

# *NIRYASABURNIA* GEN. NOV. FOR '*LIBURNIA*' *BURMITINA* COCKERELL, 1917, FROM CRETACEOUS MYANMAR (BURMESE) AMBER (HEMIPTERA, FULGOROMORPHA: ACHILIDAE)

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**SYNOPSIS** A new generic name, *Niryasaburnia*, is established for the Cretaceous *Liburnia burmitina* Cockerell described from Burmese amber. This new genus can be placed in the family Achilidae and supertribe Apatesonites, but is of uncertain tribal position.

**KEY WORDS** Insecta, fossil, new genus, Lower Cretaceous Burmese amber

## INTRODUCTION

The species named *Liburnia burmitina* was described by Cockerell in 1917 and ascribed to the genus *Liburnia* Stål in the family Delphacidae. However, Cockerell (1917: 329) stated that 'This insect is evidently not a *Liburnia* in the restricted sense.' This species, placed in the family Delphacidae (under an invalid family name Areopidae), was mentioned in Metcalf & Wade's (1966) and Keilbach's (1982) catalogues. Carpenter (1992) also listed the fossil within the Araeopidae. Subsequently, Shcherbakov (2000) placed this species in the family Achilidae, but without any generic statement or placement within any of the lower taxa of the Achilidae.

The oldest representatives of the family Achilidae come from the Lower Cretaceous, (Aptian) Santana Formation in Brazil (Hamilton 1990). Achilidae are very frequently found in Eocene Baltic amber and several species have recently been described (Szwedo 2002), among them representatives of a highly derivative tribe known only from fossils – the Ptychoptilini (Emeljanov 1990; Szwedo & Stroiński 2001). A single species, *Hooleya indecisa* Cockerell, 1922 has been recorded from the Eocene/Oligocene strata of Gurnet Bay, Isle of Wight (Cockerell 1922) and placed in the tribe Achillini (Emeljanov 1994). The recent genus *Syneccoche* O'Brien is found in Dominican amber, but has not been formally described yet. The higher classification of extant Achilidae has recently been discussed by Emeljanov (1991, 1992) but no fossil taxa are mentioned or discussed there.

## SYSTEMATIC DESCRIPTION

Suborder **FULGOROMORPHA** Evans, 1946  
Superfamily **FULGOROIDEA** Latreille, 1807

Family **ACHILIDAE** Stål, 1866

Genus ***NIRYASABURNIA*** nov.

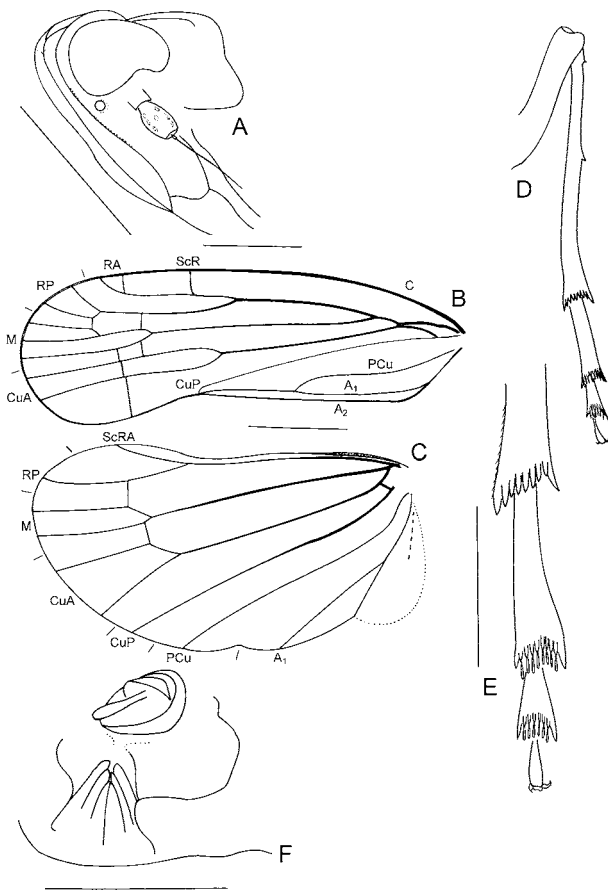
**TYPE SPECIES.** *Liburnia burmitina* Cockerell, 1917, here designated.

**DIAGNOSIS.** In general appearance similar to *Magadha* Distant, 1906 of the tribe Plectoderini, but differs in its longer clavus reaching two-thirds of the tegmen length (length of clavus in *Magadha* slightly exceeding half of the tegmen length), tegmen vein CuA forking apical of the forking of ScR (at the same level in *Magadha*) and its single wing vein RP (bifurcated in *Magadha*). Hind tibia with two lateral spines, one at the base and the other slightly basad of middle of the tibia (single spine about one-quarter from base in *Magadha*). Tibio–metatarsal formula is 9 : 2+8 : 2+6.

**DESCRIPTION.** Vertex with anterior margin obtuse. Frontoclypeus distinctly widened in lower portion, below level of compound eyes, with lateral carinae covered with small granules in median one-third of length. Frontoclypeus about 2.3 times longer than anteclypeus. Rostrum reaching beyond hind coxae. Tegmina with long clavus, claval veins connected posteriad of middle of clavus. Basal cell long. Longitudinal veins R and Cu forked basad of claval angle, longitudinal vein M forked posteriad of level of claval angle. Wings with vein R separating from M basad of arculus. Hind tibia with two lateral spines. Hind tarsi with basitarsomere and midtarsomere with platellae except outer spines. Female with short ovipositor. Male unknown.

**ETYMOLOGY.** Combination of words 'niryasa' – exudation of trees, resin in Sanskrit – and '*Liburnia*' – genus of planthopper.

**REMARKS.** The tibio–metatarsal formula of *Niryasaburnia* is unique and differentiates this genus from any recent representative of the Plectoderini. In addition, the basitarsomere and the midtarsomere are provided with subapical platellae



**Figure 1** *Niryasaburnia burmitina* (Cockerell, 1917) BMNH In 19105 (holotype). **A**, Head in lateral view. **B**, Tegmen. **C**, Wing. **D**, Left hind leg. **E**, Apex of left hind tibia and tarsomeres. **F**, Apex of female abdomen. Abbreviations used: C, costa; ScR, subcosta + radius; RA, radius anterior; RP, radius posterior; M, media; CuA, cubitus anterior; CuP, cubitus posterior; PCu, postcubitus; A, anales. Scale bars = 1 mm for **A–D & F**, 0.5 mm for **E**.

that are not to be found among the Plectoderini, but which are reminiscent of the Tropiphlepsiini, the only extant tribe with platellae-like structures.

***Niryasaburnia burmitina*** (Cockerell, 1917)  
(Fig. 1; see Pl. 1, fig. 4)

- 1917 *Liburnia burmitina* Cockerell: 329, figs 8, 9.  
1920 *Liburnia burmitina* Fletcher: 988, pl. 166, figs 21, 22.  
1966 *Liburnia burmitina* Metcalf & Wade: 113.  
1982 *Liburnia* s. lat. *burmitina* Keilbach: 230.  
1988 *Liburnia* s. lat. *burmitina* Spahr: 19, 48.  
1992 *Liburnia burmitina* Poinar: 125.  
2000 '*Liburnia*' *burmitina* Ross & York: 12, fig. 7.  
2000 '*Liburnia*' *burmitina* Shcherbakov: 36.

**DIAGNOSIS.** Frontoclypeus widened below the level of compound eyes, shallowly convex with median carina. Lateral carinae of the frontoclypeus with distinct granulation in median portion. Tegmina without markings. Female anal tube short and wide, anal style quite long.

**TYPE MATERIAL.** Holotype and only known specimen of *Liburnia burmitina* Cockerell, In. 19105 in the Natural History Museum, London collections; a female.

**OCCURRENCE.** Lower Cretaceous (Upper Albian) Burmese amber (Cruickshank & Ko 2003).

**DESCRIPTION.** Total length about 5.7 mm, length of body about 4.2 mm. Length of head in lateral aspect 0.42 mm, length of frontoclypeus 1.12 mm. Frontoclypeus narrow in upper portion, widening distinctly below the level of compound eyes, with margins subparallel in upper portion, then diverging and converging; lateral and median carinae distinct, lateral carinae with distinct granulation in median portion; median carina distinct at almost entire length, slightly obsolete in uppermost portion near the border of frontoclypeus and vertex, but reaching anterior margin of vertex (Fig. 1A). Disc of frontoclypeus shallowly concave. The margin between the frontoclypeus and the vertex slightly callused. Anteclypeus 0.49 mm long. Compound eye 0.49 mm long, 0.42 mm high, with distinct incision at lower margin and distinct ommatidia, without additional short setae. Ocellus placed near lower anterior angle of compound eye. Antennal scape cylindrical, pedicel 0.17 mm long, barrel-like, flagellum 0.56 mm long. Rostrum 1.26 mm long, reaching beyond hind coxae, apical segment about 0.56 mm long, subapical segment distinctly longer (see Pl. 1, fig. 4).

Length of pronotum in lateral view 0.35 mm; lateral carinae seem not to reach posterior margin, diverging laterally, slightly sloping downwards.

Tegmina (Fig. 1B) membranous, pale testaceous in amber, without markings. Clavus long and distinctly widened in posterior portion. Basal cell long, veins R and M leaving basal cell with a short common stem, vein ScRA<sub>1</sub> reaching costal border at the level of claval apex, RA with two terminals, RP forked posteriad of the middle of the tegmen, slightly basad of CuA forking, RP with two terminals. M forked at about three-quarters of tegmen length with three terminals, CuA forked slightly basad of claval angle, posteriad of RA forking. First transverse veinlet, r–m, placed in posterior portion, slightly beyond M forking, the second slightly posteriad of RA and M second forking; two transverse veinlets, m–cu, present, slightly basad of first m–cu veinlet. Claval veins PCu and A<sub>1</sub> connected slightly apicad of middle of clavus.

Wing (Fig. 1C) hyaline, with ScRA reaching anterior border distinctly before wing apex, RP reaching margin slightly before wing apex. R separating from M basad of arculus, M bifurcate in subapical portion of wing, arculus quite short, CuA bifurcate in subapical portion. First anal vein bifurcate, second anal vein seems not to reach the margin.

Fore and mid femora about 0.9 mm long, laterally depressed, fore and mid tibiae 1.05 mm long, subquadrangular in cross-section, with margins covered with short setae. Fore and mid tarsi about 0.43 mm long, with basitarsomeres shorter (0.12 mm) than mid and apical tarsomeres (0.20 mm); basitarsomeres and midtarsomeres with rows of five short setae at plantar margin and two slightly longer apical setae. Hind coxa with small spine. Hind femur 0.75 mm long, hind tibia (Fig. 1D; see Pl. 1, fig. 4) about 1.6 mm long, with two lateral spines, a distinct subbasal spine and a lateral spine placed basad of the middle of the hind tibia; nine apical spines. Hind tarsus (Fig. 1E) about 0.87 mm long, basitarsomere (0.52 mm long) about twice as long as midtarsomere (0.25 mm), apical tarsomere shortest (0.17 mm long), with relatively small claws and arolium. Tibio–metatarsal formula is 9 : 2 + 8 : 2 + 6, lateral spines of basitarsomere and midtarsomere without platellae, internal spines with distinct, quite long platellae.

Abdomen of female slightly longer than wide. Anal tube of female short and wide, with quite long anal style. Ovipositor short, about 0.35 mm long, with three pairs of valves visible. Female VIIth sternite without processes (Fig. 1F; see Pl. 1, fig. 4).

REMARKS. The inclusion of *Niryasaburnia burmitina* is partly destroyed: the right tegmen is partly torn, the right wing is removed but placed near the inclusion, the left tegmen is strongly folded in the apical portion, the left wing is only partly visible; fore and mid legs are partly covered with dark bubbles, abdomen is torn with partly destroyed apical portion. This slab is one of seven cut from a large block that contains a total of 458 syninclusions listed in Rasnitsyn & Ross (2000). According to Shcherbakov (2000) another specimen, NHM In. 20150(1), contains an inclusion of the same species, but examination of the inclusion showed that it represents another taxon.

Given the present state of knowledge, this species cannot be placed in any of the recently recognised tribes of Achilidae. Moreover, it differs from fossil Achilidae of a similar age from the Santana Formation in Brazil, which are also impossible to place at tribal level, in its more reduced transverse venation and less numerous tarsal spines. Tegmen venation is similar to that in some representatives of Plectoderini and Mycarini, whereas wing venation displays a simple pattern when compared with all recent Achilidae and which most closely resembles that of the supertribe Apatesonites. The tibio-metatarsal formula and the presence of platellae on the hind basitarsomeres and midtarsomeres are derivative characters of this genus making its placement in any currently recognised tribe difficult. Unfortunately the material is too scarce and the set of characters not clear enough to erect a separate tribe for this taxon. Further studies conducted on a greater number of specimens are necessary to resolve the problem of placement of *Niryasaburnia burmitina*. Currently the position of all Cretaceous Achilidae within subunits of the family remains obscure.

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