A new Early Cretaceous snakefly (Raphidioptera: Mesoraphidiidae) from El Soplao amber (Spain)

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Abstract. A virtually complete specimen of the family Mesoraphidiidae (Insecta: Raphidioptera) is described as *Cantabroraphidia marcanoi* **n. gen., n. sp.** It was found in early Albian amber from a new deposit named El Soplao within the Las Peñosas Fm. in northwestern Cantabria (Spain). It has been compared to all adult fossils placed in the Mesozoic family Mesoraphidiidae. Some taxonomical comments are provided, and we propose to restore the genus *Yanoraphidia* Ren 1995 and the combination *Yanoraphidia gaoi* Ren 1995 stat. rest., provisionally retained in the family Mesoraphidiidae.

Résumé. Un nouveau Mesoraphidiidae de l'ambre crétacé inférieur de El Soplao (Espagne) (Raphidioptera). Un spécimen presque complet de Mesoraphidiidae (Insecta: Raphidioptera) est décrit sous le nom de *Cantabroraphidia marcanoi* **n. gen., n. sp.** Il a été découvert dans un ambre Albien inférieur d'un nouveau gisement nommé El Soplao dans la Formation Las Peñosas, dans le nord-ouest de la Cantabrie (Espagne). Il est comparé à tous les adultes fossiles placés dans la famille mésozoïque des Mesoraphidiidae. Nous proposons de restaurer le genre *Yanoraphidia* Ren 1995 et la combinaison *Yanoraphidia gaoi* Ren 1995 stat. rest., provisoirement maintenu dans la famille Mesoraphidiidae.

Keywords: Raphidioptera; Mesoraphidiidae; Cretaceous amber; Spain.

Snakeflies (Insecta: Raphidioptera) are holometabolous predatory insects recognised by their elongate prothorax, which gives them their "snake" shape, the characteristic wing venation, and the existence of a long ovipositor in females. Although the first evidence of snakeflies is from the Early Jurassic, the origin of their lineage starts earlier, possibly at the end of the Palaeozoic, becoming widespread during the Mesozoic in Laurasia (Grimaldi 2000). Today snakeflies show a relict diversity and a geographically restricted distribution in cold temperate regions of the North Hemisphere exclusively in Northwestern America, the Mediterranean, and Central Asia (Aspöck *et al.* 1991), living in arboreal habitats and needing at least one period of cold to achieve maturity. Nevertheless, Grimaldi & Engel (2005) pointed out that snakeflies had an intertropical/subtropical distribution until the Early Cainozoic. As figure 1 shows, the fossil record of the Jurassic-Cretaceous family Mesoraphidiidae coincides with the warm temperate/paratropical climate belt *sensu* Scotese (2000), which was between 30ºN and 60ºN. The majority of the fossils of this family of raphidiopterans are preserved as compression fossils, and only a few specimens are known as inclusions in amber.

An unusual concentration of Cretaceous aerial amber with abundant bioinclusions has been recently discovered in El Soplao territory, in the Spanish municipality of Rábago in Cantabria (Najarro *et al.* 2009). The bioinclusions found so far are spiders and spider webs, and many insects of the orders Blattaria, Hemiptera, Thysanoptera, Raphidioptera, Neuroptera, Coleoptera, Hymenoptera, and Diptera. Here we describe one specimen of the order Raphidioptera, extending the knowledge and the palaeobiogeography of Cretaceous snakeflies. Due to the scarce fossil record of this group, any new findings of its fossil representatives are of particular interest.

Geological setting

The El Soplao outcrop is early Albian in age (Najarro *et al.* 2009) and is included in the same geological context as other north Spanish amber-bearing deposits (see Delclòs *et al.* 2007). El Soplao territory is located at the north-western margin of the Basque-Cantabrian Basin, which developed during the Cretaceous. The

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formation of the Basque-Cantabrian Basin is related to the opening of the Atlantic Ocean and the kinematics between the European and Iberian plates (Malod & Mauffret 1990; Olivet 1996). The amber-bearing deposit of El Soplao is included within the Las Peñosas Fm., in a unit of heterolithic sandstones-siltstones and carbonaceous mudstones deposited in coastal estuarine and delta marine environments (Najarro *et al.* 2009). The amber pieces were collected from a level 0.7 m to 2.5 m thick, of organic-rich clays, associated with abundant plant cuticle remains mainly of the conifer genera *Frenelopsis* (Schenk 1869) emend. Watson 1977 and *Mirovia* Reymanówna 1985 emend. Bose & Manum 1990, and ginkgoalean genera *Nehvizdya* Hluštík 1977 and *Pseudotorellia* Florin 1936 (see Najarro *et al.* 2009).

Material and methods

The specimen was found during stratigraphic fieldwork in 2008 by researchers of the Instituto Geológico y Minero de España (Madrid). Preparation involved the removing of the main part of surrounding amber in order to obtain the best visibility of the fossil, because the amber piece contains abundant debris. The prepared amber was mounted in Epoxy resin (EPO-TEK 301) following the protocol of Corral *et al.* (1999). The fossil was examined, drawn and measured using a binocular Olympus SZX9 stereomicroscope, an inverted Olympus CK40 compound microscope, and a direct Leitz microscope. Photographs were taken using a digital camera attached to an Olympus BX51 microscope. Some images were reconstructed using the computer software Combine Z5 and forewing venation was reconstructed using the two incomplete forewings in the fossil.

Morphological terminology follows that of Aspöck *et al.* (1991).

Systematic palaeontology

Order Raphidioptera Navás 1916

Family Mesoraphidiidae Martynov 1925

Genus *Cantabroraphidia* n. gen.

Type species. *Cantabroraphidia marcanoi* **n. sp.**

Etymology. Named after "Cantabria", the Spanish Autonomic Community where the outcrop is located.

Diagnosis. Minute size (forewing length 5.5 mm). Head more or less quadrangular; three large ocelli present, situated between anterior half of compound eyes; posterior border of head with a distinct collar-like lip; antenna inserted posterior to clypeal-frons suture, slightly basad of anterior tangent of compound eyes; antenna distinctly longer than head; compound eyes large and exophthalmic; coronal suture possibly absent. Pronotum subequal in length to head length, with anterior

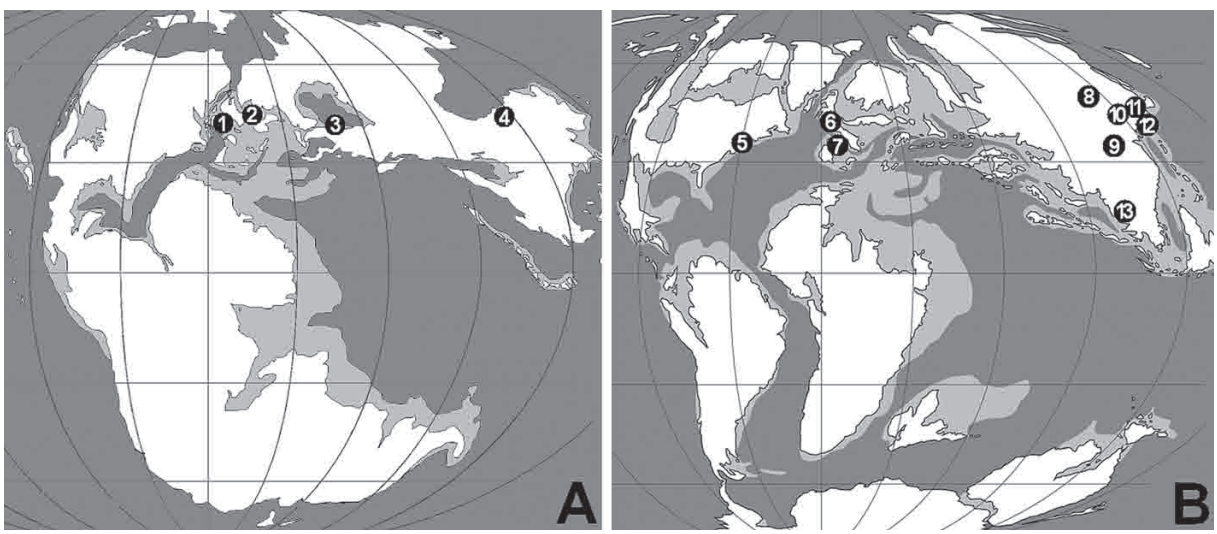

Figure 1
Palaeogeographical distribution of localities with described species of the family Mesoraphidiidae (after Engel 2002, and Jepson & Jarzembowski 2008). **A,** Jurassic Period. **1**, Dorset, England. *Metaraphidia confusa*. **2**, Niedersachsen, Germany. *Metaraphidia vahldieki*. **3**, South Kazakhstan, Kazakhstan. *Mesoraphidia elongata*, *M. grandis*, *M. inaequalis*, *M. parvula*, *M. pterostigmalis*, *M. similis*; *Proraphidia turkestanica*. **4**, Dundgobi Aimag, Mongolia. *Mesoraphidia gobiensis*. **B,** Cretaceous Period. **5**, New Jersey, USA. *Mesoraphidia luzzii*. **6**, Southern England. *Mesoraphidia durlstonensis*, *M. mitchelli*, *M. purbeckensis*, *M. websteri* (Dorset County). *Proraphidia hopkinsi* (Surrey County). **7**, Spain. *Cantabroraphidia marcanoi* **n. gen., n. sp**. (Albian of the Cantabria, Northern Spain). *Proraphidia gomezi* (Early Barremian of the Lleida Province, Northeastern Spain). **8**, Buryat Republic, Russia. *Baisoraphidia glossopteron*, *B. orientalis*; *Siboptera eurydictyon*, *S. medialis*. **9**, Gansu, China. *Sinoraphidia viridis*. **10**, Liaoning, China. *Huaxiaraphidia shandongensis*, *H. sinensis*; *Kezuoraphidia kezuoensis*; *Mesoraphidia amoena*, *M. furcivenata*, *M. glossophylla*, *M. heteroneura*, *M. longistigmosa*, *M. myrioneura*, *M. obliquivenatica*, *M. polyphlebia*, *M. shangyuanensis*, *M. sinica*; *Siboptera fornicata*; *Xuraphidia liaoxiensis*; *Yanoraphidia gaoi* **stat. rest. 11**, Jilin, China. *Jilinoraphidia dalaziensis*. **12**, South Korea. *Mesoraphidia koreenensis*, *M. phantasma*. **13**, Kachin, Myanmar. *Nanoraphidia electroburmica*. (Redrawn from Blakey 2008).

half narrowed dorsoventrally relative to posterior half (i.e., with slight downward curve in lateral view). Forewing with costal area relatively broad, at widest point costal field as broad as pterostigma; pterostigma elongate, without cross-veins; Sc terminating into C in distal two-third of wing length; two medial cells posterior to Mp; first cua-cup cross-vein strongly basad of Mp-Cua separation (at or separated by a few vein widths in other mesoraphidiids, except *Nanoraphidia* Engel 2002). Process at half of the metatibiae in a posterior position; tibiae with apical spines.

Cantabroraphidia marcanoi n. sp. (Figs 2–4)

Material. Holotype specimen ES-07-6, a virtually complete adult of sex unknown, with the wings partially damaged (fig. 4.1). It was found within a mass of transparent amber, collected by M. Najarro and I. Rosales. It is provisionally housed at the Museo Geominero (IGME) in Madrid (Spain). The amber also contains a dipteran adult as a syninclusion (ES-07-7). The sample has abundant debris that makes the study of the specimen difficult.

Diagnosis. As for the genus.

Etymology. The specific epithet is patronymic honouring Mr. Francisco Javier López Marcano ("Consejería de Cultura, Turismo y Deportes", Government of Cantabria) for his efforts and promotion of the study of El Soplao amber.

Age and outcrop. Early Cretaceous (early Albian) in Las Peñosas Fm. Amber-bearing outcrop from El Soplao territory in northwestern Cantabria (near the village of Rábago), Spain (see Najarro *et al.* 2009).

Description. As for the genus with the following additions: Integument dark brown, with maculations on legs (see fig. 2–4.5). Mandible with teeth hardly visible; palps short, not easily visible; compound eye length slightly longer than head posteriad posterior tangent of compound eyes; compound eyes separated by distance nearly 2 times greater than compound eye length; inner margins of compound eyes relatively straight and parallel; 28 antennal segments (fig. 2–4.3), flagellomeres each about as long as wide, with sparse, minute setae (fig. 4.2). All tibiae with apical spines; metatibiae with a process at its midpoint (fig. 4.6). Five tarsal segments, third bilobed (fig. 4.7); claws apparently simple but with a long basal seta and a basal enlargement (fig. 4.8); arolium large. Wing veins brown with strong setae (fig. 4.8), membrane hyaline. Forewing length ca. 5.5 mm, width 1.8 mm; with pterostigma elongate (1.4 mm long) and faintly infumate (fig. 3.1–3.2), situated 0.4 mm (three and half times pterostigmal width) beyond termination of Sc; pterostigma without transverse cross-veins, basally closed by a cross-vein; pterostigma longer than either radial cell; veins meeting wing margins not apically bifurcate; four costal cross-veins (c-sc); single, proximal sc-r cross-vein; two large radial cells present, with two posterior cells immediately behind and progressively decreasing in size; first radial cell nearly as long as second radial cell, with posterior radial branch arising slightly distad its midpoint; two medial cells present; Mp-Cua separation positioned closer to second cua-cup cross-vein than to first; 2A strongly arcuate; jugal lobe not visible. Basal half of a hindwing partially preserved, with only the proximal area of the pterostigma conspicuous (fig. 3.3); costal area distinctly narrower than in forewing; apex of Sc well basal of pterostigma; Mp with two medial cells, the first one smaller and trianguloid; 1ma-mp cross-vein very close to the branching between Rs and Ma; anal area narrow. Thorax, except prothorax, and abdomen largely crushed, but overall length roughly the same as the head plus the prothorax. Anterior part of dorsal side of prothorax with a band of small spines.

Discussion

Engel (2002) proposed a commented list of fossil Raphidioptera, including several nomenclatural changes. A few taxa have been described later (for the latest summaries see Engel & Ren 2008 and Jepson &

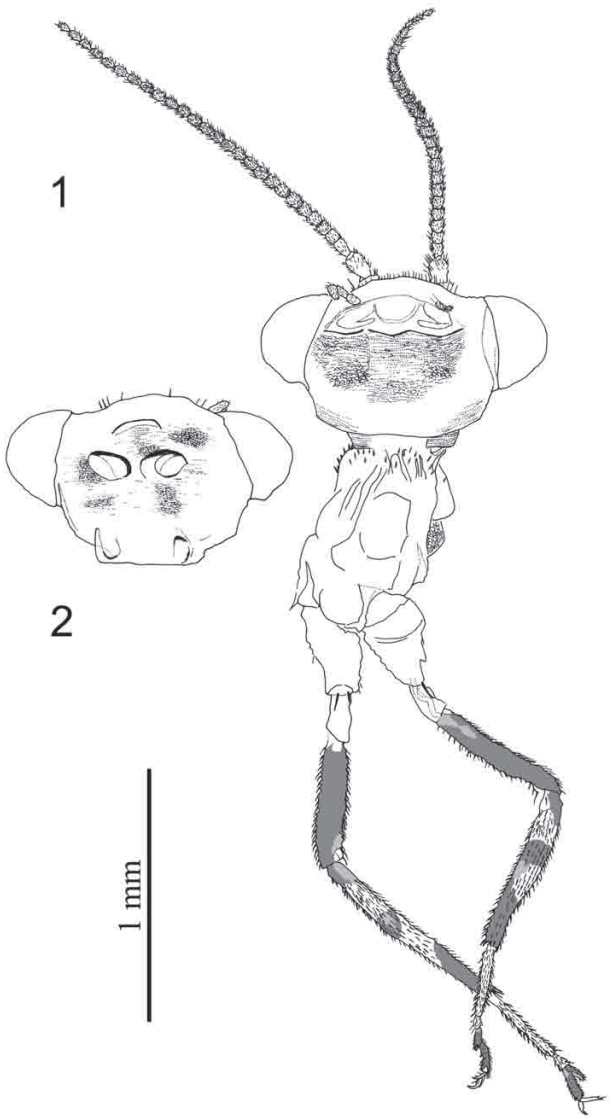

Figure 2
Camera lucida drawing of *Cantabroraphidia marcanoi* **n. gen., n. sp.**; holotype ES-07-6. **1)** Head, pronotum and fore legs in ventral view and, **2)** Detail of head in dorsal view. Note the colour pattern preserved in legs.

Jarzembowski 2008). Two localities indicated as Jurassic-Cretaceous by Engel (2002), the Jiuquan Basin (Gansu, China) and Baissa (Buryat, Russia), have been previously considered to be Cretaceous (Hong 1988; Zherikhin & Gratshev 2004) (fig. 1). Engel (2002) noticed that the general classification of the Mesozoic Raphidioptera is far from being satisfactory due to the different families probably being paraphyletic. With the present state of raphidiopteran taxonomy, *Cantabroraphidia marcanoi* **n. gen., n. sp.** can be attributed to Mesoraphidiidae Martynov 1925 rather than to Baissopteridae Martynova 1961 or Alloraphidiidae Carpenter 1967, because of its great similarity in wing venation with mesoraphidiid genera like *Nanoraphidia* Engel 2002. Figure 1 shows the palaeogeographical distribution of the family Mesoraphidiidae during the Jurassic and Cretaceous.

Thirteen genera are currently attributed to the Mesoraphidiidae: *Mesoraphidia* Martynov 1925, *Proraphidia* Martynova 1947, *Sinoraphidia* Hong 1982, *Metaraphidia* Whalley 1985, *Jilinoraphidia* Hong & Chang 1989, *Huaxiaraphidia* Hong 1992, *Xuraphidia* Hong 1992, *Baisoraphidia* Ponomarenko 1993, *Siboptera* Ponomarenko 1993, *Kezuoraphidia* Willmann 1994, *Yanoraphidia* Ren 1995, *Nanoraphidia* Engel 2002 and *Cantabroraphidia* **n. gen.** We have compared *Cantabroraphidia marcanoi* **n. gen., n. sp.** to all the described Mesoraphidiidae, and to the genera *Ororaphidia* Engel & Ren 2008 and *Styporaphidia* Engel & Ren 2008, which are of uncertain position but have a wing venation similar to those of Mesoraphidiidae.

The species of the genus *Metaraphidia* Whalley 1985 have obscured pterostigmata. *Metaraphidia confusa* Whalley 1985 (Lower Jurassic of England) has a forewing length of 14.5 mm and *Metaraphidia vahldieki* Willmann 1994 (Lower Jurassic of Germany) has a forewing 8.5 mm long (Whalley 1985; Willmann 1994). *Ororaphidia* Engel & Ren 2008 (*O. megalocephala* Engel & Ren 2008, Middle Jurassic of China, has a forewing length of 11.4 mm, with wing venation superficially similar to some *Mesoraphidia*), and *Styporaphidia* Engel & Ren 2008 (*S. magia* Engel & Ren 2008, Middle Jurassic of China, with a wing length of 10 mm), have at least one cross-vein in the pterostigma (Engel & Ren 2008). The species of the genus *Proraphidia* Martynova 1947 (*P. turkestanica* Martynova 1947, Upper Jurassic of Kazakhstan, *Proraphidia gomezi* Jepson & Jarzembowski 2008, Lower Cretaceous of Spain, and *Proraphidia hopkinsi* Jepson & Jarzembowski 2008, Lower Cretaceous of England) have wings between 11–13 mm long and very short pterostigmata (Martynova 1947; Jepson & Jarzembowski 2008).

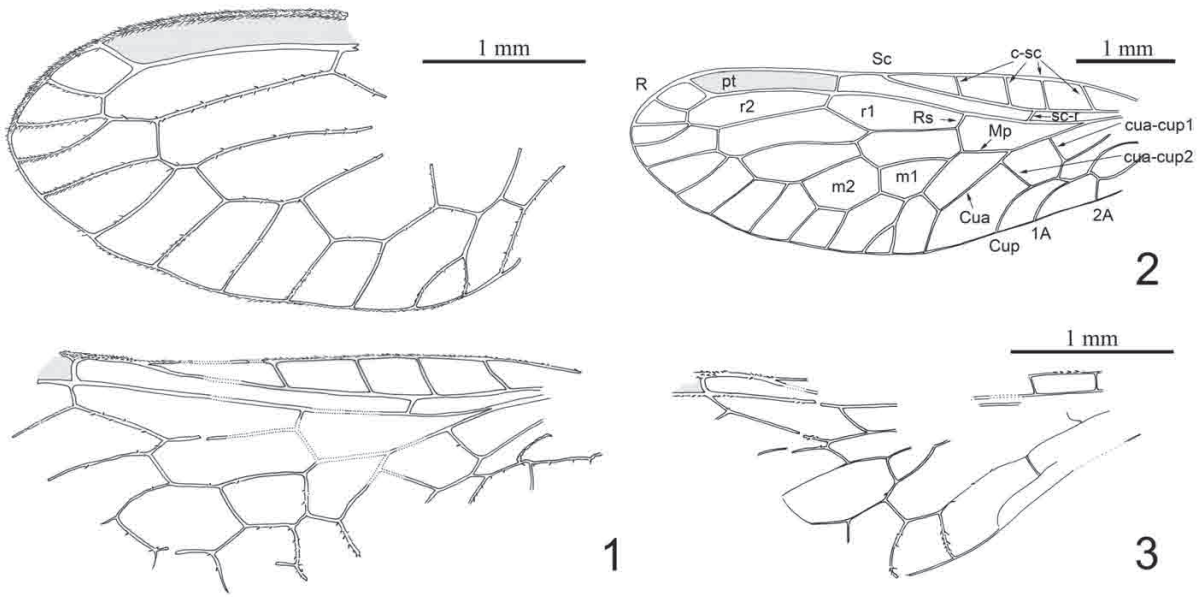

Figure 3
Cantabroraphidia marcanoi **n. gen., n. sp.**; holotype ES-07-6. **1,** Distal and proximal portions preserved of two forewings (*camera lucida* drawings); **2**, Tentative reconstruction of the forewing based on the two preserved portions (some parts appear deformed with respect to the original preserved portions); **3**, Preserved portion of hindwing. 1A/2A = anal veins, c-sc = costal cross-veins, Cua = Cubital anterior vein, Cup = Cubital posterior vein, cua-cup1/cua-cup2 = cubito-anal cross-veins, m1/m2 = medial cells, Mp = Median posterior vein, pt = pterostigma, R = Radial vein, r1/r2 = radial cells, Rs = Radial sector, Sc = Subcostal vein, sc-r = subcostal-radial cross-vein.

The genus *Mesoraphidia* Martynov 1925 comprises of many Jurassic and Cretaceous species, but it is probably not a natural group. The type species *Mesoraphidia grandis* Martynov 1925 (Upper Jurassic of Kazakhstan) has a wing length of 16 mm, a short common stem of Mp and Cua, and a very long marginal cell between R and Rs (Martynov 1925a,b), unlike *Cantabroraphidia* **n. gen.** *Mesoraphidia elongata* Martynov 1925 (Upper Jurassic of Kazakhstan) has a wing 9.5 mm long, and the same differences with *Cantabroraphidia marcanoi* **n. gen., n. sp.** as *M. grandis* Martynov 1925. *Mesoraphidia inaequalis* Martynov 1925 (Upper Jurassic of Kazakhstan) has a wing length of 16 mm. *Mesoraphidia parvula* Martynov 1925 (Upper Jurassic of Kazakhstan) has a wing 5.5 mm long, but its last cross-vein between the anterior branch of Rs and Ma is aligned with that between Ma and Mp, and the stem of Ma is long before it apically divides (Martynov 1925a,b). *Mesoraphidia similis* Martynov 1925 (Upper Jurassic of Kazakhstan) has a wing length of 15 mm (Martynov 1925a,b), and a long marginal cell between R and Rs, unlike *Cantabroraphidia marcanoi* **n. gen., n. sp.** *Mesoraphidia pterostigmalis* Martynova 1947 (Upper Jurassic of Kazakhstan) has a forewing 13 mm long, a short common stem of Mp and Cua, and a very long marginal cell between R and Rs (Martynova 1947), unlike the new species described herein. *Mesoraphidia gobiensis* Ponomarenko 1988 (Upper Jurassic of Mongolia) has wing 8.5 mm long, and a longer marginal cell between R and the anterior branch of Rs (Ponomarenko 1988). The new taxon also differentiates from several species of *Mesoraphidia* described in the Lower Cretaceous of China by Ren (1994, 1995, 1997), previously placed in several genera (see Engel 2002). *Mesoraphidia longistigmosa* (Ren 1994) has a forewing 15 mm long, and a short common stem of Mp and Cua. *Mesoraphidia obliquivenatica* (Ren 1994) and *Mesoraphidia polyphlebia* (Ren 1994) have forewings 16 mm long and similar short common stems of Mp and Cua (Ren 1994; Engel 2002). The same situation occurs for *Mesoraphidia shangyuanensis* (Ren 1994) with a forewing length of 13 mm. *Mesoraphidia gaoi* (Ren 1995) has a forewing 5 mm long, similar to *Cantabroraphidia marcanoi* **n. gen., n. sp.**, but its pterostigma goes up to the apex of R, unlike the new species but also unlike *M. grandis*, the type species of the genus. Ren in Ren *et al.* (1995) described it originally in the genus *Yanoraphidia* Ren 1995, but Engel (2002) transferred it to *Mesoraphidia*. This important difference is clearly visible in the photograph of the holotype and justifies the attribution of *M. gaoi* to a different genus. Thus we propose to restore the genus *Yanoraphidia* and the combination *Yanoraphidia gaoi* Ren 1995 **stat. rest.** The exact position and relationships of this genus, originally described in the Alloraphidiidae and transferred into the Mesoraphidiidae by Engel (2002), remains rather uncertain even if the second solution seems to be the best, at least provisionally. *Mesoraphidia furcivenata* (Ren 1995) has a forewing 10 mm long and a short common stem of Mp and Cua (Ren *et al.* 1995). *Mesoraphidia amoena* Ren 1997 has a forewing 9 mm long, a first radial cell nearly twice as long as second, and a very long marginal cell between R and Rs (Ren 1997). *Mesoraphidia glossophylla* (Ren 1997) has a forewing 19 mm long, a relatively long common stem of Mp and Cua but a long marginal cell between R and Rs (Ren 1997). *Mesoraphidia heteroneura* Ren 1997 has a forewing 10.5 mm long, and a short common stem of Mp and Cua (Ren 1997). *Mesoraphidia myrioneura* (Ren 1997) has a forewing 18 mm long and three radial cells instead of two, like in *Cantabroraphidia marcanoi* **n. gen., n. sp.** *Mesoraphidia sinica* Ren 1997 has a forewing 11 mm long, and a short common stem of Mp and Cua (Ren 1997). *Mesoraphidia koreenensis* Engel, Lim & Baek 2006 (Lower Cretaceous of South Korea) has a wing 7.0 mm long, but its pterostigma is in a much more distal position and it has a longer marginal cell between R and the anterior branch of Rs (Engel *et al.* 2006). *Mesoraphidia phantasma* Engel, Lim & Baek 2006 (Lower Cretaceous of South Korea) has a wing 6.5 mm long, but its Rs emerges in a much more basal position (Engel *et al.* 2006), plus its common stem Mp+Cua is distinctly shorter than in *Cantabroraphidia marcanoi* **n. gen., n. sp.** Recently four new species of the genus *Mesoraphidia* have been described from the Lower Cretaceous of England (Jepson *et al.* 2009). *Mesoraphidia durlstonensis* Jepson, Coram & Jarzembowski 2009 has a forewing 10.6 mm long. *Mesoraphidia purbeckensis* Jepson, Coram & Jarzembowski 2009 has an estimated forewing length of 5.1 mm long and *Mesoraphidia websteri* Jepson, Coram & Jarzembowski 2009 has an estimated hindwing length 5.7 mm, similar in length to the Spanish specimen, but both differ in a long marginal cell between R and Rs. *Mesoraphidia mitchelli* Jepson, Coram & Jarzembowski 2009 has a second radial cell relatively very wide compared to its length and R distal to pterostigmal level straight, unlike *Cantabroraphidia marcanoi* **n. gen., n. sp.** *Mesoraphidia luzzii* Grimaldi 2000 (Upper Cretaceous of USA) has a forewing length of 6.13 mm (Grimaldi 2000), but its basal common stem of Mp and Cua is distinctly shorter than in *Cantabroraphidia marcanoi* **n. gen., n. sp.**

Sinoraphidia Hong 1982 (*S. viridis* Hong 1982, Lower Cretaceous of China) has a forewing about 13.5

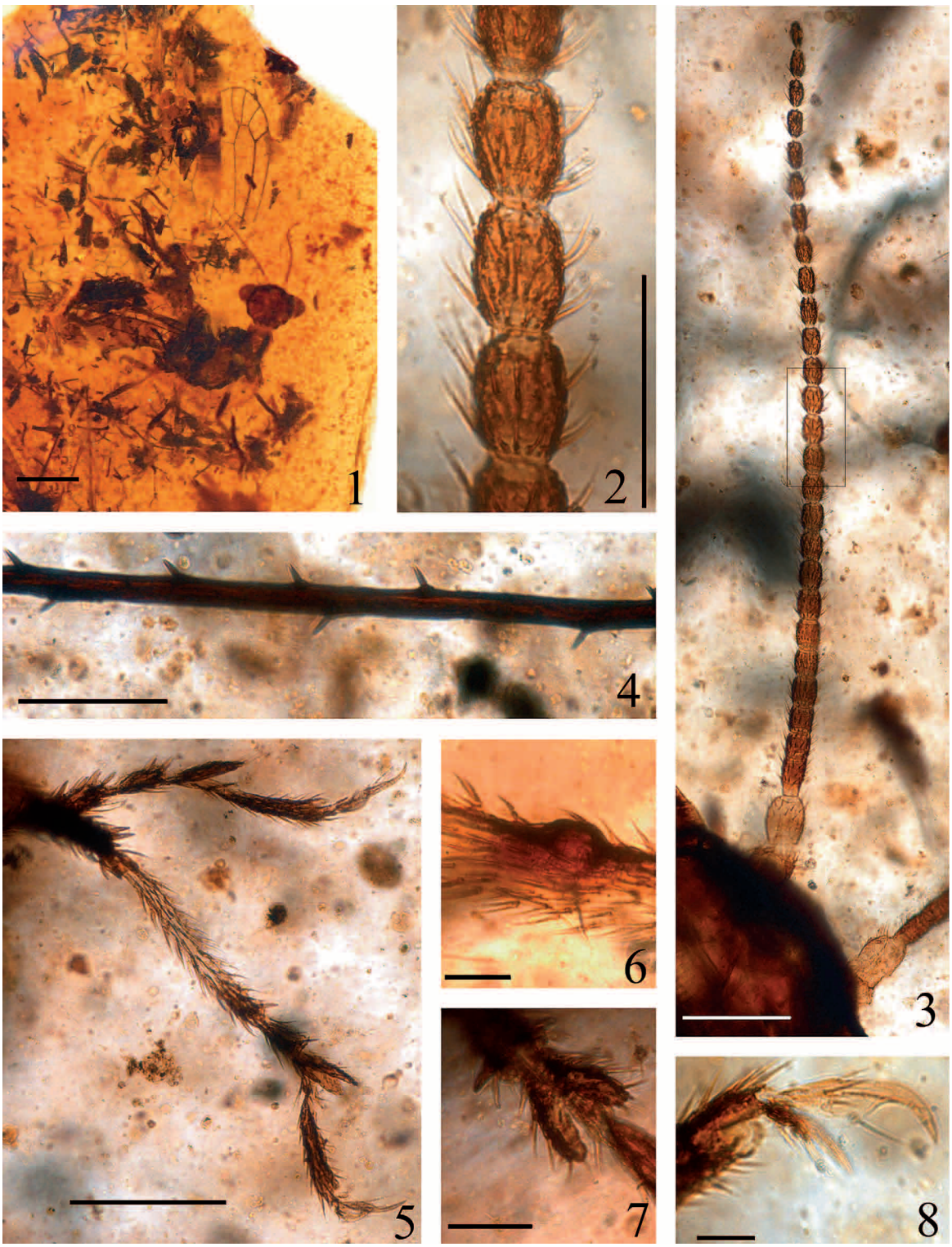

Figure 4
Cantabroraphidia marcanoi **n. gen., n. sp.**; holotype ES-07-6. **1,** dorsal habitus (bar = 1 mm); **2,** detail of flagellomeres (bar = 0.1 mm); **3,** left antenna (bar = 0.2 mm); **4,** detail of setae in forewing vein (bar = 0.1 mm); **5,** meso- (down) and metatarsi (up) (bar = 0.2 mm); **6,** process in metatibiae (bar = 0.025 mm); **7,** bilobed third mesotarsal segment (bar = 0.05 mm); **8,** claw of foreleg (bar = 0.025 mm). Images 3 and 5 are composite, made with consecutive pictures taken at successive focal planes.

mm long, and apparently a short common stem of Mp with Cua (Hong 1992a). *Jilinoraphidia* Hong & Chang 1989 (*Jilinoraphidia dalaziensis* Hong & Chang 1989, Lower Cretaceous of China, wing length 24 mm), has numerous cross-veins between R and costal margin near the apex (Hong & Chang 1989). *Huaxiaraphidia* Hong 1992 (*Huaxiaraphidia sinensis* Hong 1992, Lower Cretaceous of China, wing length 14.0 mm, and *Huaxiaraphidia shandongensis* Hong 1992, same age and locality, wing length 12.0 to 13.5 mm) differs from *Cantabroraphidia* **n. gen.** in the very long marginal cell between R and Rs, plus probably a short stem of Mp and Cua (Hong 1992a). *Xuraphidia* Hong 1992 has a wing length of 10.0 mm and three radial cells (Hong 1992b; Willmann 1994). *Baisoraphidia* Ponomarenko 1993 from the Lower Cretaceous of Russia (*B. glossopteron* Ponomarenko 1993, forewing lengths between 10.5 to 11.0 mm; and *B. orientalis* Ponomarenko 1993, forewing lengths between 9.0 to 10.0 mm) differs from *Cantabroraphidia* **n. gen.** in the short common stem of Mp and Cua (Ponomarenko 1993). *Siboptera* Ponomarenko 1993 differs from *Cantabroraphidia* **n. gen.** in the presence of a cross-vein in the pterostigma (Ponomarenko 1993). Also *Siboptera eurydictyon* Ponomarenko 1993 from the Lower Cretaceous of Russia has forewings between 9.3 and 10.5 mm long, *S. medialis* Ponomarenko 1993 (Lower Cretaceous of Russia) has a forewing 13.5 mm long, and *S. fornicata* Ren 1994 (Lower Cretaceous of China) has a forewing 20 mm long and a long marginal cell between R and the anterior branch of Rs (Ponomarenko 1993; Ren 1994). *Kezuoraphidia* Willmann 1994 has a longer marginal cell between R and the anterior branch of Rs; also, *Kezuoraphidia kezuoensis* (Hong 1992) from the Lower Cretaceous of China has a forewing about 18 mm long (Hong 1992b; Willmann 1994). *Nanoraphidia* Engel 2002 (*N. electroburmica* Engel 2002, Upper Cretaceous of Myanmar), has a very short forewing, 4.26 mm long, and a long common stem of Mp and Cua as for *Cantabroraphidia* **n. gen.**, but it differs from the new taxon due to the presence of only one medial cell posterior to Mp (see Engel 2002).

Conclusions

After comparison of the studied specimen with all the other genera of the family Mesoraphidiidae, we propose the new genus *Cantabroraphidia* and the new species *C. marcanoi* for the first raphidiopteran found in El Soplao amber (Spain). It is distinguished from all the other Mesoraphidiidae by the characteristics of the head and wing size plus forewing venation features.

As with the other known Mesoraphidiidae, *Cantabroraphidia marcanoi* **n. gen., n. sp.** lived within the warm temperate/paratropical climatic belt that prevailed in the Northern Hemisphere during the Cretaceous. Although Raphidioptera are recorded from the Lower Cretaceous of the Southern Hemisphere (Santa Ana do Carirí, Brazil), Mesoraphidiidae seem to have been restricted to the Northern Hemisphere. Nevertheless, conclusions on the distributions of the different Mesozoic snakefly families shall give a much better understanding of the limits and monophyly of these groups.

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