov and Kuznetzov, 1999
C. baiwanganae Corpuz-Raros and Sotto 1977
C. bipanus Summers and Price 1970
C. humilis Rasool et al., 1980
C. lanceolatus Tseng 1977
C. michalskii Samsinak 1962
C. peritremaculatus Thewke 1974
C. robustus Corpuz-Raros 1998

Habitat: Stored products, bark beetle galleries, chicken feathers. Europe, USA, Asia.

Remarks: The genus was defined (Baker, 1958) as having 2 comb-like setae, a practice followed by Corpuz-Raros (1998). But Summers and Price (1970) stated that the inner comb-like seta may be "comblike or plain" and the relevant seta of their bipanus has only "several exceedingly fine barbs on its convex curvature". Tseng (1977) defined Chelacheles as having only 1 comb-like seta. The significance of this character remains unresolved.

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Genus Cheletacarus Volgin 1961

Type species: Cheletacarus raptor Volgin 1961

Diagnosis: Eyes present; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal but no hysterontonal shield a single propodosomal shield bearing spatulate or lanceolate setae; humerals similar; all legs shorter than body; all tarsi with smooth claws and empodia.

Other species
C. gryphus Summers and Price 1970
C. novemdentis Meyer 1988
C. ploceus Gupta and Paul 1985
C. rugosus (Womersley) 1941

Habitat: Trees, associated with scale insects (Homoptera: Coccoidea) or beetles; birds’ nests. Cosmopolitan.

Remarks: Summers and Price (1970) considered the placement of C. rugosus in Cheletacarus as provisional, because part of the type specimen was damaged. Another reason for reconsidering the status of this species is the form of the two anterior propodosomal setae, which are dissimilar to other dorsals and much longer.

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Genus Cheletogenes Oudemans 1905

Type species: Cheylus ornatus Canestrini and Fanzago 1876.

Diagnosis: Eyes present; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both with similar fan-like setae; humerals alike; all legs shorter than body; tarsus I without claws and empodia, bearing 2 conspicuous terminal setae; tarsi II-IV with smooth claws and empodia.

Other species
C. acerai Khan 1970
C. carinatus Aheer et al., 1992
C. dissitus Akbar et al., 1988
C. iconis Aheer et al., 1992
C. meihuashanense In and Liu 1994
C. monosetosus Tseng 1977
C. petiginis Qayyum and Chaudhri 1977
C. sagacis Aheer et al., 1992
C. scaber Qayyum and Chaudhri 1977
C. vulgatus Rasool and Chaudhri 1979
C. waitei Gerson 1994

Habitat: Plants. Cosmopolitan.

Genus Cheletoides Oudemans 1904

Type species: Syringophilus uncinatus Heller 1880

Diagnosis: Eyes absent; palpal tarsus without comb-like setae, but bearing a stiff seta carrying vestigial teeth and 2
Figs 14-16 — Fig. 14. *Caudacheles khayae* GERSON. Female, dorsum (from GERSON, 1968). Fig. 15. *Euchelytelia bishoppi* BAKER. Female, dorsum (from SUMMERS and PRICE, 1970). Fig. 16. *Hylopecheyia malayi* FAIN and NADCHATRAM. Female, dorsum (a); venter (b) (from FAIN and NADCHATRAM, 1980).
sickle-like setae; palpal claw with a single tooth; peritremes with more than 3 links; body ovoid, legs II and III separated by about body width; dorsum only with a propodosomal shield, dorsal setae slender, barbed; several, including humerals, ultralong; all legs shorter than body; all tarsi with smooth claws and empodia.

Other species
Cheletoides chirivuensis FAIN 1979.

Habitat: Birds. Europe, Africa.

Figs 17-19 — Fig. 17. *Atarsacheylus vichii* THEWKE. Female, dorsum (redrawn by A.F. from THEWKE, 1980). Fig. 18. *Bak sanctaehelenae* YUNKER. Female, dorsum (from SUMMERS and PRICE, 1970). Fig. 19. *Alliea laruel* YUNKER. Female, dorsum without gnathosoma (a); tarsus I (b) (from YUNKER, 1960).

§. Genus *Cheletoinimus* OUDEMANS 1904

* Type species: *Cheletes berlesoi* OUDEMANS 1904

*Diagnosis:* Eyes present; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and 2 hysteronotal shields, placed side-by-side, all bearing similar, lanceolate to narrowly fan-like dorsal setae; each hysteronotal shield with 1-2 setae;
humerals alike; all legs shorter than body, all tarsi with smooth claws and empodia.

Other species
C. binus Tseng 1973
C. bisetosus Tseng 1977
C. cambio Aheer, Akbar and Chaudhri 1994
C. cantor Rasool, Chaudhri and Akbar 1980
C. citrocinensis Paxton and Goff 1985
C. daltoniensis Corpuz-Raros 1998
C. duosetosus MUMA 1964
C. heredis QAYYUM and CHAUDHRI 1979
C. larmae AHEER et al., 1994
C. minutus SOLIMAN 1977
C. zania AHEER et al., 1994
C. electa AHEER et al. 1999
C. reema AHEER et al. 1998

Habitat: Plants, soil. Cosmopolitan.

Genus Cheletomorpha OUDEMANS 1904
(= Acheletomorpha VOLGIN 1969)

Type species: Acarus lepidopterorum SHAW 1794

Diagnosis: Eyes present; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw with 1 large basal tooth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield; lateral and humerals setae rod-like, barbed, medians dissimilar, staghorn-like; legs longer than body, their tarsi with empodia, with or without minute claws; other legs shorter; their tarsi with smooth claws and empodia.

Other species
C. bakeri LAWRENCE 1954
C. dosolus AHEER et al., 1997
C. obrutus QAYYUM and CHAUDHRI 1977
C. opacus QAYYUM and CHAUDHRI 1977
C. orientalis OUDEMANS 1928
C. tenerum QAYYUM and CHAUDHRI 1977

Habitat: Moths, stored products, plants. Cosmopolitan.

Remarks: VOLGIN (1969) created Acheletomorpha gen. nov. for C. bakeri, because its median dorsal and lateral setae are similar. SUMMERS and PRICE (1970) considered this difference to be specific rather than generic, thereby returning C. bakeri to Cheletomorpha. Three species, namely C. dosolus, C. obrutus, and C. opacus, bear paired hysteronotal shields, which suggests that they should be placed elsewhere. Alternatively, one or more of the examined specimens of these taxa were not adults, because the nymphs of many cheyletids bear 2 hysteronotal shields. We suggest that the position of some of the described species of Cheletomorpha should be reconsidered.

Genus Cheletonata WOMERSLEY 1955

Type species: Cheletonata milesi WOMERSLEY 1955

Diagnosis: Eyes present; palpal tarsus with 1 comb-like seta and 2 sickle-like setae; palpal claw with 4 basal teeth; peritremes forming an inverted U, with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, latter only a nude, small median platelet; dorsal setae spartulate to fan-like, humerals alike; all legs shorter than body, with smooth claws and empodia, claws on tarsus I minute.

Habitat: Bird's nest. Australia.

Genus Cheletonella WOMERSLEY 1941

Type species: Cheletonella vespertilionis WOMERSLEY 1941

Diagnosis: Eyes absent; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw with 2-4 teeth; peritremes forming an inverted U or M-shaped, with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal but no hysteronotal shield, dorsal setae lanceolate or fan-like; humerals similar or dissimilar to other dorsal setae; all legs shorter than body, all tarsi with smooth claws and empodia.

Other species
C. caucasica VOLGIN 1955
C. hoffmannae SMILEY 1996
C. juglandis XIA et al., 1999
C. pilosa TSENG 1977

Habitat: Bat guano, bird nests, soil. Australia, Russia, China.

Remarks: An application of our criteria for separating genera in the family Cheyletidae suggests that C. pilosa and C. juglandis should be placed elsewhere. The peritremes of both are M-shaped, their dorsal setae are lanceolate-barbed and the humerals are ultralong, dissimilar to the dorsals; these characters are in contrast to the inverted U-shaped peritremes, fan-like dorsals and similar humerals in the type species.

Genus Cheletoptenes OUDEMANS 1904

Type species: Cheleteta montandoni BERLESE and TROUSSART 1889

Diagnosis: Eyes present; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw with more than 3 teeth; peritremes M-shaped, with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a contiguous hysteronotal shield; both shields bear similar spatulate setae surrounded by concentric striae, humeral setae alike, displaced pleuroventrally; leg I subequal in length to idiosoma; all tarsi with smooth claws and empodia.

Other species:
C. peregrinus BERLESE 1921

Habitat: Bugs. Eastern Europe.
2. Genus Cheletophyes Oudemans 1914

Type species: Cheletophyes vitzthumi Oudemans 1914

*Diagnosis:* Eyes present; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw with 2-3 teeth; peritremes M-shaped, with more than 3 bulbous links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, latter restricted to opisthosomal region; both with similar, rod-like, barbed setae; humerals similar; all legs shorter than body, all tarsi with smooth claws and empodia.

Figs 23-26 — Fig. 23. Paracaropsis travisi (BAKER). Female, dorsum (from SUMMERS and PRICE, 1970). Fig. 24. Neocaropsis granulatus VOLGIN. Female, dorsum (from VOLGIN, 1969). Fig. 25. Cheletonata milesi WOMERSLEY. Female, dorsum (from SUMMERS and PRICE, 1970). Fig. 26. Microchyela parvula VOLGIN. Female, dorsum (from VOLGIN, 1969).
Other species
C. apicola FAIN, LUKOSCHUS and NADCHATRAM 1980
C. clavipes FAIN, LUKOSCHUS and NADCHATRAM 1980
C. deodikari PUTATUNDA and KAPIL 1988
C. eckerti SUMMERS and PRICE 1970
C. harnaji PUTATUNDA and KAPIL 1988
C. haryanaensis PUTATUNDA and KAPIL 1988
C. indicus Smiley and WHITAKER 1981
C. newtoni PUTATUNDA and KAPIL 1988
C. orientalis PUTATUNDA and KAPIL 1988
C. panamensis KLOMPEN et al., 1984
C. ruttenii PUTATUNDA and KAPIL 1988
C. shendei PUTATUNDA and KAPIL 1988
C. xylocopae RAMARAJU and MOHANASUNDARAM 1999

Habitat: On carpenter bees (Xylocopinae). South-east Asia.

85 Genus Cheletopsis Oudemans 1904
\( (-,+) \)

Type species: Cheyletus nörneri Poppe 1888

Diagnosis: Eyes absent; palpal tarsus with 1 comb-like seta and 2 sickle-like setae; palpal claw with 1-2 teeth; peritremes with more than 3 links; body fusiform, legs II and III separated by less than body width; dorsum with a single, propodosomal shield; all setae slender, finely barbed, several, usually including humerals, ultralong; all legs shorter than body, coxae III and IV contiguous; all tarsi with smooth claws and empodia; tarsus I with solenidion.

Other species
C. aninosa Oudemans 1904
C. anax Oudemans 1904
C. basilica Oudemans 1904
C. charadrii MIRONOV et al., 1991
C. deberti KIVGANOV and BOCHKOV 1994
C. impavida Oudemans 1904
C. magnanima Oudemans 1904
C. mariae MIRONOV et al., 1991

Habitat: Birds. Europe, South America.

86 Genus Cheletosoma Oudemans 1905
\( (-,+) \)

Type species: Cheletosoma tyrannus Oudemans 1905

Diagnosis: Eyes absent; palpal tarsus with 1 comb-like seta and 2 sickle-like setae; palpal claw with 1 tooth; peritremes forming an inverted U with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a small suranal hysteronotal shield bearing 2 pairs of slender setae unequal in length; other dorsals slender, humerals ultralong; all legs shorter than body, all tarsi with smooth claws and empodia.

Other species
C. americana VOLGIN* 1969
C. aradiphila VOLGIN 1969
C. laureata HALLER* 1884
C. papillifera VOLGIN 1955

Habitat: Bugs, scale insects, birds. Europe, USA.

Remarks: We follow SUMMERS and PRICE (1970) in considering squamosa to be the type species of Cheyletia, and agree with them that the concept of this genus remains nebulous. Three different species, from three different habitats, seem to have been described under squamosa. One (off a bug) has remained with the specific name, and a second (from a bird) was renamed papillifera VOLGIN. The third (described by BAKER, 1949, from scale insects) was renamed americana by VOLGIN (1969), a decision challenged by SUMMERS and PRICE (1970). VOLGIN (1969) considered laureata to be the type species, thereby negating BAKER'S (1949) decision to
synonymize it with *squamosa*. A better understanding of *Cheyletia* is thus hindered by our deficient concept of the type species.

\textit{Genus Cheyletiella} CANESTRINI 1886

\( \mathbf{\Omega} \) *Cheyletus parasitivorax* MÉGNIN 1878

\textit{Type species: Cheyletus parasitivorax* MÉGNIN 1878

\textit{Diagnosis:} Eyes absent; palpal tarsus without comb-like and sickle-like setae; palpal claw edentate; peritremes with more than 3 broad links; body ovoid; legs II and III separated by less than body width; dorsum bears a single wide propodosomal shield, with 4-5 pairs of setae; dorsal setae slender, nude or barbed; humerals alike; all tarsi without claws but with feather-like empodia; tibia I without solenidion \( \varphi \).

\textit{Other species}

\begin{itemize}
  \item \textit{C. blakel} Smiley 1970
  \item \textit{C. dengi} Hu and Hou 1992
  \item \textit{C. furmani} Smiley 1970
\end{itemize}
**Genus Cheyletus Latreille 1796**

*Type species: Acarus eruditus Schrank 1781*

**Diagnosis:** Eyes absent; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw with 1-4 teeth; peritremes M-shaped, with more than 3 links, posterior link straight; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and hysteronotal shield, both with slender to spatulate setae, if present, usually small or dissimilar; all legs shorter than body, all tarsi bear smooth claws and empodia.

**Other species**

- C. acarophagus ZAHER and SOLIMAN 1967
- C. acer Oudemans 1904
- C. alacer Oudemans 1904
- C. allactaga Fain and LUKOSCHUS 1981
- C. attiabi Yousef and Issa 1972
- C. audax Oudemans 1904
- C. aversor RHODENDORF 1940
- C. avidus QAYYUM and CHAUDHRI 1977
- C. ayzazi KARBAR et al., 1993
- C. baloghi VOLGIN 1969
- C. baridus AKBAR et al., 1988
- C. bidentatus FAIN and NADCHATRAM 1980
- C. burmiticus Cockerel* 1917
- C. cacahuamilpensis BAKER 1949
- C. carnifex ZACHVATKIN 1935
- C. clavispinus* BANKS 1902
- C. crassus QAYYUM and CHAUDHRI 1977
- C. desitus QAYYUM and CHAUDHRI 1977
- C. digitarus SUGIMOTO* 1942
- C. egypticus ELBADRY 1969
- C. ferox TROUSSART 1885
- C. fortis Oudemans 1904
- C. furibundus RHODENDORF 1940
- C. gerbillicola FAIN and LUKOSCHUS 1981
- C. hendorsoni BAKER 1949
- C. infensus AKBAR et al., 1993
- C. intrepidus Oudemans 1903
- C. kuznetzovi BOCHKOV and KAUSTOV, 1999
- C. legendrei FAIN 1982
- C. lindsayei BAKER 1949
- C. mafekingensis FAIN 1982
- C. malacensis Oudemans 1903
- C. Malayensis CUNLIEFE 1962
- C. misonnei FAIN and LUKOSCHUS 1981
- C. mortelmanni FAIN 1972
- C. nidicolaus FAIN 1972
- C. nigripes MOLA* 1907
- C. parumsetosus KARPELLES 1884
- C. patagiatius* NORDENSKJOILD 1900
- C. phanthonis AKBAR and AHEER 1994
- C. philippensis CORPUZ-RAROS 1988
- C. pluridens FAIN and NADCHATRAM 1980
- C. polymorphus VOLGIN 1949
- C. praedibundus RHODENDORF 1940
- C. promptus Oudemans 1904
- C. pseudomalaccensis FAIN 1982
- C. punctulatus FAIN and LUKOSCHUS 1981
- C. pyriformis BANKS 1904
- C. rapax Oudemans 1903
- C. rohdenoarti ZACHVATKIN 1949
- C. rwandae FAIN 1972
- C. saevus Oudemans* 1904
- C. schneideri Oudemans 1904
- C. spatiosus QAYYUM and CHAUDHRI 1977
- C. strenuus Oudemans 1904
- C. tenuipilis FAIN et al., 1980
- C. trouessarti Oudemans 1903
- C. truculentus VOLGIN 1949
- C. trux RHODENDORF 1940
- C. tutela QAYYUM and CHAUDHRI 1977
- C. ugandanus LAWRENCE 1954
- C. venator VITZTHUM 1920
- C. vivatus QAYYUM and CHAUDHRI 1977
- C. vorax Oudemans 1903
- C. waindoinensis AKBAR and AHEER 1994
- C. woodrooffi JEFFREY 1979
- C. zumpti FAIN 1972

**Habitat:** Stored food, soil, plants, nests. Cosmopolitan.

**Remarks.** This is the largest and most problematic genus in the family. VOLGIN (1969) keyed out 29 species, of which 13 were known only as males (some heteromorphic), 8 only as females and both genders were described for the remaining 8 species. SUMMERS and PRICE (1970) listed 36 species but provided keys for 9 only. Problems in species determination include loss of type material, inadequate descriptions, the need to match up males and females, some variation in shape and length of various setae and a sometimes broad definition of the genus. Thus we agree with SUMMERS and PRICE (1970) that a complete revision of Cheyletus may require the combined efforts of acarologists from different parts of the world. A preliminary effort towards understanding the extent of variation within 5 common species of Cheyletus was made by SUMMERS et al. (1972).

**Genus Chiapacheylus De Leon 1962**

*Type species: Chiapacheylus edentatus De Leon 1962*

**Diagnosis:** Eyes present; palpal tarsus with 2 comb-like setae and 2 sickle-like setae; palpal claw edentate; peri-
Figs 29-32 — Fig. 29. *Acaropsellina sollers* (RHODENDORF). Female, dorsum (a); leg I (b) (from SUMMERS and PRICE, 1970). Fig. 30. *Acaropsella rohdendorfi* (VOLGIN). Female, dorsum (from VOLGIN, 1969). Fig. 31. *Philippicheyla filipina* Corpus-RAROS. Female, dorsum (from Corpus-RAROS, 1972). Fig. 32. *Cheletacus raptor* VOLGIN. Female, dorsum (from VOLGIN, 1969).
tremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, with similar fan-like setae, some neotrichious; humerals similar to lateral setae; all legs shorter than body; all tarsi with empodia; tarsus I without claws but tarsi II-IV with smooth claws.

Other species
C. desertorum ZAHER and SOLIMAN* 1967
C. macrocorneus ZAHER and SOLIMAN* 1967

Habitat: Plants. Mexico.

Remarks: In their definition of Chiapacheylus, ZAHER and SOLIMAN (1967) stated that this genus had all legs with claws and "pulvillus". This incorrect definition suggests that C. desertorum and C. macrocorneus may belong elsewhere.

32 Genus Columbicheyla THEWKE and ENNS 1972

Type species: Columbicheyla macroflabellata THEWKE and ENNS 1972

Diagnosis: Eyes present; palpal tarsus with 2 comb-like setae, no sickle-like setae; palpal claw edentate; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, dorsal setae dissimilar, laterals and humerals fan-like, medians squamate; all tarsi with smooth claws and empodia.

Habitat: Tree bark, North America.

Remarks: The definition of the genus is based on the inflated tarsal seta along with the vesicular chamber at the posterior part of the peritremes. BOCHKOV and MIRONOV (1997) made an effort to elucidate the relationships of Cunliffeola, and the closely related Neoeuchelys, by applying cladistic methods. As a result they resurrected Bothrocheyla Volgin 1964 and re-assigned species currently referable to Cunliffeola and to Neoeuchelys. However, these authors used characters that are variable within genera, a practice that detracts from their use for intergeneric analysis. Further, the 2 most distinctive characters separating Cunliffeola and Neoeuchelys, the inflated inner tarsal seta and the presence/absence of the vesicular chambers, are inconsistent in the BOCHKOV and MIRONOV (1997) arrangement. The status of these genera should be re-evaluated.

34 Genus Cunliffeola VOLGIN 1969

Type species: Neoecuchelys tuberculicoxa VOLGIN 1964.

Diagnosis: Eyes present; palpal tarsus with 2 comb-like setae, 1 sickle-like seta and an inflated seta; palpal claw with more than 3 teeth; peritremes with more than 3 links, posteriorly straight or looped around a vesicular chamber; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both covered by fan-like to squamate setae; laterals usually differ from medians, and latter may differ amongst themselves; humerals displaced to pleuroventral position, similar to lateral setae; all tarsi with smooth claws and empodia.

Other species:
C. variegata BARIL 1985
C. whartoni (BAKER) 1949

Habitat: Soil. Eastern Europe, USA.

Remarks: In their definition of Chiapacheylus, ZAHER and SOLIMAN (1967) stated that this genus had all legs with claws and "pulvillus". This incorrect definition suggests that C. desertorum and C. macrocorneus may belong elsewhere.

33 Genus Criokeroll VOLGIN 1966

Type species: Nihelia quintus DOMROW and BAKER 1963

Diagnosis: Eyes absent; gnathosoma with large lateral hook-like processes; palpal tarsus fused with palpal tibia, with 1 comb-like seta and 1-2 sickle-like setae; peritremes with more than 3 broad links, posteriorly convoluted; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal shield and a hysteronotal shield; all setae slender, humerals on pleuroventral platelets, similar to lateral setae; all legs shorter than body; solenidion σ on geni I replaced by a stellate seta; all tarsi with smooth claws and empodia.

Other species
C. thailandicus FAIN and LUKOSCHUS 1985.

Habitat: Tupaia glis. Africa, South-east Asia.
Figs 33-36 — Fig. 33. *Aegyptiocheleia summersi* YOUSEF. Female, dorsum (a); genito-anal region (b); (from YOUSEF, 1978). Fig. 34. *Oudemansicheleia denmarkii* (YUNKER). Female, dorsum (a); antero-dorsal seta (b) (this and the next Fig. from SUMMERS and PRICE, 1970). Fig. 35. *Cheletominus berlesei* (Oudemans). Female, dorsum. Fig. 36. *Paracheyletiella volgini* KUZNETZOV. Female, dorsum (from KUZNETZOV, 1977).
Figs 37-40 — Fig. 37. *Columbiccheyla macroflabellata* THEWKE and ENNS. Female, dorsum (redrawn by A.F. from a paratype).
Fig. 38. *Chiapacheyle edentatus* DE LEON. Female, dorsum (a); palpus (b); leg I (c) (from SUMMERS and PRICE, 1970).
Fig. 39. *Pavlovskicheyla semenovi* (RHODENDORF). Female, dorsum (from VOLGIN, 1969).
Fig. 40. *Kerpalmatus* MUMA. Female, dorsum (from SUMMERS and PRICE, 1970).
Habitat: Rodents. Turkemenistan.

Remarks: Some salient features of this genus were noted above. We formerly (FAIN et al., 1997) believed *Dubiniola* to be very close to *Alliea YUNKER*, a genus we could not treat herein (see above). The examination of *D. polylepis* indicated that the 2 genera are very different. In contrast to *Alliea*, *Dubiniola* has eyes, a large setulose and branched ventral seta on all tarsi, and 2 pairs of squamate setae beyond the anal setae.
36. Genus *Cheletopsis* VOLGIN 1969

*Type species: Cheletopsis major* OUDEMANS 1904

*Diagnosis:* Eyes absent; palpal tarsus with one comb-like seta and two sickle-like setae; palpal claw with a single tooth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum only with a propodosomal shield; all setae, including humerals, slender, ultralong; all legs shorter than body, coxae III and IV clearly separated; all tarsi with smooth claws and empodia; tarsus I without solenidion.

*Habitat:* Bird, New Guinea.

37 Genus *Euchyletia* BAKER 1949

(*= Zachvatkiniola* VOLGIN 1969)

*Type species: Euchyletia bishoppi* BAKER 1949.

*Diagnosis:* Eyes absent; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with 2-4 teeth; peritremes forming an inverted U, with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both with dissimilar dorsal setae, laterals and humerals fan-like, medians staghorn-like or squamae; all legs shorter than body, all tarsi without claws but with feather-like empodia; tibia I without solenidion.

*Other species*

- *E. asiatica* VOLGIN 1955
- *E. bakeri* VOLGIN 1963
- *E. bothriophila* VOLGIN 1963
- *E. eoa* VOLGIN 1963
- *E. flavellifera* (MICHAEL) 1878
- *E. funisciuri* VOLGIN 1960
- *E. harpyia* (RHODENDORF) 1940
- *E. kivuensis* FAIN 1972
- *E. leticia* DEFINADO and KHANG-FIELDS 1976
- *E. nintoda* CORPuz-RAROS 1998
- *E. oregonensis* SMILEY and WHITAKER 1981
- *E. pavlovskyi* VOLGIN 1963
- *E. reticulata* CULLIFE 1962
- *E. simulicola* VOLGIN 1963
- *E. sinensis* VOLGIN 1963
- *E. tanzaniensis* FAIN 1972
- *E. taurica* VOLGIN 1963
- *E. womersleyi* VOLGIN 1963

*Habitat:* Soil, stored food, nests of small mammals. Cosmopolitan.

*Remarks:* VOLGIN (1969) erected *Zachvatkiniola* gen. nov. for *E. reticulata*, due to its strong dorsal reticulation and similar lateral and median setae. SUMMERS and PRICE (1970) returned *reticulata* to *Euchyletia*, arguing that the taxonomy of the genus will thus be simplified. The issue requires re-evaluation.

22 Genus *Euchyletiella* VOLGIN 1969

*Type species: Euchyletiella bishoppi* BAKER 1949.

*Diagnosis:* Eyes absent; palpal tarsus with two comb-like and sickle-like setae; palpal claw edentate; peritremes with more than 3 broad links; body ovoid; legs II and III separated by less than body width; female dorsum bears only a propodosomal shield, as long or longer than wide; dorsal setae slender, mostly barbed; humerals similar; all tarsi without claws but with feather-like empodia; tibia I without solenidion.

*Habitat:* Rabbits (Lagomorpha), field mice. Cosmopolitan.

25 Genus *Eutogenes* BAKER 1949

*Type species: Eutogenes foxi* BAKER 1949.

*Diagnosis:* Eyes absent; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw edentate; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width, leg I almost as long as body, other legs shorter; dorsum with a propodosomal and a hysteronotal shield, both with similar dorsal fan-like setae; humerals alike; leg I without claws and empodia, bearing four conspicuous terminal setae; tarsi II-IV with smooth claws and empodia.

*Other species*

- *E. africana* WAFA and SOLIMAN 1968
- *E. bakeri* CORPuz-RAROS 1998
- *E. citri* GERSON 1967
- *E. cornutus* CORPuz-RAROS 1998
- *E. frater* VOLGIN 1958
- *E. makilingiensis* CORPuz-RAROS 1998
- *E. narashinoensis* HARA and HANADA 1960
- *E. onoi* (SHIBA) 1976
- *E. pinicola* THEWKE and ENNS 1972
- *E. punctata* ZAHER and SOLIMAN 1965
- *E. quadrisetatus* BERLESE 1913
- *E. reticularis* OLIVIER and THERON 1988
- *E. vicinus* SUMMERS and PRICE 1970

*Habitat:* Plants, soil. Cosmopolitan.
Genus *Galagocheles* Fain 1979

*Type species: Cheletiella lemuricola* Lawrence 1948

*Diagnosis:* Eyes absent; palpal tarsus with several uneven rod-like setae but no comb-like and sickle-like setae; palpal claw edentate, hooked; palpal femur with lateral and ventral processes; base of gnathosoma with a pair of retrose processes; peritreme with more than 3 broad links, much expanded anteriorly; body ovoid, legs II and III separated by less than body width; idiosoma with retrose lateral processes between legs II and III; dorsum with a propodosomal shield and a hysteronotal shield; all setae, including humerals, slender to spine-like; all legs shorter than body; coxa I with a lateral process; legs I–II with retrose ventral processes on tarsi, genua and femora; solenidion 01 on genu I replaced by a stellate seta; all tarsi with smooth claws and empodia.

*Habitat:* Lemurs. Africa.
Further observations on the Cheyletidae

Figs 46-48 — Fig. 46. *Samsinakia volgini* (FAIN). Female, dorsum (a); gnathosoma dorsal (b) and ventral (c); leg I (d); genito-anal region (e) (from FAIN 1980c). Fig. 47. *Cniliifella tuberculicola* VOLGIN. Female, dorsum (from VOLGIN, 1969). Fig. 48. *Hoffmannita mexicana* PELAEZ. Female, dorsum (a); leg I (tarsus and tibia) (b); palpal tarsus and tibia, ventral (c) (from PELAEZ, 1962).

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**Genus Grallacheles DE LEON 1962**

*Type species*: *Grallacheles bakeri* DE LEON 1962

**Diagnosis**: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with more then 3 links; body ovoid, legs II and III separated by less than body width; dorsum bears a propodosomal and a hysteronotal shield; anterior propodosomal setae fan-like, second pair and posterior setae narrowly fan-like, all other dorsals rod-like, barbed; humerals alike; all legs shorter than body, all tarsi with smooth claws and empodia.

**Other species**

*G. nanfengensis* XIA et al., 1997.
Figs 49-52 — Fig. 49. *Paracheyletia pyriformis* (BANKS). Female, dorsum (a); leg I (b) (this and the next two Figs are from Summers and Price, 1970). Fig. 50. *Prosocheyla oaklandia* (BAKER). Female, dorsum (a); leg I (b). Fig. 51. *Cheletogenes ornatus* (CANESTRINI' and FANZAGO). Female, dorsum. Fig. 52. *Neocheylela loricata* (BERLESE). Female, dorsum (from Berlese, 1913).
**Habitat:** Plants; stored food. USA, Pacific Islands, East Asia, Israel.

\[41\] **Genus Hemicheyletia** VOLGIN 1969
\( (= \text{Dendrocheyla Volgin 1969;}
\ = \text{Andrecheyla Volgin 1969})\)
\( \text{(Fig. 41)} \)

**Type species:** Paracheyletia bakeri EHARA 1962

**Diagnosis:** Eyes present; palpal tarsus with a two comb-like setae and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield; lateral and humeral setae spatulate to fan-like, medians similar or dissimilar, in latter cases staghorn-like; all legs shorter than body, all tarsi with smooth claws and empodia.

**Other species**
- *H. anarbora* (DE LEON) 1967
- *H. arecana* TIEING 1972
- *H. asiatica* VOLGIN 1978
- *H. athenae* CORPUZ-RAROS 1988
- *H. bregetovae* (VOLGIN) 1969
- *H. chui* TSENG 1977
- *H. congensis* (CUNLiffe) 1962
- *H. cordovensis* (DE LEON) 1962
- *H. darwinia* SUMMERS and PRICE 1970
- *H. granula* SUMMERS and PRICE 1970
- *H. hissariensis* MATHE and MATHUR 1981
- *H. indica* GUPTA 1991
- *H. kuretolensis* GOFF 1982
- *H. kysenyensis* THEWKE and ENNS 1979
- *H. lacinia* RASOOL and CHAUDHRI 1979
- *H. laguncula* RASOOL and CHAUDHRI 1979
- *H. lanceolata* CORPUZ-RAROS 1998
- *H. leytensis* CORPUZ-RAROS 1988
- *H. makilingensis* CORPUZ-RAROS 1972
- *H. mexicana* THEWKE and ENNS 1979
- *H. morii* EHARA and GIANI IBRAHIM 1988
- *H. newyorkensis* DEFINADO and KHAING-FIELDS 1976
- *H. omissa* TSENG 1977
- *H. pusillifolium* LIN, PEN and CHEN 1994
- *H. reticulata* JEFFREY and CAMPBELL 1975
- *H. rostella* SUMMERS and PRICE 1970
- *H. scutula* CORPUZ-RAROS 1972
- *H. scutellata* (DE LEON) 1962
- *H. serrula* SUMMERS and PRICE 1970
- *H. transversa* CORPUZ-RAROS 1972
- *H. tropica* (SHIBA) 1976
- *H. tumidus* QAYYUM and CHAUDHRI
- *H. uichancot* CORPUZ-RAROS 1972
- *H. vescus* QAYYUM and CHAUDHRI
- *H. volgini* (CUNLiffe) 1962
- *H. wellsi* (BAKER) 1949
- *H. lindquisti* THEWKE and ENNS 1979
- *H. wellsina* (DE LEON) 1967

**Habitat:** Plants, soil. Cosmopolitan.

**Remarks:** The present concept of *Hemicheyletia*, the second largest genus in the family, is unsatisfactory. It contains one group whose median and lateral dorsal setae are similar and another with dissimilar setae. The hysteronotal shield may be reduced in members of both groups (*H. volgini*, with dissimilar dorsal setae, has an almost obsolete, nude hysteronotal shield). VOLGIN (1969) tried to address the problem by restricting *Hemicheyletia* to species with similar dorsal setae, creating *Dendrocheyla* gen. nov. for taxa with dissimilar dorsals, and adding *Andrecheyla* gen. nov. for *H. scutellata*, which bears a small hysteronotal shield. SUMMERS and PRICE (1970) did not accept this arrangement and rejected *Dendrocheyla* and *Andrecheyla*, a decision followed by most subsequent authors. However, as the number of species assigned to *Hemicheyletia* has almost trebled since then, it is time for a new effort, utilizing more characters.

\[42\] **Genus Hoffmannnita** PELAEZ 1962
\( (= \text{Myrmicocheylea Volgin 1963})\)
\( \text{(Fig. 42)} \)

**Type species:** Myrmicocheyla mexicana PELAEZ 1962

**Diagnosis:** Eyes absent; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with a single large tooth; peritremes forming an inverted U, with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both with fan-like lateral and humerals setae and boatlike median setae; all legs shorter than body, all tarsi with smooth claws and empodia.

**Other species**
- *H. clavipes* (VOLGIN) 1963
- *H. rimandoi* CORPUZ-RAROS 1972
- *H. mexicana* PELAEZ 1962

**Habitat:** Invertebrates: scorpion, millipede, tree bugs. Mexico, Eastern Europe, The Philippines.

**Remarks:** Although the three species assigned to *Hoffmannnita* appear to be very similar, they actually make up two groups. The type species bears a pair of eyes whereas the other two taxa lack this character. An examination of the types and an evaluation of additional characters would be needed to decide the issue.

\[43\] **Genus Myrmicocheyla** FAIN 1972
\( (= \text{Myrmicocheyla Volgin 1963})\)

**Type species:** Myrmicocheyla bunguranensis FAIN 1972

**Diagnosis:** Eyes absent; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with more than 3 teeth; peritremes M-shaped, with more than 3 links, posterior link abruptly bent inwards; body ovoid, legs II and III separated by less than body width; dorsum with a
propodosomal and a hysteronotal shield, both with slender, barbed dorsal setae; humerals similar; all legs shorter than body, all tarsi with smooth claws and empodia.

Other species

_Hylopecheyla malayi_ Fain and Nadchatram 1980

_Habitat:_ Squirrels (Sciuridae). South Asia.

**Genus Hypopicheyla Volgin 1969**

*Type species:* _Hypopicheyla elongata_ Volgin 1969

**Diagnosis:** Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with more than 3 teeth, placed along its entire length; peritremes with 3-4 links, posteriorly straight; body ovoid, legs II and III separated by less than body width; dorsum with a
propodosomal and a hysteronotal shield, contiguous; both shields bear dissimilar setae, laterals fan-like, medians squamate; humerals like lateral setae, pleuroventrally displaced; all tarsi with smooth claws and empodia.

Other species: 
H. mirabilis (VOLGIN) 1955

Habitat: Bugs, beetles, soil. Eastern Europe, Asia, USA.

Genus Ker MUMA 1964

Type species: Ker palmatus MUMA 1964

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw edentate; peritremes with 3-4 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both coarsely reticulated and with similar, spatulate to fan-like setae, humerals alike; all legs shorter than body, all tarsi with smooth claws and empodia.

Other species:
K. acidalia AHEER et al., 1997
K. bakeri ZAHER and SOLIMAN 1967
K. caeterus Barilo 1986
K. mercedesae CORPUZ-RAROS 1998
K. pintoriensis CORPUZ-RAROS 1998

Habitat: Soil, food stores, bird's nest. USA, Asia.

Genus Laeliocheyletia Summers and PRICE 1970

Type species: Laeliocheyletia teretis Summers and PRICE 1970

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both coarsely reticulated and with similar, spatulate to fan-like setae, humerals alike; all legs shorter than body, all tarsi with smooth claws and empodia.

Habitat: Tenebrionidae (Coleoptera). Central America.

Genus Lepidocheyla VOLGIN 1963

Type species: Lepidocheyla gracilis VOLGIN 1963

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both bearing fan-like setae, humerals similar; hysteronotal shield tapering posteriorly; all legs shorter than idiosoma; all tarsi with smooth claws and empodia.

Habitat: Old manure. Eastern Europe.

Genus Metacheletoides FAIN 1972

Type species: Metacheletoides numidae FAIN 1972

Diagnosis: Eyes absent; palpal tarsus without comb-like setae, bearing a smooth stiff seta and two sickle-like setae; palpal claw with more than one tooth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsal with only a propodosomal shield, dorsal setae slender, barbed; several, including humerals, ultralong; claws on tarsi I minute, other tarsi with smooth claws and empodia.

Other species:
M. akanyaruensis (FAIN) 1972
M. crinifer FAIN 1979
M. gisagarensis FAIN 1979

Habitat: Birds. Africa.

Genus Metacheyletia FAIN 1972

Type species: Metacheyletia obesa FAIN 1972

Diagnosis: Eyes absent; palpal tarsus with two sickle-like setae and two setae that lack dentitions; palpal claw with a single basal tooth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with only a small propodosomal shield; all setae slender; humerals similar; all legs shorter than body; tarsi I-III with smooth claws and empodia; leg IV vestigial or absent.

Other species:
Metacheyletia longisetosa ATYEO et al., 1984

Habitat: Parrots. Africa, South-East Asia, Mexico.

Genus Mexecheles DE LEON 1962

(= Acarocheyle VOLGIN 1965)

Type species: Mexecheles cunliffei DE LEON 1962

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid; legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both with dissimilar dorsal setae: laterals and humerals...
Figs. 57-58 — Fig. 57. *Cheletophanes montandoni* (Berlese and Trouessart). Female, dorsum (a) and venter (b); a dorsal seta (c); palpus venter (d) and dorsal (e) (from Oudemans, 1906). Fig. 58. *Lepidocheylea gracilis* Volgin. Female, dorsum (a) and venter (b) (from Volgin, 1969).
Figs 59-62 — Fig. 59. *Anthribicheyla bocki* THEWKE. Female, dorsum (redrawn by A.F. from the holotype). Fig. 60. *Tutacheyla robusta* CORPUZ-RAROS. Female, dorsum (from CORPUZ-RAROS, 1972). Fig. 61. *Hemicheyletia bakeri* EHARA. Female, dorsum (from EHARA, 1962). Fig. 62. *Laeliocheyletia teretis* SUMMERS and PRICE. Female, dorsum (a); gnathosoma (b); a dorsal seta (c) (from SUMMERS and PRICE, 1970).
Figs 63-64 — Fig. 63. Teinocheylellus longissimus FAIY. Female, dorsum (a) and venter (b); palpus venter (c) and dorsal (d); gnathosoma dorsal (e); leg I (f) and II (g) (from FAIN, 1974). Fig. 64. Chelonotus selenirhynchus BERLESE. Female, dorsum (a) and venter (b) (from Domrow, 1960).

lanceolate to strap-like, medians staghorn-like; leg I with minute claws and empodia, subequal in length to body or longer; other legs shorter than body; tarsi II-IV with smooth claws and empodia.

Other species
- *M. aztecorum* DE LEON 1962
- *M. hawaiiensis* (BAKER) 1949
- *M. impolitus* (SMILEY and MOSEY) 1970
- *M. marshalli* (BAKER) 1949
- *M. panneus* SUMMERS and PRICE 1970
- *M. virginensis* BAKER 1949
- *M. voitandini* JEFFREY 1975

Habitat: Plants, house dust, nests. USA, England, Australia.

54. *Genus Microchylella* VOLGIN 1966

Type species: *Microchylella parvula* VOLGIN 1966

Eyes present; with a single comb-like seta, other setae scimitar-like, and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with 3-4 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield; lateral
setae fan-like, medians dissimilar, squamate; humeral setae displaced to a pleuroventral platelet, similar to laterals; all legs shorter than body, all tarsi with minute claws and empodia (see FAIN et. al. 1997).

Other species
M. bengalensis GUPTA and PAUL 1992
M. granifera KUZNETZOV 1977
M. ozkani Koç and AYYILDIZ 1995

Habitat: Plants, soil. Tadzhekistan, Russia, Turkey, USA.

Remarks: VOLGIN (1969) described the type species as bearing minute claws, whereas SUMMERS and PRICE (1970) emphasized the lack of claws on all tarsi. However, the figures provided by KUZNETZOV (1977) and by Koç and AYYILDIZ (1995) indicate that their species carry claws on all legs. Claws also seem to be present on leg I of M. bengalensis according to the figure provided by GUPTA and PAUL (1992). These authors also wrote that M. bengalensis has two comb-like setae, a feature not shared by the type species.

Genus Mudcheyla FAIN 1972

Type species: Muricheyla sicista FAIN 1972

Diagnosis: Eyes absent; palpal tarsus with one comb-like seta and two sickle-like setae; palpal claw with 1-2 teeth; peritremes with more than 3 links; body ovoid; legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield; all dorsal setae spatulate-barbed, humerals similar; all legs shorter than body; all tarsi with smooth claws and empodia; tarsi III and IV with 3 dorsal conical processes each.

Habitat: On Sicista subtilis. Caucasia.

Genus Neoacaropsis VOLGIN 1962

Type species: Neoacaropsis granulatus VOLGIN 1962

Diagnosis: Eyes present; palpal tarsus with one comb-like seta and two sickle-like setae; palpal claw with 1-2 teeth; peritremes with more than 3 links; body ovoid; legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield; all dorsal setae slender, barbed; humerals similar; all legs shorter than body; all tarsi with smooth claws and empodia; tarsi III and IV with 3 dorsal conical processes each.

Habitat: Birds. Cosmopolitan.

Genus Neocheyletiella BAKER 1949

Type species: Cheyletia loricata BERLESE 1913.

Diagnosis: Eyes present; palpal tarsus with two comb-like setae, a feature not shared by the type species. This suggests that the species should be placed elsewhere.

Genus Neochelacheles SMILEY and WILLIAMS 1972

Type species: Neochelacheles messersmithi SMILEY and WILLIAMS 1972

Diagnosis: Eyes present; palpal tarsus with one comb-like seta and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body fusiform, legs II and III separated by more than body width; dorsum with a propodosomal and a hysteronotal shield; all dorsal setae spatulate-barbed, humerals similar; all legs shorter than body; all tarsi with smooth claws and empodia.

Habitat: Tenebrionidae (Coleoptera), USA.

Genus Neocheyletiella BAKER 1949

Type species: Cheyletia loricata BERLESE 1913.

Diagnosis: Eyes present; palpal tarsus with one comb-like seta and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal shield which may be distinguished only by delicate striae; dorsal setae slender, a few, including humerals, may be ultra-long; setae ic4 missing; all legs shorter than body; all tarsi with basally-inflated claws and empodia; coxae III and IV widely separated, coxa IV with one seta; tibia I with solenidion φ.

Habitat: Birds. Cosmopolitan.

Genus Neocheyletiella RADFORD 1950

Type species: Cheyletia loricata BERLESE 1913.

Diagnosis: Eyes present; palpal tarsus with two comb-like setae, a feature not shared by the type species. This suggests that the species should be placed elsewhere.
Figs 65-66 — Fig. 65. *Metacheyletia obesa* FAIN. Female, dorsum (a) and venter (b) (from FAIN, 1972, 1980c). Fig. 66. *Ornithocheyletia aitkeni* FAIN. Female, venter (a) and dorsum (b) (from FAIN, 1981).
setae, a single sickle-like seta and an inflated seta; palpal claw with a single to more than 3 teeth; peritremes with more than 3 links, none paired, without posterior vesicular chamber, body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hyster­
ontal shield, both covered by fan-like to squamate setae; laterals usually differ from medians, and latter may differ among themselves; humerals similar to other lateral setae; all tarsi with smooth claws and empodia.

Other species
N. beeri THEWKE and ENNS 1972
N. bulgarica (VOLGIN) 1955
N. dua CORPUZ-RAROS 1998
N. macrocorneus SOLIMAN 1975
N. manya CORPUZ-RAROS 1998
N. minuta BARLO 1986
N. numai VOLGIN 1969
N. ornata WAFA and SOLIMAN 1969
N. pavlovskyi VOLGIN 1964
N. placetus GUPTA and PAUL* 1992
N. typhosa SUMMERS and PRICE 1970
N. arctica PAU & KEDLINA, 2000

Habitat: Soil, moss, plants. Europe, USA.

Remarks: The definition of Neoeuchyletia is based on the inflated instead of a vesicular chamber at the posterior part of the peritremes; see also under Cunlfjella. The presence or absence of eyes in N. placetus could be determined neither from its description (GUPTA and PAUL, 1987) nor from the accompanying figure. The status of this species remains unclear.

53 Genus Nodele DOMROW and BAKER 1960
(= Neoeuchyletus LAWRENCE 1954)

Type species: Nodele calamondin DOMROW and BAKER 1960

Diagnosis: Eyes present; palpal tarsus with two comb­
like setae and two sickle-like setae; palpal claw with a single basal tooth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsal propodosomal and hysterontal shields in determinately separated, with similar rod-like barbed setae; humerals alike; leg I as long as body, other legs shorter; all tarsi with smooth claws and empodia.

Other species
N. coccineae THEWKE and ENNS 1968
N. mu HAINES 1988
N. philippinensis (BAKER) 1949
N. simplex WAFA and SOLIMAN 1968
N. superba KUZNETZOV 1977

Habitat: Soil, galleries of bark beetles. USA, Russia, Asia.

54 Genus Ornithocheyletia VOLGIN 1964
(= Neoeuchyletus Volgin 1965)

Type species: Ornithocheyletia dubinini VOLGIN 1964

Diagnosis: Eyes absent; palpal tarsus devoid of comb-like setae but with 1-2 sickle-like setae; tibial claw edentate; no retrose processes on palpal femora; peritremes with 3-4 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and two hysterontal shields: one large, covers hysterontum, other suranal; dorsal setae slender, barbed; some, including humerals, ultralong; all legs shorter than body; all tarsi with smooth claws and empodia; coxa IV with 1 seta; tibia I with solenidion φ.

Other species
O. aitkeni FAIN 1972
O. argentinensis FAIN 1972
O. barri SMILEY 1977
O. canadensis (BANKS) 1909
O. eulades FAIN 1981
O. franco­lini FAIN 1972
O. grralux FAIN 1972
O. geopeliae FAIN 1981
O. gersoni SMILEY 1970
O. granatina FAIN 1972
O. haliae SMILEY 1970
O. lamprocolius FAIN 1972
O. lawrenceae SMILEY 1970
O. leiothrix FAIN 1972
O. lepidus FAIN 1981
O. lichmerae SMILEY 1984
O. lonchurae SMILEY 1984
O. lukoschusi FAIN 1970
O. mironovii BOCHKOV and CHIROV, 1998

Habitat: Mongoose. Africa, South-east Asia.

Other species
N. curvidens (LAWRENCE) 1948
N. cynictis FAIN 1979

Habitat: Mongooses. Thailand, Angola, South Africa.
Figs 67-69 — Fig. 67. Ornithocheyletia dubinini Volgin. Female, dorsum (from Volgin, 1969). Fig. 68. Bakericheyla benoiti Fain. Female, dorsum (a); leg I (b) (from Fain, 1980b). Fig. 69. Bakericheyla (Apodicheyla) africana Fain. Female, dorsum (a) and venter (b) (from Fain, 1979b).

O. phylloscopi Bochkov et al., 1994
O. pinguis (Berlese) 1889
O. psittaci Fain 1972
O. psittaculæ Fain 1972

O. smileyi Fain 1972
O. volgini Smiley 1970

Habitat: Birds; cosmopolitan.
Figs 70-71 — Fig. 70. *Neocheyletiella media* FAIN. Female, dorsum (a) and venter (b) (from FAIN, 1980a). Fig. 71. *Apodicheles cypsiurus* FAIN. Female, dorsum (a) and venter (b) (from FAIN, 1979b).
Figs 72-73 — Fig. 72. *Nihelia curvidens* (Lawrence). Female, venter (a) and dorsum (b); gnathosoma: venter, left; dorsum, right (c) (from Lawrence, 1948). Fig. 73. *Galagocheles lemuricola* (Lawrence). Female, venter (a) and dorsum (b); gnathosoma: venter, left; dorsum, right (c) (from Lawrence, 1948 and Fain, 1979a).
61 Genus Oudemansicheyla Volgin 1969

Type species: Cheletomimus denmarki Yunker 1961

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with at least 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and two hysteronotal shields, placed side-by-side; all with similar dorsal fan-like setae; each hysteronotal shield with 5-7 setae; humerals alike; all legs shorter than body; all tarsi with smooth claws and empodia.

Other species
O. coprosomae Thewke and Enns 1976

Habitat: Soil, plants. USA, Australasia.

62 Genus Paracal'opsis Volgin 1969

Type species: Acal'Opsis travisi Baker 1949

Diagnosis: Eyes present; palpal tarsus with a single comb-like seta and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and 2 minute hysteronotal shields, placed in tandem, median, devoid of setae; dorsal setae slender, humerals similar but ultralong; all tarsi with smooth claws and empodia, claws on tarsus I minute.

Habitat: Lizard, flies, moss. USA, Europe.

63 Genus Paracheyletia Volgin 1955

Type species: Cheyletus pyriformis Banks 1904

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both with dissimilar setae, lateral and humerals fan-like, medians staghorn-like; all legs shorter than body, all tarsi with smooth claws and empodia; claws on tarsus I minute.

Other species
P. hortensis Volgin 1969
P. recki Volgin 1966
P. samsinaki Volgin 1966

Habitat: Plants, insects. Eastern Europe, USA.

Remarks: The present concept of Paracheyletia is based on Summers and Price (1970). The female of the type species has dissimilar lateral and median dorsal setae, whereas all those of the male are similar. Only the males of the other species are known, and they bear similar dorsal setae. A clearer definition of the genus will thus have to await the description of additional species or of the females of named taxa.

64 Genus Parachyletiella Kuznetsov 1977

Type species: Parachyletiella volgini Kuznetsov 1977

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with more than 3 teeth; peritremes with at least 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and two hysteronotal shields, placed side-by-side; with rod-like, barbed dorsal setae; each hysteronotal shield with 2 setae; humerals similar to other dorsal setae; all tarsi with smooth claws and empodia, solenidia on all tarsi subequal to segment in length.

Habitat: Tree holes, Russia.

Remarks: The type of this genus is very similar to several species of Cheletomimus, the only consistent difference being the length of the solenidia on tarsi II-IV. A further evaluation of this character is warranted.

66 Genus Paramicrocheyla Olivier and Theron 1989

Type species: Paramicrocheyla spinula Olivier and Theron 1989

Diagnosis: Eyes present; palpal tarsus with a single comb-like seta; palpal claw with more than 3 teeth; peritremes with less than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both with fan-like setae, humerals similar; all tarsi with empodia but lack claws.

Other species
Paramicrocheyla ungulina Olivier and Theron 1989.

Habitat: Soil, South Africa.

Remarks: The description of this genus presents two separate problems. First, the figure of P. spinula (herein reproduced as Fig. 28) suggests that the specimen examined by Olivier and Theron may have been a nymph. Second, P. spinula lacks claws on all legs, whereas the second species, P. ungulina, has tarsal claws.

66 Genus Pavlovskicheyla Volgin 1965

Type species: Cheletophyes semenovi Rodendorf 1940

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw edentate;
Figs 74-75 — Fig. 74. *Sciurocheylea squamosa* (DOMROW and BAKER). Female dorsum, (a) and venter (b) (from DOMROW and BAKER, 1963). Fig. 75. *Smileycheles camerunensis* FAEN. Female dorsum, (a) and venter (b) (from FAEN, 1979a).

Peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both smooth or punctated and with similar, lanceolate to fan-like dorsal setae; humerals similar; all legs shorter than body, all tarsi with smooth claws and empodia.

*Other species*

*P. philippicana* CORPUZ-RAROS 1998

*P. platydemeae* THEWKE and ENNS 1975

*Habitat:* Stored products, manure, Tenebrionidae (Coleoptera). Uzbekistan, USA.

*† Genus Philippicheyla* CORPUZ-RAROS 1972

(Type species: *Philippicheyla filipina* CORPUZ-RAROS 1972)

*Diagnosis:* Eyes present; palpal tarsus with two comb-
like setae and two sickle-like setae; palpal claw with more than 3 teeth, located only along basal half; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a single propodosomal shield bearing rod-like setae; humeral setae alike; all tarsi with smooth claws and empodia.

Other species
P. notelaeae GERSON 1994

Habitat: Plants. The Philippines; Australia.

Genus Polycheyletus VAIYANJIKUL 1979

Type species: Polycheyletus boonkongae VAIYANJIKUL 1979

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with more than 3 basal teeth; peritremes with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both bearing many neotrichous, similar fan-like setae; humerals similar; all tarsi with smooth claws and empodia.

Other species:
P. batangenius (CORPUZ-RAROS and SOTTO) 1977

Habitat: Soil; Thailand, The Philippines.

Remarks: CORPUZ-RAROS (1980) redescribed P. batangenius (originally placed in Oudemansicheyla). She noted that it differed from the type species by having only a single comb-like seta (among other characters), the appropriate seta being present but lacking dentitions. At present it is difficult to evaluate the significance of this variation.

Genus Promuricheyla FAIN 1979

Type species: Promuricheyla lukoschusi FAIN 1979

Diagnosis: Eyes absent; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with 1-2 teeth; peritremes with more than 3 links; body ovoid; legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield; dorsal setae slender, barbed, humerals similar; all tarsi bear smooth claws and empodia; tarsi III and IV with 2 dorsal conical processes each.


Genus Prosoccheyla VOLGIN 1969

Type species: Cheletogenes oakhlandia BAKER 1949.

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with 1-2 teeth; peritremes with more than 3 links; body ovoid; legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield, both with similar or dissimilar fan-like or staghorn-like setae; humerals similar to lateral setae; leg I without claws and empodia, bearing four to six conspicuous terminal setae; tarsi II-IV with smooth claws and empodia.

Other species:
P. acantha (SMILEY and MOSER) 1970
P. buckneri (BAKER) 1949
P. hepburni (LAWRENCE) 1954
P. traubi (BAKER) 1949
P. villosa BOCHKOV and HAUSTOV, 1999

Habitat: Plants. Cosmopolitan.

Remarks: VOLGIN (1969) as well as SUMMERS and PRICE (1970) noted that Prosoccheyla is a heterogenous assemblage. VOLGIN (1969) split Prosoccheyla into two subgenera, Prosoccheyla and Reckiana; the former characterized by a large shield which covers most of its hysteronotum, whereas the latter bears only an indeterminate, centrally-located hysteronotal shield. SUMMERS and PRICE (1970) generally agreed with VOLGIN, but did not accept his subgenera. Upon applying the generic concepts used in the present summation, we conclude that the genus may have to be split even further. All dorsal setae of the type species, P. oakhlandia, are similar, whereas they are quite dissimilar on the dorsum of another member of that group, P. traubi. The same disparity may be seen in regard to the dorsal setae of P. hepburni and P. buckneri, both placed in the Reckiana group. Finally, P. acantha, which has a longitudinally-separated hysteronotal shield, clearly deserves separate status. However, were we to formalize these concepts, Prosocchyla would be split into five genera, a step which appears to be premature.

Genus Salmisnaxia VOLGIN 1965

(= Cryptocheyla FAIN, 1972)

Type species: Cheletophyes theodoridis Samínák 1959

Diagnosis: Eyes present; palpal tarsus with two comb-like setae and two sickle-like setae; palpal claw with 1-2 teeth; peritremes with more than 3 links; gnathosoma partly covered by anterior margin of propodosoma; body ovoid; legs II and III separated by less than body width; dorsum with strongly-appressed propodosomal and hysteronotal shields; dorsal setae slender, lanceolate or fan-like, humerals alike; all tarsi with smooth claws and empodia.

Other species:
S. carabae RAMARAJU and MOHANASUNDARAM 1999
**Figs 76-77** — Fig. 76. *Cheyletiella parasitivorax* (Égnin). Female dorsum, (a) and venter (b); genu I, dorsal (c) (from SMILEY, 1970). Fig. 77. *Bicheyletiella romerolagi* FAIN. Female dorsum, (a) and venter (b); leg I (c); leg IV (d) (from FAIN, 1979f).

*S. gonocephalum* FAIN 1984
*S. pagongae* CORPUZ-RAROS and SOTTO 1977
*S. trilobitus* BOCHKOV and MIRONOV 1998
*S. volgini* (FAIN) 1972

**Habitat**: Tenebrionidae (Coleoptera). Africa, Australia, The Philippines.

**Remarks**: The variable number of teeth located on the tibial claw of species consigned to this genus, as well as the diverse shape of their dorsal setae, would indicate that *Samsinakia*, as presently understood, consists of more than a single genus. CORPUZ-RAROS and SOTTO (1977) were aware of these difficulties and only reluctantly placed *pagongae* (collected from soil, an unusual habitat...
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Figs 78-79 — Fig. 78. *Eucheyletiella ochotonae* (VOLGIN). Female, dorsum (from VOLGIN, 1969). Fig. 79. *Criokeron quintus* (DOMROW and BAKER). Female, dorsum (from DOMROW and BAKER, 1963).

for *Samsinakia* in this genus. Most species of *Samsinakia* were collected off tenebrionid beetles, and the variations noted may reflect adaptations to specific hosts. A further evaluation of the characters defining *Samsinakia* awaits the description of additional species.

72. **Genus Sciuroclleyla** VOLGIN 1969
    
    *Nihelia squamosa* DOMROW and BAKER 1963

*Diagnosis:* Eyes absent; palpal tarsus minute, without comb-like or sickle-like setae; palpal claw edentate, hooked; palpal femur and coxa I each with a retrose ventral process; peritreme with more than 3 beadlike links; body ovoid, legs II and III separated by less than body width; dorsum with two contiguous, propodosomal and hysteronotal shields; dorsal setae dissimilar, medians squamate, laterals and humerals slender; humeral setae on a separate platelet; all legs shorter than body; solenidion of on genu I replaced by a stellate seta; all tarsi with smooth claws and empodia in the shape of two diverging, distally-expanded rods.

*Habitat:* Squirrel (Sciuridae). Thailand.

73. **Genus Smileychelles** FAIN 1979
    
    *Smileycheles camerounensis* FAIN 1979

*Diagnosis:* Eyes absent; palpal tarsus absent, thus without comb-like or sickle-like setae; palpal claw edentate, hooked; palpal femur with a ventral process; peritreme with more than 3 beadlike links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield; all setae, including humerals similar, slender; all legs shorter than body; solenidion of on genu I replaced by a stellate seta; all tarsi with smooth claws and empodia.

*Habitat:* Rodents. Africa.
Genus Tetocheylus FAI N 1974

Type species: Tetocheylus longissimus FAI N 1974

Diagnosis: Eyes absent; palpal tarsus without comb-like setae and a single sickle-like seta; palpal claw edentate; peritreme with more than 3 links; body fusiform, legs II and III separated by more than body width; dorsum with a single propodosomal shield and two hysteronotal shields placed in tandem; all shields bear foliate setae; other anterior dorsal setae, including humerals, slender or barbed, posterior setae feathered; idiosoma with two setiferous lobes caudally; all legs shorter than body, coxae III and IV clearly separated; tarsi I-III bear smooth claws and empodia; tarsus IV only with empodium.

Other species
Tetocheylus gundi FAI N et al., 1982.

Habitat: Rodents. Africa.

Genus Thewchela IDE and KETHLEY 1977

Type species: Thewchela ratuji IDE and KETHLEY 1977

Diagnosis: Eyes absent; palpal tarsus with one comb-like seta and two sickle-like setae, other comb-like seta modified to a thick spine; palpal claw edentate; peritremes with more than 3 links; base of gnathosoma with strong hooks; body ovoid; legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield; dorsal setae short, barbed; humerals similar, on separate platelets; all legs shorter than body; coxae I-II with lobes; all tarsi with smooth claws and empodia.

Habitat: Squirrels. South-east Asia.

Genus Tutacheyla CORPUZ-RAROS 1972
( = Indonesicheylia THEWKIE 1980)

Type species: Tutacheyla robusta CORPUZ-RAROS 1972

Diagnosis: Eyes present; palpal tarsus with two comb-like seta and two sickle-like setae; palpal claw with more than 3 teeth; peritremes strongly M-shaped, with more than 3 links; body ovoid, legs II and III separated by less than body width; dorsum with a propodosomal and a hysteronotal shield which carry similar spatulate setae; humerals similar; all tarsi with smooth claws and empodia.

Other species
T. buruensis (THEWKIE) 1980

Habitat: Plants. The Philippines; USA.

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References
(Except for references cited in the text, sources quoted by VOLGIN, 1969, or by SUMMERS and PRICE, 1970, are not repeated)


Further observations on the Cheyletidae

Further observations on the Cheyletidae


FURTHER OBSERVATIONS ON THE CHEYLETIDAE (ACARI), WITH A KEY TO THE GENERA OF THE CHEYLETINAE AND A LIST OF ALL KNOWN SPECIES IN THE FAMILY

by U. GERSON, A. FAIN AND R.L. SMILEY


CORRIGENDA

Page 39. : Couplet 55 : should be read :

55. Palpal claw toothed along basal half... Cheyletia Haller (Fig.56)
Palpal claw toothed along entire length... Hypopicheyia Volgin (Fig.55)

Page 73 : In the remarks to the genus Neoeucheyla, it should be read : The definition of the genus Neoeucheyla is based on the presence in the internal part of the palpal-tarsus of a club-shaped seta (= modified sickle-shaped seta) along with the absence of a vesicular chamber in posterior part of peritreme.

Page 77 : In the diagnosis of genus Paramicrocheyla : read : peritreme with less than 3 links.

Page 80 : In the legends of fig 76, instead of (EGNIN) ... read (MEGNIN)

ADDENDA

Page 66 : In the legend of fig.55, add: "( from Summers and Price,1970)"


Columbicheyla bicirci n.sp. (add on p. 57)
Hoffmannita navicula n.sp. (add on p.65)
Columbicheyla macroflabellata Thewke & Enns,1972 new record.


Cheletomimus trema : same reference
A systematic review of the parasitic mite genus Eucheyletiella
Volgin, 1969 (Prostigmata: Cheyletidae). (add on page 61)
Eucheyletiella palasius Bochkov & Mironov nov. spec. (add on page 61)
Eucheyletiella daurica Bochkov & Mironov nov. spec. (add on page 61)

the genus Neoeucheyla Radford, 1950 (Acari: Cheyletidae) with
description of a new species from Iran.

2000 : Bak faini Corpuz-Raros.-
Bak gersoni Corpuz-Raros - Two new species and a new record of Bak from the Philip-