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Systematic notes on the Speleognathinae
(Acari, Ereynetidae)
with description of new taxa
and a key to the Trispeleognathini*

by A. FAIN**

Summary

The Speleognathinae (Acari, Ereynetidae) are divided in five new tribes. Four new genera and two new subgenera are created in this subfamily. A key to the Trispeleognathini is provided.

Résumé

Les Speleognathinae (Acari, Ereynetidae) sont divisés en cinq nouvelles tribus. Quatre nouveaux genres et deux nouveaux sous-genres sont créés dans cette sous-famille. Une clé des Trispeleognathini est donnée.

The Ereynetidae include free-living mites and species living in the respiratory tract of various animals : molluscs, batrachians, birds and mammals. This family has been divided in three sub-families mainly on the basis of the number of sensillae, the presence or absence of genital suckers and the shape of the chaetotaxy.

The classification of this group of mites, especially at the genus level, is particularly difficult owing to the polymorphism of the chaetotaxy and the relative instability of some characters such as the number of palpal segments and the presence or absence of the dorsal shield and the eyes. The polymorphism of the chaetotaxy is specially marked in the genera parasitizing the non-passeri-form birds. We have described and depicted all the different setae

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occurring in the Speleognathinae in a previous paper (Fain, 1963). They belong to four main types: barbed (B), dentate (D and E), striated (S) and simple, piliform (N).

Morphologically the Speleognathinae can be divided in five groups. Ecologically, each of these groups is specialized for a defined group of hosts. We think, therefore that they represent natural groups and we propose to give them the rank of tribes:

1. Tribe Speleognathini n.tr.: This tribe is clearly characterized by the unique structure of the gnathosoma which is completely ventral and lacks the coxal base. The palps have only one large segment which is directly attached to the cuticle. In all the other tribes the gnathosoma has a coxal base (hypostome) and is terminal. The internal part of the gnathosoma is reinforced by a thick and sclerotized U-shaped sclerite. Dorsal shield lacking. A pair of prominent eye-lenses is present. Chaetotaxy with a mixture of setae B and N.

Type and only one genus: Speleognathus Womersley, 1936. This genus is represented by only one species *S. australis* Wom. 1936, living in the nasal cavities of cattle.

2. Tribe Boydaiini n.tr.: All the setae are barbed (type B). Tibiae with 5-3-3(2)-3(2) setae except in one species, *Coboydaia* (*Apodiboydaia*) *trochila* Fain, 1958 whose tibiae bear 4-2-2-2 setae. Dorsal shield or eye lenses absent, vestigial flat eyes may be present. Palps with three segments.

Type genus: Boydaia Womersley, 1953. There is one other genus. This tribe includes about 40 species, all parasitic in the nasal cavities of birds, especially Passeriformes, more rarely in other orders of birds.

3. Tribe Trispeleognathini n.tr.: Chaetotaxy very polymorphic, two or three different types of setae are generally present in the same species. Shield and eye lenses present or not. Palps with either one, two or three segments. Tibiae 5-3(2)-3(2)-3(2).

Type genus: Trispeleognathus Fain, 1958a. This tribe includes 13 other genera and a total of about 30 species, all living in the nasal cavities of non-passeriform birds.

4. Tribe Speleochirini n.tr.: Chaetotaxy generally of the striated type (S), rarely of the N type. The pulvilli are modified. In most species they consist of a large striated median lobe flanked

or not by two smaller lateral lobes. In two genera the median lobe is smaller, more or less apically divided and flanked by two small latero-basal lobes. Claws generally dilated and striated basally. Dorsal shield either present or not. Eyes lacking. Palps with either one, two or three segments. Tibiae 5-3-3(2)-3(2).

Type genus: Speleochir Fain, 1966. This tribe includes five other genera and a total of 11 species. All the group is confined to bats.

5. Tribe Paraspeleognathopsini n.tr.: Chaetotaxy exclusively of the barbed type (B) as in the Boydaiini. Dorsal shield always present. Eyes absent. Palps variable (with one, two or three segments). Tibiae always with 4-2-2-2 setae.

Type genus: Paraspeleognathopsis Fain, 1958a. This tribe includes two other genera and a total of 12 species all parasitic in the nasal cavities of rodents except for one species living in a primate (*Galago* sp.) and one in a Marsupial.

Description of new genera in the Speleognathinae

1. Genus *Psittaboydaia* n.g.: This genus differs from the other genera in the tribe Trispeleognathini by the strong reduction of the apical setae of tarsi I-IV which are microsetae. Idiosomal setae of dentate type. Scutum lacking. Sensillae piliform. Setae *vi*, *ve*, *sc i* present, the *sc e* absent. This genus is divided in two subgenera:

Nominate subgenus: Palps with two segments. Eyes present. Two pairs of hypostomal setae. Palp tarsus with 3 setae. Trochanters 1-1-0-0 setae. Femora 4-3-2-3 (2).

Type species: Neoboydaia psittaculae Fain, 1962. This subgenus contains a second species *P. amazona* (Fain, 1972).

Subgenus *Trichoglossiella* n.subg.: Palps with one segment bearing two setae. Eyes lacking. One pair of hypostomal setae. Trochanters without setae. Femora 3-2-2-2.

Type species: Aureliania trichoglossi Fain, 1970.

2. Genus *Meropiboydaia* n.g.: Idiosoma with dorsal setae of type N and ventral setae of barbed type (Bt type). Tarsi with all the setae barbed. Dorsal shield lacking. Eyes with prominent lenses (in the original description the eyes were overlooked). Sensillae

globulous. Palps with one segment. Setae *vi*, *ve*, hypostomals and trochanterals are lacking. Coxae 1-1-1-0. Femora 5-3-3-2.

Type species: *Boydaia merops* Fain, 1956.

3. Genus *Pterniboydaia* n.g.: Dorsal and ventral setae of idiosoma dentate (type Ea) Tarsi with apical setae barbed, the other more basal are cylindrical (type Ha). Dorsal shield and eyes are lacking. Sensillae piliform. Palps with one segment. Coxae 2-0-1-0. Trochanters 1-1-0-0. Femora 5-4-3-2. Two pairs of hypostomal setae.

Type species: *Boydaia pternistis* Fain, 1955.

4. Genus *Speleochiroides* n.g.: Differs from *Speleochir* Fain, 1966 by the presence of a dorsal shield in an inverted T, the striated aspect of the dorsal setae of idiosoma, the bifid aspect of the sensillae. Coxae 1-1-1-1. Femora 6-4-2-3.

Type species: *Speleochir carollia* Fain and Lukoschus, 1971.

5. We elevate the subgenus *Boydaia* (*Coboydaia*) Fain, 1971 to the genus rank, and we describe the subgenus *Apodiboydaia* n. subg. in the genus *Coboydaia* n. stat., with the following characters: Claws strongly modified, specially the claws III-IV which are very short, only slightly curved and spatulate in their apical half. Another character is the reduction of the number of tibial setae: 4-2-2-2 which is unique in the *Boydaiinae*. Trochanteral setae are lacking.

Type species: *Boydaia trochila* Fain, 1958.

Key to the *Trispeleognathini* (Females) *

1. Tarsi I-IV with only striated setae (foliate Sb or thin SN type). Tibiae with setae Na, other segments of legs with a mixture of setae Na and dentate setae (types D and E). Idiosoma with dentate setae (E and D) ... 2.
Tarsi I-IV without striated setae ... 4.
2. Palps with one segment. Eyes absent. Number of setae: coxae 1-1-1-1, trochanters without setae, femora 4-3-3-2
... genus *Aureliania* Fain, 1958a
One species: *A. aureliani* (Fain, 1955a)

* Remark: *Ophthalmognathus accipitris* Domrow, 1969 is not listed in this key.

Palps with 3 segments, the basal one being poorly developed. One pair of prominent eye lenses. Coxae 2-1-1-0, trochanters 1-1-0-0 ... genus *Ophthalmognathus* Dubinin, 1957

(syn. *Neospeleognathus* Fain, 1958) 3.

3. Femora 5-4-3-2 setae. With 4 pairs of genital setae. Apex of tarsi with asymmetrical thick striated setae. Tarsi I with all dorso-basal setae more apical than the solenidion

... *O. schoutedeni* (Fain, 1955) = *O. dogieli* Dubinin, 1957)

Femora 6-4-3-3. With 5 pairs of genital setae. Apex of tarsi with symmetrical thick striated setae. Tarsi I with one dorsal seta more basal than the solenidion ... *O. tenorioae* Fain & Goff, 1980

4. The 4 apical and the 2 ventro-apical setae of tarsi I-IV are rodlike microsetae about 5 µm long, the other tarsal setae are normal (tarsi I with 4 dorsal Ha setae and 2 ventral Na or Nz; tarsi II with 2 Na dorsally, tarsi III-IV with 1 Na dorsally). Idiosoma with dentate setae (type D). Tibiae with Na or Nz setae. Other segments with setae Na or Nz mixed with dentate setae. Sensillae piliform. Dorsal shield and setae *sc e* are lacking. Coxae 2-1-1-1 ... genus *Psittaboydaia* n.g. 5.

Apical or ventro-apical setae of tarsi normally developed and barbed (type B), the other tarsal setae either barbed or of types Ha or Na ... 7.

5. Palps with 2 segments. Palptarsus with 2 or 3 setae. Eyes either with lenses or flat. Hypostome with 2 pairs of setae. Trochanters 1-1-0-0. Femora 4-3-2-3(2)

... subgenus *Psittaboydaia* n. sub. 6.

Palps with one segment, the palptarsus with 2 setae. Eyes absent. Hypostome with one pair of setae. Trochanters without setae. Femora 3-2-2-2 ... subgenus *Trichoglossiella* n. subg.

One species: *P.(T.) trichoglossi* (Fain, 1970) n. stat.

6. Setae *vi* situated behind the *sc i* (= sensillae). Eyes flat. Sensillae relatively short (40 µm)

... *P.(P.) psittaculæ* (Fain, 1962) n. comb.

Setae *vi* situated in front of the *sc i*. With 2 prominent eye lenses. Sensillae longer (85 µm)

... *P.(P.) amazona* (Fain, 1972) n. comb.

7. Only the 6 to 8 apical or ventro-apical setae of tarsi I-IV are barbed, the other setae of these tarsi being of types Ha, Na

Tibiae I with setae BNz and B. Sensillae bare. Setae *ve* and *l5* present. Two pairs of anals. Coxae 2-0-1-0. Femora 7-4-3-3
... *S. onychognathi* (Fain, 1964) n. comb.

17. With two pairs of *vi*. Coxae 2-1-1-1. Femora 7-4-3-4. Dorsal shield well developed. With prominent eye lenses

... *S. benoiti* Fain, 1955a.

With one pair of *vi*. Coxae 2-0-1-0. Femora 7-4-3-3. Dorsal shield smaller and different in shape. Eyes flat

... *S. charadricola* Fain, 1964

18. Dorsal setae of idiosoma either exclusively or mainly pili-form (Na, SNa, BNz or SNz) ... 19.

Dorsal and ventral setae of idiosoma either exclusively or mainly dentate (Db or Dd) ... 21.

19. Setae *d1* to *d5* and *l1*, *l4* and *l5*, anal setae and setae of legs (except tarsi) long and piliform (Na type). Ventral setae of idiosoma of Bt type. Shield absent. With prominent eye lenses. Sensillae globulous. Palps with one segment. Setae *vi*, *sce*, hypostomals and trochanterals are lacking. Coxae 1-1-1-0. Femora 5-3-3-2

... genus *Meropiboydaia* n.g.

One species: *M. merops* (Fain, 1956) n. comb.

Setae *d1* to *d4* piliform and forked. (Nz, BNz or SNz). Ventral setae of idiosoma very small and barbed, either with one (BNc) or two (BNz) thin apical prolongations or without such prolongations (Ba). Tibiae with Na or Nz; other leg segments (except tarsi) with Na, Bz, Ba, BNc, BNz. With a dorsal shield and prominent eye lenses. Palps with 3 segments. Two pairs of hypostomal and of anal setae. Setae *vi* and *sce* present

... genus *Astrida* Fain, 1955a 20.

20. Pulvilli deeply incised. Dorsal shield longer than wide. Palps with 3 segments. Setae *ve*, *sce* and *l5* present. Ventral setae of idiosoma with BNc and BNz. Setae *l4*, *l5* and *d5* of type Nz. Leg segments other than tarsi and tibiae with Nz, BNc and BNz. Coxae 2-1-1-1. Trochanters 1-1-0-0. Femora 7-4-3-3

... subgenus *Astrida* Fain, 1955a.

One species: *A.(A.)caprimulgi* Fain, 1955a.

Pulvilli entire. Dorsal shield poorly developed, wider than long. Palps with 2 segments. Setae *ve*, *sce*, *l5* and the trochanterals are lacking. Ventral setae of idiosoma short and barbed (Ba). Setae

l4 and *d5* of type Ba. Legs segments other than tarsi and tibiae with Na and Ba setae. Coxae 1-1-1-1. Femora 5-3-3-2

... subgenus *Cerylonyssus* Fain & Aitken, 1970

One species: *A.(C.) chlorocerylei* Fain & Aitken, 1970

21. Claws either of tarsi III and IV or only of III unequal and modified: one or both abruptly bent in their apical part. Dorsal setae of idiosoma of type Db; ventral setae either exclusively of type Db or mixed with Na, Nz and B. Tibiae with Na or Nz; other segments with Na, Nz and Db

genus *Ralliboydaia* Fain, 1962b n. stat. 22.

Claws III and IV normal ... 24.

22. Claws IV normal; claws III modified with the anterior claw regularly curved at apex but shorter and thinner than the posterior claw, the latter being abruptly bent in its apical third. Shield wider than long. All ventral setae of idiosoma of type Db

... *R. coccyzae* (Pence, 1973) n. comb.

Claws III and IV unequal and modified, the anterior claw smaller than the posterior claw, both or only the posterior abruptly bent in their apical part. Genital setae barbed, anal setae Na, setae *l5* Nz. 23.

23. Anterior claw of tarsi III-IV thin and small and normally curved at apex; posterior claw much thicker and abruptly bent near apex. Dorsal shield absent.

... *R. lateralli* Fain, 1962b n. stat.

Both claws of tarsi III-IV thick and abruptly bent close to their apex, the apical part being sinuous. Dorsal shield present

... *R. porphyronis* (Domrow, 1965) n. comb.

24. With a large dorsal shield. Palps with one segment. Eyes absent. Idiosoma with only setae of type Db or Dd (except sensillae). Pulvilli entire. Absence of setae *vi*, *l5*, hypostomals and trochanterals. Coxae 3-1-1-0. Femora 5-3-2-1

... genus *Picinyssus* Fain, 1969

One species: *P. buccanodon* Fain, 1969

Dorsal shield absent. Palps with 3 segments. Eyes with prominent lenses. Trochanters 1-1-0-0

... genus *Phoenicopteriella* Fain, 1970 25

25. Idiosoma with dorsal setae Db, except *vi*, *sce* and *l1* which are lanceolate-striate (type Sc); ventral setae Db, except coxal I

(Sc) and the genitals (type Bf). Tibiae with SN and Db, other segments (except tarsi) with Db, Na and Sd. Hypostome with 2 pairs of setae. Coxae 1-0-1-1. Femora 7-4-3-4

... *P. mirabilis* Fain, 1970

Idiosoma with all dorsal setae Dd (except sensillae); ventral setae of Dd type mixed with Bf setae (the genitals). Tibiae with Na and rare BNa; other segments with Bd and Na setae. One pair of hypostomal setae. Coxae 2-1-1-1. Femora 5-4-3-3

... *P. womersleyi* (Fain, 1955a) n. comb.

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Etude d'une rivière calcaire salmonicole*

Phénologie des Ephéméroptères

par Dominique ROSILLON

Résumé

La phénologie de 11 espèces d'Ephéméroptères dans une petite rivière salmonicole, le Samson, est décrite sur base de captures réalisées au cours de 4 années (1981-1984). Les résultats sont comparés avec ceux provenant d'autres régions européennes et nous avons essayé de les rattacher aux cycles de vie des espèces. Il apparaît une grande diversité des périodes de vol. Certaines espèces volent pendant plusieurs mois (*B. scambus*, *E. ignita*) voir presque toute l'année (*B. rhodani*) alors que le stade adulte d'autres espèces ne se rencontre que durant une courte période (1 mois chez *E. danica* et *E. major*). Les causes de telles stratégies sont discutées. Les variations géographiques affectent surtout l'étalement des émergences qui a pu être mis en relation avec les conditions thermiques hivernales (chez *Baetis rhodani*) alors que le mode d'émergence (synchronisé ou dispersé) apparaît comme une caractéristique spécifique. Enfin les comportements de ponte ont été observés pour plusieurs espèces et ils montrent également une variabilité selon l'espèce.

Summary

The phenology of 11 Ephemeropteran species in a trout stream, the Samson, is described from adults caught during four years (1981-1984). The results are compared with those from other European countries and connected with the life cycles of the species. A great variability appeared between the flight periods; some species fly during several months (*B. scambus*, *E. ignita*, ...), even almost the whole year (*B. rhodani*) whereas the adult stages of other species occur during a short period only (one month in *E. danica* and *E. major*). The causes of those strategies are discussed. The geographic variations essentially affect the length of the flight period which can be connected with the thermal conditions during winter (in *Baetis rhodani*) while the emergence type (synchronized or dispersed) seems a specific characteristic. The laid behaviour is also observed in several species and it shows a great variability between the different species.

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