A new genus and species of myrmecophilous Aleocharini from Morocco (Coleoptera: Staphylinidae: Aleocharinae), associated with *Aphaenogaster* (Hymenoptera: Formicidae: Myrmicinae)

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Abstract – *Aphaenochara lackneri* n. gen., n. sp., is described based on material collected from a nest of the ant *Aphaenogaster atlantis* Santschi in the High Atlas, Morocco. This genus is closely allied to the genus *Aleochara* Gravenhorst, and is placed in the subtribe Aleocharina of the tribe Aleocharini.

The tribe Aleocharini of the subfamily Aleocharinae is represented by 19 genera and about 480 species from all zoogeographic regions and includes four myrmecophilous genera: *Piocharidia* Heyden, 1870 (8 species from southern Mediterranean, the Caucasus, the middle East and India), *Leptogenophilus* (1 species from Philippine, actually a member of the tribe Hoplandriini, Maruyama, in prep.), *Aleonictus* (1 species from Sumatra), and *Formicaenictus* (1 species from Sumatra and Malay Peninsula). Of these, *Piocharidia* is the only known myrmecophilous genus of Aleocharini from the Western Palearctic region, and is associated with *Cataglyphis* ants.

Recently, we examined specimens of a curious staphylinid beetle taken from the nest of a species of *Aphaenogaster* ant in the High Atlas, Morocco. Our examination revealed that they represent an undescribed species, which cannot be assigned to any known genus of Aleocharini. The beetle fauna of the Western Palearctic has been well investigated, and only a few myrmecophilous species from this region have been newly described in the past 50 years. The addition of another myrmecophilous genus of Aleocharini to the Western Palearctic fauna seems remarkable.

This paper describes a new genus represented by a new species, and discusses its systematic position.

**Material and methods**

Four beetles were collected from a colony of *Aphaenogaster atlantis*, which had nested under a stone in a deciduous forest in the high mountainous zone (2,800m, alt.) of the High Atlas of Morocco. Mr. Tomas Lackner, the collector, searched several other nests, but did not collect any additional specimens. Therefore, there is only one known example of this species. Ethological observations have not been made.

The technical procedures adopted here generally follow Naomi & Maruyama (1997). The terminology of the microstructures largely follows Sawada (1972), Seevens (1978), and Klimaszewski (1984). The numbers of setae and pores in the description are those on one side of the body, except for the medial pseudopores of the prementum.

**TAXONOMY**

*Aphaenochara*, n. gen.

**Type species:** *Aphaenochara lackneri*, n. sp.

**Diagnosis** – *Aphaenochara* is similar to the genus *Aleochara* but can be distinguished from the latter by

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the combination of the following character states:
1) body limuloid-shaped; 2) maxilla thick and short;
3) 1st segment of labial palpus short, almost as long as wide; 4) posterolateral angle of male 8th tergite protruded and pointed.

Description – Body (fig. 1) broad, somewhat limuloid-shaped, slightly depressed above, shining. Head circular, weakly convex dorsally. Antenna clavate, 11-segmented; 1st segment short, as long as 3rd. Labrum (fig. 2) much wider than long; anterior margin widely emarginate. Epipharynx (fig. 3) with 4 or 5 setulae laterally, and with many pores medially. Mandibles asymmetric, pointed apically; right mandible (fig. 4) with small tooth at middle of inner margin, serrate between the tooth and apex; left mandible (fig. 5) slightly serrate at middle of inner margin. Lacinia (fig. 6) with about 30 stout setae on inner margin and densely covered with short pubescence around the setae. Galea (fig. 6) with apex obtuse and densely pubescent. Maxillary palpus (fig. 6) with 2nd and 3rd segments dilated apically. Mentum (fig. 7) subtrapezoidal; anterior margin widely emarginate; surface, except lateral margin, moderately covered with pseudopores. Prementum (fig. 8) with 3 real pores, 1 setal pore and 2 or 3 pseudopores laterally, and with about 30 medial pseudopores; anterior margin between medial setae deeply emarginate. Ligula (figs. 8, 9) bilobed [holotype trilobed, a teratism]; each lobe with 4 long setulae apically. Lateral lobe of ligula (fig. 9) generalized; inner margin almost straight. Labial palpus (fig. 8) with 1st segment short, slightly longer than wide and as long as 2nd. Pronotum semicircular; posterior margin bisinuate. Mesosternum (fig. 10) much wider than long; process pointed apically, margined, 2.5 times longer than metasternal process. Elytra much wider than long; posterior margin truncate. Legs slender, moderate in length; each tarsus narrowed toward apex, and with 5th tarsomere longer than combined length of 3rd and 4th. Abdomen broad, narrowed posteriorly; 3rd to 6th segments much wider than long.

Sexual dimorphism: lateral angle of male 8th tergite protruding and pointed while that of female short and rounded.

Male: median lobe of aedeagus (figs. 14, 15) elongate pyriform in dorsal view; copulatory piece of inner sac with flagellum; inner sclerotized pieces, x, y, z, present.

Female: spermatheca (fig. 18) curved at joint between capsule and chamber; capsule bulbous.

Etymology – This feminine genus name is a combination of the host ant genus, *Aphaenogaster* Mayr, 1853, and the type genus of the tribe Aleocharini, *Aleochara* Gravenhorst, 1802.

*Aphaenochara lackneri*, n. sp.


Diagnosis – *Aphaenochara lackneri* can be distinguished from all the other members of the tribe Aleocharini by the limuloid body and the posterolateral angle of male 8th tergite protruded and pointed. See also the diagnosis of the genus.

Description – Body length: 3.1-3.7 mm; 1.4-1.5 mm (from front margin of head to apices of elytra). Body surface smooth, shining. Black in ground color; mouthparts, 1st and 2nd antennomeres, apices of elytra, legs, 9th and 10th abdominal segments reddish brown; setae and bristles covering body surface yellow and black, respectively. Head slightly wider than long (width/length = 1.11); anterior margin of clypeus rounded; surface sparsely covered with setae; eyes moderate in size, 1/3 as long as head. Antennae short, evidently shorter than combined length of head and pronotum; 1st to 3rd segments small, slightly longer than wide; 4th segment as long as wide; 5th to 10th segments wider than long; 11th segment conical, longer than combined.
length of 9th and 10th; relative length of segments from base to apex: 7:5; 5:7: 4:5: 3:5: 4:5: 5:15.5. Pronotum much wider than long (width/length = 1.76-1.81) and moderately convex; surface moderately covered with long setae. Pronotal length: 0.72 – 0.75 mm. Pronotal width: 1.27-1.35 mm. Elytra slightly widened posteriorly, wider than long (width/length = 1.87); surface moderately covered with long setae; lateral margin with 5 or 6 suberect bristles. Third to 7th abdominal segments moderately covered with long setae; 8th (figs. 11, 12) tergite with 5 bristles; 8th sternite (fig. 13) with 14-16 bristles, and with long sensory setae along posterior margin.

Male: posterior margin of 8th tergite (fig. 11) widely emarginate and its lateral angle protruding and pointed, and with small setiferous granules along the emargination. Median lobe of aedeagus (figs. 14, 15) pointed apically in lateral view; sclerite x large, curved, and located near apex of median lobe; sclerite y thin and subtriangular in lateral view; sclerite z well developed; flagellum 2/3 as long as total length of copulatory piece. Paramere (fig. 16) generalized; apical lobe of paramerite (fig. 17) long, as long as condylyte, dilated apically.

Female: posterior margin of 8th tergite (fig. 12) slightly emarginate. Spermatheca (fig. 18) with chamber almost straight.

**Etymology** – Named in honor of Mr. Tomas Lackner, specialist on Histeridae, who collected and gave us the material used here.

**Distribution** – Known only from type locality in Morocco.

**Host ant** – *Aphaenogaster (Aphaenogaster) atlantis* Santschi, 1929 (Myrmicinae). Identified by MM using the determination key of Cagniant (1996).

**DISCUSSION**

The genus *Aphaenochara* is classified into the tribe Aleocharini using the following combination of character states: 1) 5-5-5 tarsal formula; 2) maxillary and labial palpi with pseudosegments at the apices (making the maxillary and labial palpi appear 5-segmented and 4-segmented, respectively); 3) ligula shorter than the 1st segment of the labial palpus; and 4) median lobe of the aedeagus without dorsal apodeme. Of these character states, the presence of pseudosegments of the maxillary and labial palp is unique to the tribe and is apomorphic.

**Figures 2-9**

*Aphaenochara lackneri*. – 2, labrum, dorsal view. – 3, epipharynx, adoral view. – 4, right mandible, dorsal view. – 5, left mandible, dorsal view. – 6, maxilla, ventral view. – 7, mentum, ventral view. – 8, labium, ventral view. – 9, hypopharynx, adoral view. Scale: 0.1 mm.

**Figures 10-13**

*Aphaenochara lackneri*. – 10, meso- and metathoraces, ventral view. – 11, 8th tergite, male, dorsal view. – 12, ditto, female, dorsal view. – 13, 8th sternite, male, ventral view. Scale: 0.5 mm.
The tribe Aleocharini is subdivided into three poorly defined subtribes: Aleocharina, Compactopediina, and Hodoxenina (Newton & Thayer 1992). Nevertheless, Aphaenochara can be placed in Aleocharina because of its possible close relationship with Aleochara, the type genus of the subtribe. Within the Aleocharina, these two genera share the following character states: 1) body broad, more or less fusiform; 2) body depressed above; 3) pronotum much wider than long; 4) mesosternal process developed, much longer than metasternal process; 5) aedeagus more or less pyriform; and 6) copulatory piece with long flagellum. Although these character states are highly homoplastic, this combination of character states is common only to Aleochara and Aphaenochara within the tribe Aleocharini, and suggests a close relationship between these two genera. Due to the paucity of knowledge about the phylogenetic relationships within the subtribe Aleocharina at the generic level (Maus et al., 1997), the polarities of these states are not clear at present.

It is possible that Aphaenochara is merely a highly derived lineage within Aleochara. However, Aphaenochara can be distinguished from Aleochara by the character states mentioned in the diagnosis, especially the secondary sexual character of the 8th tergite, which is not observed in Aleochara. These character states are sufficient to treat Aphaenochara as an independent genus, although the present treatment is no more than tentative. A phylogenetic analysis of Aleocharini is needed to determine the precise systematic position of Aphaenochara.

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