Palaeoentomology 004 (2): 095–136
https://www.mapress.com/j/pe/

Review

ISSN 2624-2826 (print edition)
PALAEOENTOMOLOGY
ISSN 2624-2834 (online edition)

https://doi.org/10.11646/palaeoentomology.4.2.1
http://zoobank.org/urn:lsid:zoobank.org:pub:F8985607-955D-4D63-9489-4125AC8681D4

The early assemblage of Middle–Late Jurassic Yanliao biota: checklist, bibliography and statistical analysis of described taxa from the Daohugou beds and coeval deposits

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Abstract

Checklists of all described organisms from the Daohugou biota, and insects from the Haifanggou Formation at Haifeng Village (Beipiao City, Liaoning Province) and the 'Jiulongshan Formation' at Zhouyingzi Village (Luanping County, Chengde City, Hebei Province), are provided. Fossil insects from the Daohugou biota are summarized, including a total of 760 valid species reported in 396 research papers from 2001 to April, 2021. The heyday of exploration of Daohugou insects has been lasted for a decade from 2006 to 2016 according to the number of published papers.

Keywords: Daohugou biota, Daohugou Beds, Haifanggou Formation, Daohugou, Haifeng, Zhouyingzi, insects, invertebrates, vertebrates, plants

Introduction

Hong (1983) established the Yanliao entomofauna based on fossil insect assemblages from the Haifanggou Formation at Beipiao City, Western Liaoning Province and its correlated strata. He suggested that the Yanliao entomofauna occurs in the Middle Jurassic of North China and reaches to central Asia and Siberia of Russia. As defined, the Yanliao entomofauna includes two major assemblages: the Haifanggou assemblage (insects from the Haifanggou Formation) in western Liaoning Province and the Jiulongshan assemblage (insects from the Jiulongshan Formation) in northern Hebei Province (Hong, 1983). Huang (2019) emphasized that the rich insect-bearing strata near Zhouyingzi, Luanping County, northern Hebei in fact belong to the Longmen Formation. The so-called Jiulongshan Formation in northern Hebei Province is in fact the lower part of the Upper Jurassic Tiaojishan Formation and is always younger than 161 Ma. Hong (1983) also indicated that the Middle Jurassic Yanliao entomofauna is completely different from the Early Cretaceous Jehol entomofauna. No species from the Jehol biota have been described from the Yanliao biota to date, except for some vertebrates whose original locality was mistakenly assigned when they were initially described. Many authors mixed the exceptionally preserved animal fossils within the Daohugou biota with Yanliao biota (*e.g.*, Zhou *et al*., 2010; Wang *et al*., 2013; Sullivan *et al*., 2014). Huang (2015) indicated that the Yanliao biota may be divided into the early assemblage, represented by the Daohugou biota (the late Middle Jurassic to the earliest Late Jurassic, *i.e.*, Callovian and early Oxfordian), and the late assemblage, represented by the Linglongta biota (Late Jurassic, *i.e.*, the major parts of Oxfordian and Kimmeridgian).

The Yanliao biota encompasses numerous exceptional fossils, including insects, clam shrimps, fairy shrimps, cladocerans, ostracods, spiders, harvestmen, millipedes, bivalves, gastropods, fishes, salamanders, lizards, pterosaurs, dinosaurs, mammals, charophytes, algae, plants, pollens and spores, and fungi (see Huang, 2016). No ostracods have been discovered from the Daohugou beds, but a few of them were reported from the Haifanggou Formation in Liaoning Province. The ostracods are in fact rare in the Lower and Middle Jurassic of northern China, but are abundant in the Late Jurassic, indicating an ecological explosion of ostracods near the Middle–Late Jurassic boundary in northern China. No fishes, gastropods or charophytes have been found from the Daohugou biota, which probably indicates a relatively

Submitted: 10 Apr. 2021; accepted by D. Azar: 16 Apr. 2021; published: 29 Apr. 2021

closed and younger palaeolake system. Studies on the late assemblage of the Yanliao biota (*i.e.*, Linglongta biota) mainly focused on vertebrate and plant fossils, including fossilized woods. Fossil insects are also diverse and abundant in the late assemblage but poorly explored (Huang *et al*., 2018). Fossil plants from the Yanliao biota are well-represented in the Middle Jurassic of China, which can be referred to as the *Coniopteris-Phoenicopsis* flora that was first established based on fossils from the Yan'an Formation (Si & Zhou, 1962). The Haifanggou Formation and its correlated strata yielded a flourishing stage of the flora, while the Tiaojishan Formation and its correlated strata yielded a declined stage. The origin of *Coniopteris-Phoenicopsis* flora can be traced back to the late Early Jurassic. The present study focuses on the early assemblage of the Yanliao biota, especially insect fossils from the Haifanggou Formation near Daohugou Village, Ningcheng County, Inner Mongolia and Haifeng Village, Beipiao City, Liaoning Province (Fig. 1).

The study of fossil insects from the Yanliao biota has been initiated since 1970s (Lin, 1976), but the first described fossil can be traced back to 1928 (Ping, 1928). It was a fossil cockroach presented by Wong (1928), and almost at the same time, he intensive studied the Yanshan Movement based on his investigations of tectonic features in the Beipiao Basin (Wong, 1928). The most significant early work is the book entitled '*Middle Jurassic fossil insects in North China*' published by Hong (1983). The study of fossil insects from the Daohugou biota started at the beginning of the 21st century, accompanied with many exciting discoveries of fossil vertebrates such as salamanders, dinosaurs, pterosaurs, and mammals. Fossil insects from Daohugou are represented by at least 23 orders: Archaeognatha, Odonata, Ephemeroptera, Dermaptera, Plecoptera, Orthoptera, Mantophasmatodea, Grylloblattodea, Embioptera, Phasmatodea, Blattodea, Hemiptera, Thripida, Hymenoptera, Raphidioptera, Megaloptera, Neuroptera, Coleoptera, Trichoptera, Lepidoptera, Mecoptera (including Siphonaptera), Diptera, and the extinct order Permopsocida (Fig. 2). Some other groups still await formal descriptions. A total of 760 insect species have been described from the Daohugou beds with quite many synonyms proposed. According to Figure 2, Hymenoptera, Diptera, Neuroptera, Hemiptera, Coleoptera, and Mecoptera are the dominant insect orders in Daohugou biota, which account for 81% of the total species diversity. The reason why numerous synonyms have been brought out by many researchers is that they ignored the relationship of fossil insects from Daohugou beds and Haifanggou Formation at Beipiao, among other subjective reasons. The lithostratigraphy of the Daohugou beds was assigned or correlated within different strata from the Middle Jurassic to Lower Cretaceous by different authors (*e.g.*, Haifanggou, Jiulongshan, Tiaojishan, Tuchengzi, Dabeigou, Yixian formations) but its geological features have never been clarified

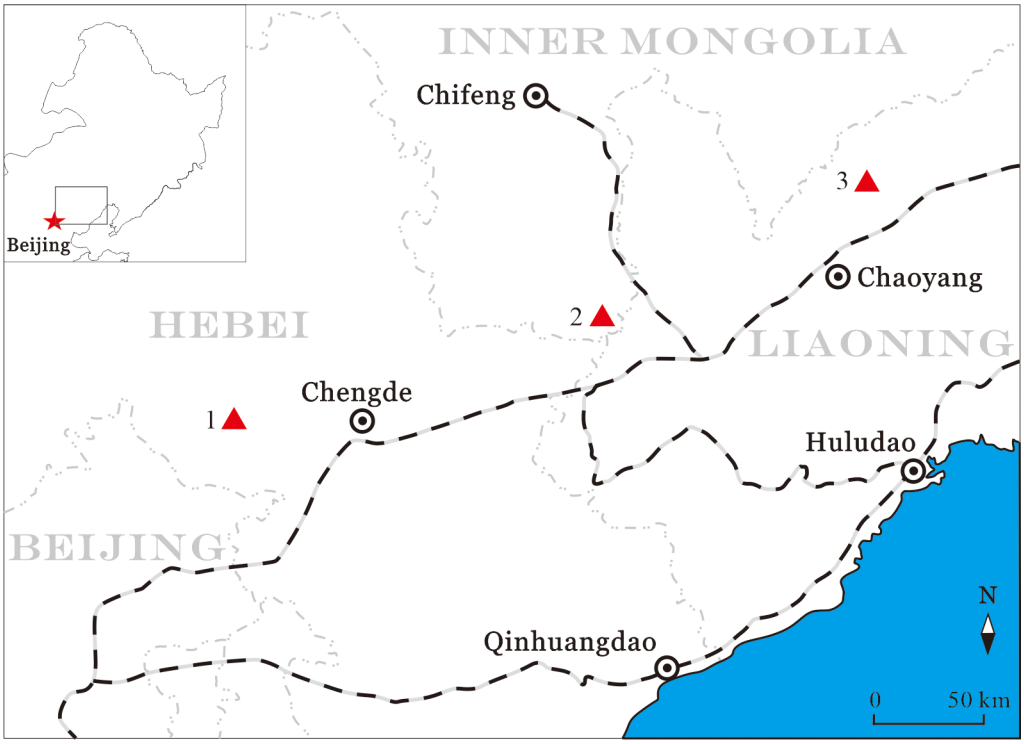


FIGURE 1. Fossil locality map of Yanliao biota. Red triangles represent the fossil localities. 1, Zhouyingzi Village, Luanping County, Chengde City, Hebei Province; 2, Daohugou Village, Ningcheng County, Chifeng City, Inner Mongolia; 3, Haifeng Village, Beipiao City, Liaoning Province.

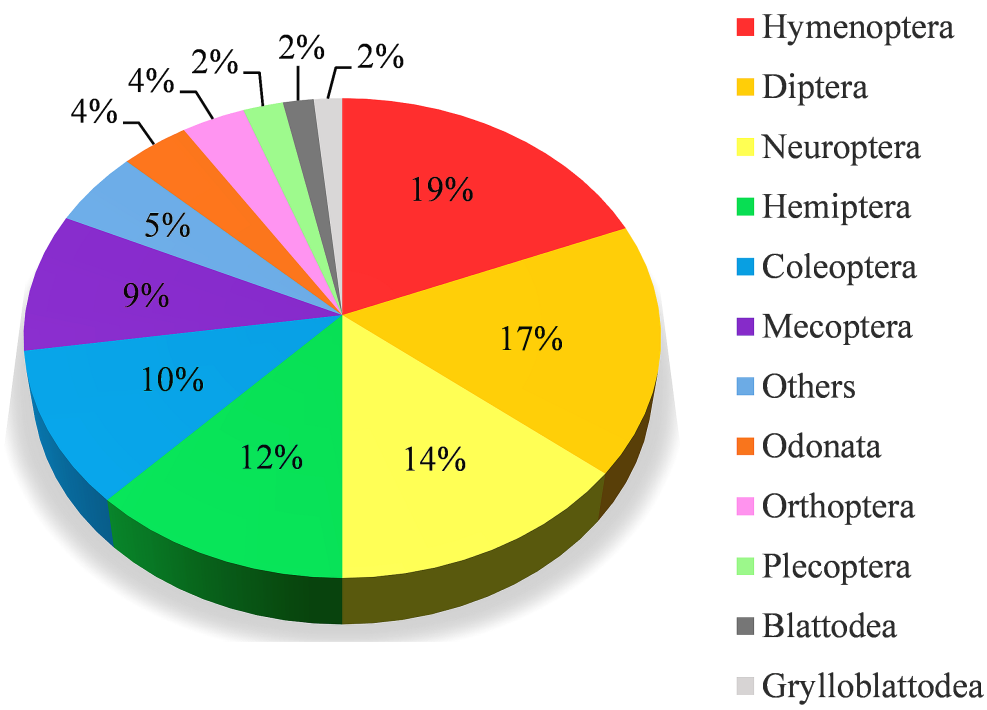


FIGURE 2. Pie chart of insect orders at Daohugou locality. Others include orders of Ephemeroptera, Mantophasmatodea, Embioptera, Dermaptera, Phasmatodea, Permopsocida, Thripida, Megaloptera, Raphidioptera, Trichoptera, and Lepidoptera.

during that period. The regional stratigraphic name of the Daohugou beds in fact would be referred to the Wanbao Formation that ignored by all authors (Bureau of Geology and Mineral Resources of Inner Mongolia Autonomous Region, 2008). The correlation of the Daohugou beds with the Haifanggou Formation at Beipiao can be briefly summarized as follows:

(1) Lithostratigraphy: The bottom of both strata contains thick layers of complex conglomerates overlying on Late Archeozoic gneiss or granite (Daohugou) or other strata (Haifanggou Formation at Liaoning Province) with an unconformity. The volcanic activity appeared within the bottom conglomerate layers. Both strata are characterized by lacustrine or proluvial tuffaceous deposits. However, the rocks in the Haifanggou Formation at Beipiao are distinctly weathered thus looks like mudstone. The upper section interbedded conglomerates can be found in most localities of both strata. The top of both strata is covered by a set of hundreds-meter-thick andesite (the Tiaojishan Formation) forming another unconformity. No marked differences between the Daohugou beds and the Haifanggou Formation at Beipiao are recognized in lithostratigraphy. As such, the Daohugou beds can be clearly assigned to the Haifanggou Formation.

(2) Biostratigraphy: The most convincing example for biostratigraphic correlation of Daohugou beds and Haifanggou Formation at Beipiao lies in 'conchostracans'. The conchostracans fauna of those two formations belongs to the typical *Triglypta-Qaidamestheria* assemblage, represented by *Triglypta haifanggouensis*. However, conchostracans at Zhouyingzi, Luanping County, Hebei Province were assigned to a very similar species, *Triglypta luangpingensis*. *Ferganoconcha sibirica*, the sole bivalve species from the Daohugou beds was also reported from the Haifanggou Formation at western Liaoning as well as the Longmen Formation at northern Hebei (Jiang, 2006; Huang, 2016). Moreover, many plants and especially the insects of the same species were discovered from these localities (Tab. 1). Therefore, the biostratigraphic evidence on all well-known groups confirmed the correlation between the Daohugou beds and other localities of the Haifanggou Formation. It can be largely correlated to the Longmen Formation in northern Hebei and western Beijing.

(3) Isotope chronology: The isotopic date for the Daohugou beds is approximately 165 Ma (Chen *et al*., 2004; Liu *et al*., 2004; Yang & Li, 2008), and the age of the overlapped volcanic rocks of the Tiaojishan Formation is ~165–160 Ma (Liu *et al*., 2012; Wang *et al*., 2013; Yu *et al*., 2021). Our unpublished CA-ID-TIMS dating indicates that the fossiliferous layers of the Haifanggou Formation at both Daohugou and Haifeng are almost of the same age.

TABLE 1. A list of insects from more than two localities of Yanliao biota. DHG, Daohugou Village in Inner Mongolia; HF, Haifeng Village in Liaoning Province; ZYZ, Zhouyingzi Village in Hebei Province. The species at Haifeng or Zhouyingzi Village are according to Hong (1983). '?' represents uncertain.

Order	Species	DHG	HF	ZYZ
Odonata	*Samarura gigantea* Brauer, Redtenbacher & Ganglbauer, 1889	*	*	*
Ephemeroptera	*Clavineta eximia* Zhang, 2006	*	*	*
Dermaptera	*Leicarabus parvus* Hong, 1983	*	*	
Orthoptera	*Allaboilus gigantus* Ren & Meng, 2006	*	*	
Thripida	*Mesopsocus divaricatus* Hong, 1983	*	*	
Hemiptera	*Yanliaocorixa chinensis* (Lin, 1976) Hong, 1983	*	*	*
	Sinopsocus oligovenus Lin, 1976	?	*	*
	Anthoscytina longa Hong, 1983	*	*	
	Cicadocoris brunneus (Hong, 1983) Dong, Yao & Ren, 2013	*	*	
	Cicadocoris sinensis (Hong, 1983) Dong, Yao & Ren, 2013	*	*	
	Paracicadella beipiaoensis Hong, 1983	*	*	
Coleoptera	*Protostaphylinus mirus* Lin, 1976	*	*	*
	Parandrexis beipiaoensis Hong, 1983	*	*	
Mecoptera	*Mesopanorpa luanpingensis* Hong, 1983	*		*
Diptera	*Jurolaemargus yujiagouensis* (Hong, 1983) Evenhuis, 1994	*	*	
	Leptoplecia laevis Hong, 1983	*	*	
	Psocites pectinatus (Hong, 1983) Zhang, 2004	*	*	

Checklists

A taxonomic checklist of all described organisms from the Daohugou biota is given in Appendix 1. Appendixes 2 and 3 are the checklists of fossil insects of the Yanliao entomofauna from Haifeng and Zhouyingzi localities, respectively. We examined the insects from the Daohugou biota; the total number of valid species reaches to 760, excluding some problematic taxa (marked with '*' in the appendixes) and those proposed based on juveniles (marked with '#' in the appendices). It is noteworthy that taxa of the orders such as Blattodea, Hymenoptera, Neuroptera and Diptera were not critically examined. The '?' is taken from the original papers.

The classification and systematics of mayflies (Ephemeroptera) from the Daohugou beds are problematic. New mayfly taxa have been established based on imagines as well as nymphs. As fossil mayfly imagines and nymphs are difficult to correspond with each other, it is hard to avoid describing one mayfly species twice, once as a nymph and once as an imago. In the Daohugou beds, the mayfly imagines are very abundant, so it is not advisable to describe new species based on mayfly nymphs in this area. Lin & Huang (2008) established two new genera and species, *Cheirolgisca ningchengensis* and *Olgisca angusticubitis*, based on two imagines, but they are in fact very similar. The differences between the wing vein CuA and the claspers mentioned in the original text are not obvious. As such, these two mayfly taxa likely represent a same species. When initially describing the Yanliao entomofauna, Prof. Youchong Hong compared it with the insect assemblage from the Cheremkhovo Formation of Russia (Hong, 1983), but the age of the Cheremkhovo Formation may be older and is often considered to belong to the Early or early Middle Jurassic (Kiritchkova *et al*., 2017; Arzhannikova *et al*., 2018). Many subsequent authors have compared the insect fossils from the Yanliao biota, especially the Daohugou biota, with the insects from the Karabastau Formation in Kazakhstan. However, this formation is more likely to correspond to the Tiaojishan Formation of northern China, which belongs to the late assemblage of the Yanliao biota (Huang, 2015). The insect fossils from the Daohugou and Haifeng localities (both belong to the Yanliao biota) are similar in geological formation but slightly different in insect assemblage; they often share the same genera but different species. As the above-mentioned fossiliferous localities in East Asia, central Asia and western Siberia have obvious differences in age, paleogeography such as distance and paleotopography, it may be difficult to find the same insect species at all three. There are major differences in the study of mayfly nymphs at Daohugou. Hong (1983) regarded *Mesoneta antiqua* and *Mesobaetis sibirica* as key representatives of the Yanliao biota, which has been accepted by many authors and has been applied to the study of Daohugou fossils. Zhang (2006) established a series of new genera and species based on the mayfly nymphs from Daohugou, suggesting that

Mesoneta antiqua and *Mesobaetis sibirica* did not exist in Daohugou. He designated the former as a new genus and a new species, *Clavineta eximia* and regarded the latter as not present in the locality but established a new species of *Mesobaetis*, *M. latifilamentacea*. Although it is not recommended to establish new species based on mayfly nymphs from Daohugou, it is probable that *Mesoneta antiqua* and *Mesobaetis sibirica* should not occur in Daohugou. In summary, Ephemeroptera is one of the most challenging orders of insects from the Yanliao biota.

The Yanliao biota is rich in fossil water boatmen (Hemiptera: Corixidae), which are characterized by at least two clearly different taxa based on their body sizes. The larger species is *Karataviella popovi* Zhang, 2009, and the smaller species was originally classified as a congeneric, *K. chinensis* (Lin, 1976). Hong (1983) assigned the smaller species into a new genus, as *Yanliaocorixa chinensis* (Lin, 1976), whose wide distribution and abundance make it a typical representative of the Yanliao biota (Fig. 3) (Huang, 2015). The most common species in the Daohugou beds is undoubtedly *Yanliaocorixa chinensis* (Lin, 1976). *Daohugocorixa vulcanica* Zhang, 2010 from the same locality should be junior synonym of *Y. chinensis*. It is generally believed that the 'Jiulongshan Formation' in northern Hebei also produces numerous specimens of *Y. chinensis*, but Zhang (2010) classified this species in this formation in northern Hebei as a new genus and species, *Jiulongshanocorixa genuina*. The identity of the water boatman species still requires further study, as there is no obvious difference separating it from *Y. chinensis*, and more importantly, many of the differences between the two suggested by Zhang (2010) may be taphonomic artefacts.

The study of homopterans (Hemiptera) in Daohugou is rather chaotic, and many taxa have been synonymized. This is the case for many palaeontinids (Cicadomorpha), which have been revised by Wang *et al*. (2009). In recent years, further synonyms were proposed within the extinct family Procercopidae and its allies. For instance, Fu & Huang (2019a) described three forms of Sinoalidae from the top of the Daohugou beds, establishing a new genus and three new species, *Parasinoala daohugouensis*, *P. magnus* and *P. minuta*. Chen *et al.* (2019) later established a new genus and species of Sinoalidae from Daohugou, *Juroala daohugouensis*. Although the online version of Fu & Huang (2019a) was published earlier, it was not registered with ZooBank, so *Parasinoala* should be regarded as a junior synonym of *Juroala*. Furthermore, based on a detailed comparison, *Parasinoala magnus* is a junior synonym of *Juroala daohugouensis*, *Parasinoala daohugouensis* had been given a new name, *Juroala daidaleos,* for replacement of the preoccupied name *Juroala daohugouensis* (Fu & Huang, 2019b). In addition, Hong (1983) published two genera and two species of Procercopidae, *Anthoscytina longa* and *Paracicadella beipiaoensis*, from the Haifanggou Formation in western Liaoning. Both species are relatively common at the Daohugou (Ningcheng, Inner Mongolia) and Haifeng (Beipiao, Liaoning) localities, but the original description and illustrations are not accurate. Additionally, both taxa exhibit obvious intraspecific variation in their wing venation, which causes certain difficulties in classification, so a detailed revision is needed in the future. We suggest that *Anthoscytina perpetua* Li, Shih & Ren, 2013, established based on copulating specimens of Procercopidae from Daohugou, is a junior synonym of *Anthoscytina longa*.

The Coleorrhyncha from the Yanliao biota needs revision. In the early assemblages of the Yanliao biota, namely the Haifanggou Formation in Beipiao and the Daohugou beds in Ningcheng, Inner Mongolia, numerous specimens of coleorrhynchan bugs have been discovered, including at least three named species of Progonocimicidae. In the younger assemblage of the Yanliao biota, the Linglongta beds, coleorrhynchans are very rare and remain unstudied. Hong (1983) established two genera of Progonocimicidae with one species each, *Mesocimex sinensis* and *Mesoscytina brunnea*, from the Haifanggou Formation in Beipiao. While later authors established a series of new genera and species when studying Progonocimicidae fossils from Daohugou, they are all junior synonyms of the two species described by Hong (1983), despite the fact that the genus-level classification of Progonocimicidae is still contentious. For now, we follow Dong *et al*. (2013) in treating these Daohugou progonocimicids as synonymous with the genus *Cicadocoris*, namely the species *Cicadocoris sinensis* (Hong, 1983) and *Cicadocoris brunneus* (Hong, 1983). The progonocimicids, *Mesocimex lini* established by Wang *et al*. (2009), and *Cicadocoris anisomeridis* established by Dong *et al*. (2014), are both actually junior synonyms of *Cicadocoris sinensis* (Hong, 1983) (Jiang *et al*., 2016). *Cicadocoris varians*, erected based on a deformed specimen in Dong *et al*. (2012) is also a junior synonym of *Cicadocoris sinensis* (Jiang & Huang, 2017).

Zhang *et al*. (2008) established a new genus and species of Chresmodidae (Polyneoptera), *Jurachresmoda gaskelli* Zhang, Ren & Shih, 2008, based on a specimen from Daohugou. In 2010, these authors established another new species of *Jurachresmoda*, *J. sanyica* Zhang, Ren & Pang, 2009, based on another Daohugou specimen. The key diagnostic feature of *J. gaskelli* is the long fore tibia, representing approximately 59% of the anterior femur. However, tibial length is very similar in *J. sanyica* where the length of the fore tibia exceeds 68% of the femur. In fossils with very elongated appendages, it seems

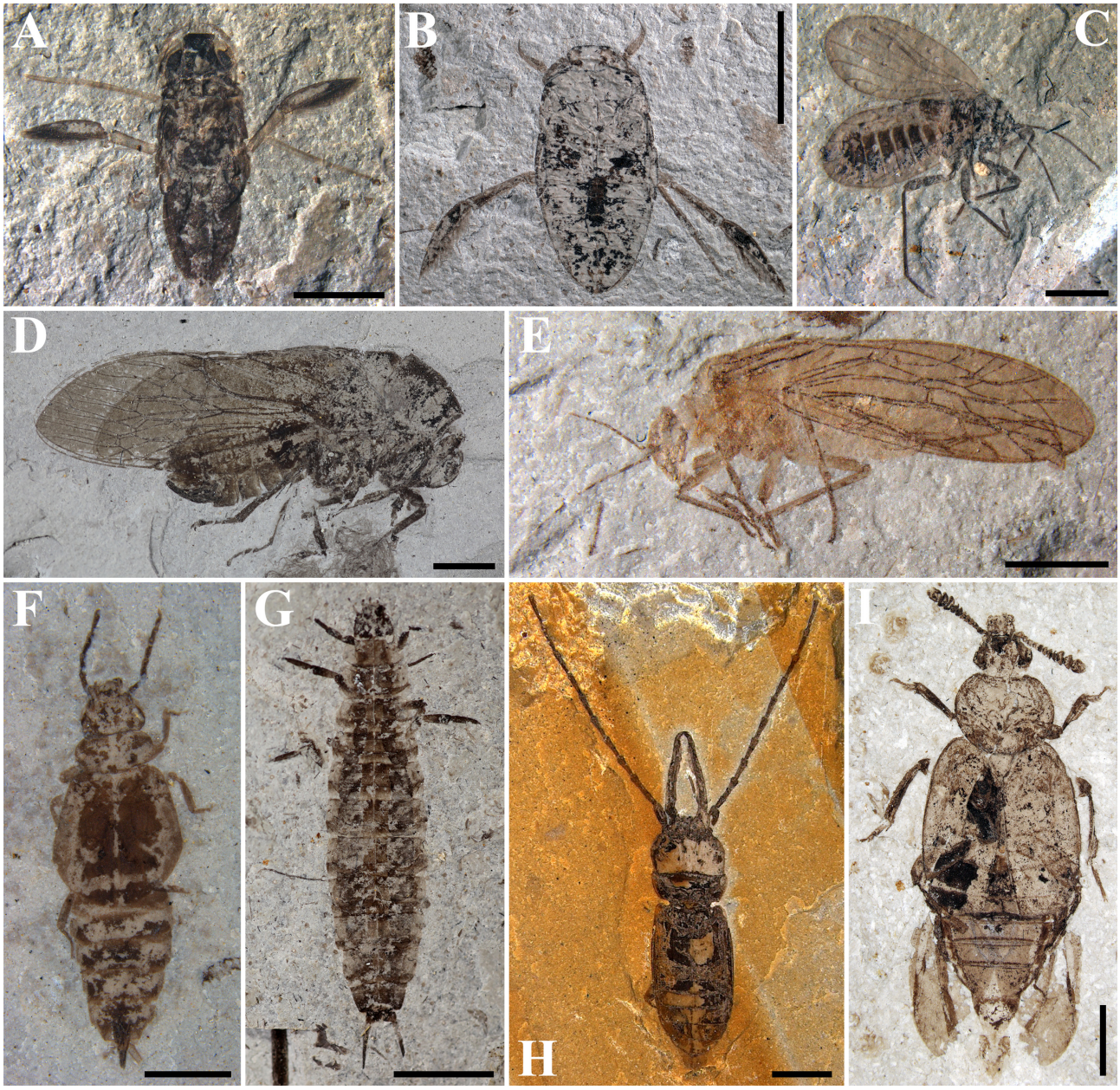


FIGURE 3. Some representative insects from the Daohugou biota. **A**, *Yanliaocorixa chinensis* (Lin, 1976). **B**, *Karataviella popovi* Zhang, 2010. **C**, *Poljanka hirsuta* Yang, Yao & Ren, 2012. **D**, *Shuraboprosbole daohugouensis* Wang & Zhang, 2009. **E**, *Archipsylla sinica* Huang, Nel, Azar, Nel, 2008. **F**, *Leicarabus parvus* Hong, 1983. **G**, *Daohugounectes primitivus* Wang, Ponomarenko & Zhang, 2009. **H**, *Parandrexis beipiaoensis* Hong, 1983. **I**, Silphidae, gen. et sp. *incertae sedis*. Scale bars = 5 mm (B, D, G); 2 mm (A, C, E, F H, I).

inappropriate to use the length ratio of the leg segments as a key diagnostic feature for species-level classification. The length of the leg segments may vary greatly due to the angle of compression during fossilization, as demonstrated by the unequal lengths of left and right anterior femora of *J. gaskelli*. Since the morphological features of the two Daohugou Chresmodidae species are very similar, and the main diagnostic character does not seem appropriate, *Jurachresmoda sanyica* should be treated as a junior synonym of *Jurachresmoda gaskelli*.

Hong (1983) named four genera and four species of Psocodea (also called Psocoptera in earlier works): *Trichopsocus beipiaoensis*, *Mesopsocus divaricatus*, *Pseudopsocus parvus* and *Parapsocus pectinatus*, and Lin (1976) named a genus and a species of Psocodea, *Sinopsocus oligovenus*, from the Haifanggou Formation. As such, the Haifanggou Formation has yielded a total of five genera and five species of Psocodea. Of them, *Trichopsocus beipiaoensis* was described based on a laterally compressed specimen, which lacks the front part of the body and the wing base. The four wings are compressed altogether, making the fine wing venation

difficult to interpret. The original description and illustrations likely depict overlapping wing veins, and it is difficult to judge the exact characteristics of wing veins. The specimen is very similar to Protopsyllidiidae (Hemiptera, Sternorrhyncha), and probably not a psocodean. The wing venation of *Mesopsocus divaricatus* is obviously not psocodean, but suggests its affinity to Thripida (Paraneoptera), a stem lineage of Thysanoptera. *Sinopsocus oligovenus* is undoubtedly a member of Protopsyllidiidae, which is very close to *Poljanka hirsuta* Yang, Yao & Ren, 2012 described later in the Daohugou beds. The main difference between them is that CuA is divided into two at the end in the latter species, but *S. oligovenus* has the same character. *Sinopsocus oligovenus* was first described from the Haifanggou Formation (Lin, 1976), and Hong (1983) recorded that this fossil also occurs in the 'Jiulongshan Formation' in Zhouyingzi, Luanping, Hebei Province. Through decades of fossil excavation and collection, we have found this species from the Haifanggou Formation in Beipiao, western Liaoning, the 'Jiulongshan Formation' at Zhouyingzi, Luanping, Hebei, and the corresponding strata in central and northwestern regions of China. It represents a widely distributed representative of the Yanliao biota. When *Pseudopsocus parvus* was described, a photograph of the fossil was not provided, but judging from the line drawing and the original description, it looks like a hemipteran. *Parapsocus pectinatus*, however, had been assigned to Diptera in Axymyiidae (Zhang, 2004). Huang *et al*. (2008) described *Archipsylla sinica* from the Daohugou beds, which is classified as Archipsyllidae in Psocodea. Later, these insects were transferred to an order of extinct order, Permopsocida (Huang *et al*., 2016). As such, no definitive Psocodea fossils have been recorded from the Yanliao biota so far.

Nel *et al*. (2014) described two genera and three species of Thripida from the Daohugou beds. Among them, *Lophiosina lini*, a junior synonym of *Mesopsocus divaricatus*, is an important representative in Daohugou biota, as we have found thousands of specimens from Daohugou and they are abundant in the Haifanggou Formation in Beipiao as well. *Mesopsocus divaricatus* was established based on a complete specimen from the Haifanggou Formation in Beipiao, but the original author misidentified it as Psocodea.

Hong (1983) established a new beetle genus and species, *Leicarabus parvus*, based on an incomplete specimen from the Haifanggou Formation of Beipiao, Liaoning Province, which preserved the head, prothorax and forewings. This fossil was originally compared with *Unda* of the extant adephagan family Trachypacheidae, but its forewings are shorter and smoother, the antennae are slender, and the apical maxillary palpomeres are longer than those of *Unda*. A critical feature in the original description of *L. parvus* is that the antennae are 12-segmented, whereas the antennae of Coleoptera generally do not exceed 11 segments. Based on numerous exceptionally preserved conspecific specimens from Daohugou that can be readily identified, *Leicarabus parvus* Hong, 1983 undoubtedly belongs to Dermaptera (earwigs), as suggested by its antennal, head and forewing morphologies. Like the water boatmen *Yanliaocorixa chinensis*, the earwig species is a typical representative of the Daohugou biota. To date, our research group has collected several thousands of such small-sized dermapteran fossils, and interestingly, about half of them do not preserve the abdomen, like the type specimen of *L. parvus*, suggesting that this represents a common taphonomic artifact (Huang *et al*., 2006; Huang, 2015, 2016). Our fossil excavations in the Haifanggou Formation at Haifeng Village, Liaoning Province have also yielded numerous specimens of *L. parvus*, which are also characterized by two taphonomic forms, with or without abdomen. Zhang (2002) established *Jurassimedeola orientalis* based on a complete female specimen from Daohugou. The head, prothorax and elytra (forewings) of this specimen are the same as those of *Leicarabus parvus*, suggesting that *J. orientalis* is a junior synonym of *Leicarabus parvus*. The original description of *J. orientalis* indicated that the cerci are multi-segmented, but this is probably an observational error. Zhao *et al*. (2010) established a new genus and species, *Atopderma ellipta*, based on a series of incomplete dermapteran specimens from the Daohugou beds, some of which with the abdomen completely or partly lost and lack critical characters of head (antennae, mouthparts, etc.). The preserved structures of these fossils are no different from the ones described by Hong (1983) and Zhang (2002), so *A. ellipta* should be regarded as a junior synonym of *Leicarabus parvus* as well.

A diverse fauna of beetles has been described from the Daohugou beds. Two species belonging to the poorly known archostematan family Asiocoleidae (= Tricoleidae) have been reported from the deposit by Tan & Ren (2009). Ponomarenko *et al*. (2014) commented that the two species of *Loculitricoleus* Tan & Ren, 2009 may in fact be synonymous, and hence require future restudy. Based on our observations, the genus *Notocupes* Ponomarenko, 1964 does not belong to Cupedidae and instead represents a sister group to the whole family (Li *et al*., in prep.). The three archostematan taxa described by Tan *et al*. (2012) are invalid according to the International Code of Zoological Nomenclature, since they were published with two distinct layouts in an online-only journal, and because reprints are not made available at the institution listed in the paper (Dubois *et al*., 2013), and hence are not included in the checklist. *Latocupes collaris* (Tan,

Huang & Ren, 2007) Kirejtshuk *et al*., 2016 is here regarded as junior synonym of *Latocupes angustilabialis* (Tan, Huang & Ren, 2007) Kirejtshuk *et al*., 2016, because the diagnostic characters for the former species are probably taphonomic artefacts.

Among adephagan beetles, a single species of the family Coptoclavidae has been reported from Daohugou. The Coptoclavidae are one of the most common groups of aquatic beetles in Mesozoic deposits with over 30 species described from the Late Triassic to Early Cretaceous. We however note that Coptoclavidae probably does not constitute a monophyletic taxon. Some important diagnostic characters of coptoclavids such as the presence of four eyes cited in some publications (*e.g*., Ponomarenko, 1961, 1977; Soriano *et al*., 2007; Bo *et al*., 2010) seem to represent a taphonomic artifact or misinterpretation, as the specimens examined by us do not possess this unusual character. As such, the specimens of *Daohugounectes* Wang, Ponomarenko & Zhang, 2009 require further study. It is also noteworthy that the larval coptoclavids from Daohugou have been spelled as '*Daohugounectes primitivus*' in Wang *et al*. (2009), while a different spelling, '*Daohugounectes primitinus*', was used for the putative adults. Thus, the nomenclature and classification of coptoclavids must be revisited.

The Daohugou beds preserve one of the most significant assemblages of polyphagan beetles from the Mesozoic, both in terms of their taxonomic diversity and often their excellent preservation, capturing a unique snapshot of the beetle fauna prior to the diversification of angiosperms in the Cretaceous. Specimens belonging to the enigmatic extinct genus *Jurodes* Ponomarenko, 1985 from Daohugou represent a lasting mystery in coleopteran systematics. Jurodidae is known from a single recent specimen from Far Eastern Russia and scarce Jurassic fossils (Lafer, 1996; Kirejtshuk, 1999). It possesses an eclectic combination of characters and was considered as a member of Adephaga, Archostemata, Polyphaga, or Coleoptera *incertae sedis* in the past (Ponomarenko, 1985; Lafer, 1996; Kirejtshuk, 1999; Beutel *et al*., 2008; Hörnschemeyer, 2009; Yan *et al*., 2014a). We note that the wing venation and thoracic morphology of jurodids is of the polyphagan type, and examination of future material may support the placement of the group within basal Polyphaga. We thus treat the family as Polyphaga *incertae sedis*.

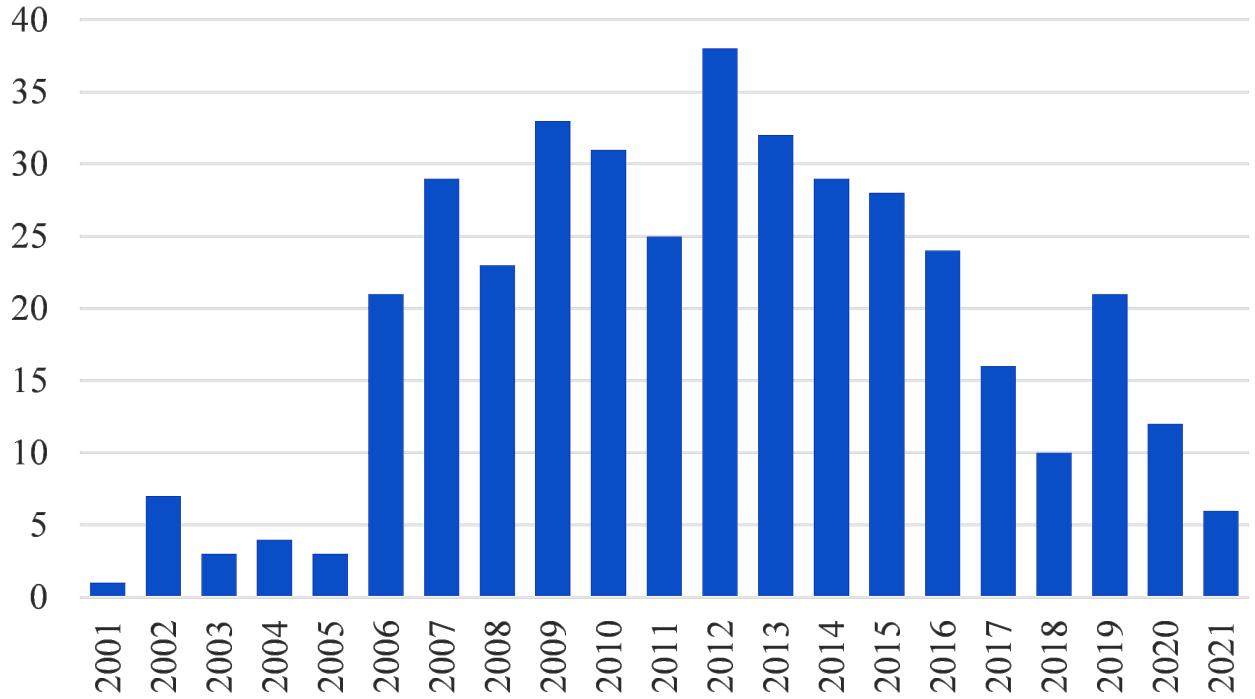
The extinct polyphagan family Lasiosynidae represents another problematic group. As defined currently, the group includes beetles that apparently belong to multiple polyphagan families. For example, Cai *et al*. (2015) transferred *Tarsomegamerus mesozoicus* Zhang, 2005 from Lasiosynidae to Artematopodidae, while other representatives of the group show similarities with the isolated relictual family Rhinorhipidae. Here we also formally transfer *Parelateriformius* Yan & Wang, 2010 from Lasiosynidae to the extant Dascillidae; the fossil genus is very close to the extant *Petalon* Schönherr, 1833. The Lasiosynidae genus *Bupredactyla* Chang, Ren & Kun, 2010 should be regarded as junior synonym of *Lasiosyne* Tan, Ren & Shih, 2007 as discussed by Yan *et al*. (2014b). It was pointed out that the differences between *Bupredactyla* and *Lasiosyne* are merely taphonomic in nature and result of the former being preserved in lateral aspect.

The genus *Sinoparathyrea* Pan, Chang & Ren, 2011 was originally placed into the family Buprestidae (Pan *et al*., 2011), but characters including the short prosternum in front of the procoxae, short and broad prosternal process, and most importantly the relatively large radial cell of the hind wings firmly place it into Schizopodidae, the sister group of Buprestidae (Cai *et al*., 2015).

Members of Elateroidea from Daohugou have a convoluted taxonomic history. *Tarsomegamerus mesozoicus* Zhang, 2005 was originally placed into Chrysomelidae before being transferred to Artematopodidae by Cai *et al*. (2015). The genus *Clavelater* Dong & Huang, 2011 has been described as a member of Elateridae, but its systematic position remains uncertain (Kundrata *et al*., 2021) and may rather resent either a hitherto unrecognized lineage of Eucnemidae (Muona *et al*., 2020) or, as we are inclined to believe, a stem lineage of Throscidae. Until further re-examination of the type material, we consider the genus as *incertae sedis* within Elateroidea. The position of *Protagrypnus robustus* Chang, Kirejtshuk & Ren, 2009 and *Paraprotagrypnus superbus* Chang, Zhao & Ren, 2009 is likewise uncertain and requires future attention. *Paradesmatus baiae* Chang, Kirejtshuk & Ren, 2009 was recently transferred to Eucnemidae by Muona *et al*. (2020), although the subfamilial placement of the fossil requires further study. In agreement with Kundrata *et al*. (2021) we transfer *Desmatus* Dolin, 1975 and *Paradesmatus* Chang, Kirejtshuk & Ren, 2009 to Eucnemidae. *Desmatus ponomarenkoi* (Chang, Kirejtshuk & Ren, 2009) has been regarded as a member of Elateridae by Muona *et al*. (2020), but the fossil shows large, triangular metacoxal plates and antennal morphology characteristic of Eucnemidae.

The extinct cucujoid family Parandrexidae known from the Mesozoic of Russia, China and Spain has been considered as potentially close to Cucujoidea, Boganiidae or even the cleroid family Peltidae (Kirejtshuk, 1994; Kirejtshuk *et al*., 2010; Escalona *et al*., 2015). Our examination of parandrexid specimens suggests that the family may be close to Boganiidae and may perhaps be synonymized in the future. *Parandrexis longicornis* Lu, Shih & Ren, 2015 was described from the Daohugou beds based on a male specimen, but considering its external

TABLE 2. The number of references about insects at Daohugou locality each year.



morphology and sexually dimorphism in the genus, we here regard it as a junior synonym of *P. beipiaoensis* Hong, 1983 from the almost coeval and adjacent locality. *Archaeoripiphorus nuwa* Hsiao, Yu, Deng & Pang, 2017 was originally placed in Ripiphoridae, but its systematic position within the family has been questioned by Batelka *et al*. (2018).

Zhang *et al*. (2013) reported a new family, twelve new genera and fourteen new species of Lepidoptera from the Daohugou beds. These new taxa were mostly established based on one specimen, and many diagnostic features are not clear enough for separating them from each other. Placements of some specimens in Lepidoptera remain uncertain. Given that the wing venation of Lepidoptera usually exhibits a degree of intraspecific variation, most of the above-mentioned taxa established based on single and not well-preserved these specimens should be subject to future revisions.

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All references about known species from the Daohugou biota, insects of Haifeng and Zhouyingzi localities by the middle of April 2021 are listed in Appendix 4. Among them, 396 references focus on insects from Daohugou, and the reference number by year from 2001 to the present is shown in Table 2.

Acknowledgements

We are grateful to Chong Dong, Yanzhe Fu, Xinran Li, Neal Evenhuis and Erik Tihelka for their kind help. We also thanks two anonymous reviewers for their constructive comments. Financial support was provided by the National Key Research and Development Program of China (2016YFC0600406), Strategic Priority Research Program of the Chinese Academy of Sciences (XDB26000000 and XDB18000000), and the National Natural Science Foundation of China (41925008 and 41688103).

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Appendix 1: Daohugou biota checklist

ARTHROPODA

Insecta

Odonata
- Campterophlebiidae
  - *Amnifleckia guttata* Zhang, Ren & Cheng, 2006
  - *Amnifleckia splendida* Huang, Fleck, Nel & Lin, 2006
  - *Angustiphlebia mirabilis* Li, Nel, Ren & Pang, 2013
  - *Azarphlebia evanescens* Nel & Huang, 2020
  - *Ctenogampsophlebia reni* Petrulevičius, Huang & Nel, 2011
  - *Hsiufua chaoi* Zhang & Wang, 2013
  - *Hypsothemis sinensis* Huang, Fu & Nel, 2020
  - *Karatawia sinica* Li, Nel & Ren, 2012
  - *Parabrunetia celinea* Huang, Fleck, Nel & Lin, 2006
  - *Parazygokaratawia azari* Huang, Cai & Nel, 2018
  - *Qibinlina sinica* Huang & Nel, 2009
  - *Sinacymatophlebia mongolica* Nel & Huang, 2009
  - *Sinokaratawia prokopi* Nel, Huang & Lin, 2007
  - *Sinokaratawia daohugouica* Zhang, Ren & Pang, 2008
  - *Sinokaratawia gloriosa* Zhang, Ren & Pang, 2008
  - *Sinokaratawia magica* Zhang, Ren & Pang, 2008
  - *Zygokaratawia reni* Nel, Huang & Lin, 2008
  - *Zygokaratawia incompleta* Huang, Cai & Nel, 2018
- Daohugoulibellulidae
  - *Daohugoulibellula lini* Nel & Huang, 2015
- Enigmalestidae
  - *Enigmalestes lini* Nel & Huang, 2020
- Euthemistidae
  - *Sinoeuthemis daohugouensis* Li, Nel, Shih, Ren & Pang, 2013
- Juraheterophlebiidae
  - *Juraheterophlebia sinica* Nel, Azar & Huang, 2013
  - *Juraheterophlebia cancellosa* Huang & Nel, 2017
- Juralibellulidae
  - *Juralibellula ningchengensis* Huang & Nel, 2007
- Paracymatophlebiidae
  - *Linqibinia panae* Pinkert, Nel & Huang, 2017
- Protomyrmeleontidae
  - *Protomyrmeleon daohugouensis* Huang, Petrulevičius & Nel, 2010
  - *Protomyrmeleon lini* Huang, Petrulevičius & Nel, 2010
- Family *incertae sedis*
  - *Propecymatophlebia magnifica* Huang, Nel & Cai, 2017
  - #*Samarura gigantea* Brauer, Redtenbacher & Ganglbauer, 1889
  - *Sinocymatophlebiella hasticercus* Li, Nel, Ren & Pang, 2011

Ephemeroptera
- Fuyoidae
  - #*Fuyous gregarius* Zhang & Kluge, 2007
    - = *Mesoneta antiqua* Brauer, Redtenbacher & Ganglbauer, 1889
- Hexagenitidae
  - #*Shantous lacustris* Zhang & Kluge, 2007
    - = *Mesobaetis sibirica* Brauer, Redtenbacher & Ganglbauer, 1889
- Mesonetidae
  - #*Clavineta eximia* Zhang, 2006
    - = *Mesoneta antiqua* Brauer, Redtenbacher & Ganglbauer, 1889
- Siphlonuridae
  - *Cheirolgisca ningchengensis* Lin & Huang, 2008
  - *Jurassonurus amoenus* Huang, Ren & Sinitshenkova, 2008
  - *Multiramificans ovalis* Huang, Liu, Sinitshenkova & Ren, 2007
  - **Olgisca angusticubitis* Lin & Huang, 2008
- Siphluriscidae
  - *Stackelbergisca cylindrata* Zhang, 2006

Dermaptera
- Bellodermatidae
  - *Belloderma arcuata* Zhao, Ren & Shih, 2010
  - *Belloderma ovata* Zhao, Ren & Shih, 2010
- Dermapteridae
  - *Palaeodermapteron dicranum* Zhao, Ren & Shih, 2011
  - *Sinopalaeodermata neimonggolensis* Zhang, 2002
- Protodiplatyidae (= Longicerciatidae)
  - *Abrderma gracilentum* Xing, Shih & Ren, 2016
  - *Perissoderma triangulum* Xing, Shih & Ren, 2016
- Sinopalaeodermatidae
  - *Leicarabus parvus* (Hong, 1983)
    - = *Atopderma ellipta* Zhao, Ren & Shih, 2010
    - = *Jurassimedeola orientalis* Zhang, 2002

Plecoptera
- Baleyopterygidae
  - *Aristoleuctra yehae* Liu, Ren & Sinitshenkova, 2006
- Capniidae
  - *Dobbertiniopteryx Juracapnia* Liu, Sinitshenkova & Ren, 2009
  - *Dobbertiniopteryx* sp. (*In* Huang & Cai *in* Huang, 2016)
- Notonemouridae
  - *Paranotonemoura zwicki* Cui & Béthoux, 2018
- Perlariopseidae
  - *Karanemoura abrupta* Sinitshenkova, 1987
  - *Karanemoura manca* Liu, Sinitshenkova & Ren, 2009
  - *Karanemoura* sp. (*In* Huang & Cai *in* Huang, 2016)
- Pronemouridae
  - *Pronemoura angustithorax* Liu, Ren & Shih, 2011
  - *Pronemoura longialata* Liu, Sinitshenkova & Ren, 2011
  - *Pronemoura minuta* Liu, Sinitshenkova & Shih, 2011
  - *Pronemoura peculiaris* Liu, Sinitshenkova & Ren, 2011
  - *Pronemoura shii* Liu, Sinitshenkova & Ren, 2011
- Pteronarcyidae
  - *Pteroliriope sinitshenkovae* Cui, Shih & Ren, 2016
- Taeniopterygidae
  - *Jurataenionema inornatus* Liu & Ren, 2007
  - *Jurataenionema stigmaeus* Liu & Ren, 2007
  - *Jurataenionema* sp. (*In* Huang & Cai *in* Huang, 2016)
  - *Mengitaenioptera multiramis* Liu & Ren, 2008
  - *Noviramonemoura trinervis* Liu & Ren, 2008
  - *Protaenionema fuscalatus* Liu & Shih, 2007

Orthoptera
- Elcanidae
  - *Parelcana pulchmacula* Tian, Gu, Yin & Ren, 2019
  - *Sinoelcana minuta* Gu, Tian, Wang & Yue, 2020
- Haglidae
  - *Archaboilus musicus* Gu, Engel & Ren, 2012
  - *Liassophyllum caii* Gu & Ren, 2012
- Locustopsidae
  - *Locustopsis rhytofemoralis* Gu, Yue, Shi, Tian & Ren, 2016
- Prophalangopsidae
  - *Aboilus cornutus* Li, Ren & Wang, 2007
  - *Aboilus stratosus* Li, Ren & Wang, 2007
    - = *Protaboilus lini* Ren & Meng, 2006
  - *Aboilus chinensis* Fang, Zhang & Wang, 2009
  - *Aboilus perbellus* Wang, Li, Zhang, Fang, Wang & Zhang, 2015
  - *Allaboilus dicrus* Ren & Meng, 2006
  - *Allaboilus gigantus* Ren & Meng, 2006
    - = *Flexaboilus retinervius* Li, Ren & Meng, 2007
    - = *Furcaboilus excelsus* Li, Ren & Wang, 2007
  - *Allaboilus robustus* Gu, Qiao & Ren, 2010
  - *Angustaboilus fangianus* Li, Ren & Meng, 2007
  - *Ashangopsis daohugouensis* Lin, Huang & Nel, 2008

Bacharaboilus lii Gu, Qiao & Ren, 2011
Circulaboilus aureus Li, Ren & Wang, 2007
= *Circulaboilus amoenus* Li, Ren & Wang, 2007
Circulaboilus priscus Gu, Qiao & Ren, 2010
Novaboilus multifurcatus Li, Ren & Meng, 2007
Protaboilus rudis Ren & Meng, 2006
Pseudohagala shihi Li, Ren & Wang, 2007
Scalpellaboilus angustus Gu, Qiao & Ren, 2010
Sigmaboilus gorochovi Fang, Zhang, Wang & Zhang, 2007
Sigmaboilus longus Fang, Zhang, Wang & Zhang, 2007
Sigmaboilus sinensis Fang, Zhang, Wang & Zhang, 2007
Sigmaboilus fuscus Gu, Zhao & Ren, 2009
Sigmaboilus peregrinus Gu, Zhao & Ren, 2009
Sigmaboilus calophlebius Wang, Fang & Zhang, 2018

Mantophasmatodea
Mantophasmatidae
Juramantophasma sinica Huang, Nel, Zompro & Walker, 2008

Grylloblattodea
Bajanzhargalanidae
Sinonele fangi Cui, Béthoux, Klass & Ren, 2015
Sinonele hei Cui, Béthoux, Klass & Ren, 2015
Sinonele mini Cui, Béthoux, Klass & Ren, 2015
Sinonele phasmoides Cui, Béthoux, Klass & Ren, 2015
Geinitziidae
Geinitzia aristovi Cui, Storozhenko & Ren, 2012
Shurabia grandis (Huang & Nel, 2008) Cui, Storozhenko & Ren, 2012
= *Megasepididontus grandis* Huang & Nel, 2008
Sinosepididontus chifengensis Huang & Nel, 2008
Juraperlidae
Juraperla daohugouensis Huang & Nel, 2007
Juraperla grandis Cui, Béthoux, Shih & Ren, 2010
Plesioblattogryllidae
Plesioblattogryllus magnificus Huang, Nel & Petrulevičius, 2008
Plesioblattogryllus minor Ren & Aristov, 2011
Family *incertae sedis*
Duoduo qianae Cui, 2012

Embioptera
Sinembiidae
Sinembia rossi Huang & Nel, 2009
Juraembia ningchengensis Huang & Nel, 2009

Phasmatodea
Chresmodidae
Jurachresmoda gaskelli Zhang, Ren & Shih, 2008
= *Jurachresmoda sanyica* Zhang, Ren & Pang, 2010
Susumaniidae
Adjacivena rasnitsyni Shang, Béthoux & Ren, 2011
Aclistophasma echinulatum Yang, Engel & Gao, 2021

Blattodea
Fuziidae
Arcofuzia cana Wei, Shih & Ren, 2012
Colorifuzia agenora Wei, Liang & Ren, 2013
Fuzia dadao Vršanský, Liang & Ren, 2009
Longifuzia pectinata Liang, Shih, Wang & Ren, 2019
Parvifuzia brava Guo & Ren, 2011
Parvifuzia marsa Guo & Ren, 2011
Parvifuzia peregrina Wei, Liang & Ren, 2012
Liberiblattinidae
Entropia initialis Vršanský, Liang & Ren, 2012
Raphidiomimidae
Divocina noci Liang, Vršanský & Ren, 2012
Falcatusiblatta gracilis Liang, Shih & Ren, 2017
Falcatusiblatta qiandaohua Liang, Shih & Ren, 2017
Fortiblatta cuspicolor Liang, Vršanský & Ren, 2009
Graciliblatta bella Liang, Huang & Ren, 2012

Hemiptera
Aleyrodidae
Sinicoselis weberi Drohojowska, Wegierek, Evans & Huang, 2019
Fulgoridiidae
*Fenghuangor imperato*r Li & Szwedo, 2011
Oviparosiphidae
Daoaphis magnalata Huang, Wegierek, Żyła & Nel, 2015
Palaeontinidae
Abrocossus longus Wang & Zhang, 2007
Cladocossus undulatus Wang & Ren, 2009
Cricocossus paradoxus Wang & Ren, 2009
Daohugoucossus solutus Wang, Zhang & Fang, 2006
Daohugoucossus lii Wang, Ren & Shih, 2007
Daohugoucossus parallelivenius Wang, Ren & Shih, 2007
Daohugoucossus shii Wang, Ren & Shih, 2007
Eoiocossus validus Wang & Zhang, 2006
= *Eoiocossus conchatus* Wang, Ren & Shih, 2007
= *Papilioncossus conchatus* Wang, Ren & Shih, 2007
Eoiocossus giganteus (Wang, Ren & Shih, 2007) Wang, Zhang & Szwedo, 2009
= *Papilioncossus giganteus* (Wang, Ren & Shih, 2007)
Eoiocossus pteroideus (Wang, Ren and Shih, 2007) Wang, Zhang & Szwedo, 2009
= *Papilioncossus pteroideus* Wang, Ren & Shih, 2007
Gansucossus typicus Wang, Zhang & Fang, 2006
Kallicossus ningchengensis Chen, Zhang & Wang, 2014
Martynovocossus ancylivenius (Wang & Ren, 2006) Wang & Zhang, 2008
= *Pseudocossus ancylivenius* Wang & Ren, 2006
Martynovocossus bellus (Wang & Ren, 2006) Wang & Zhang, 2008
= *Pseudocossus bellus* Wang & Ren, 2006\
Martynovocossus punctulosus (Wang & Ren, 2006) Wang & Zhang, 2008
= *Pseudocossus punctulosus* Wang & Ren, 2006
Martynovocossus cheni Wang & Zhang, 2008
Martynovocossus decorus Wang & Zhang, 2008
Neimenggucossus normalis Wang & Zhang, 2007
Ningchengia minuta (Wang, Zhang & Fang, 2006) Wang, Zhang & Szwedo, 2009
= *Fletcheriana minuta* Wang, Zhang & Fang, 2006
Ningchengia aspera Wang, Zhang & Szwedo, 2009
Palaeontinodes cf. shabarovi Martynov, 1937
Palaeontinodes cf. angarensis Becker-Migdisova & Wootton, 1965
Palaeontinodes daohugouensis Wang & Zhang, 2007
Palaeontinodes locellus Wang & Zhang, 2007
Palaeontinodes reshuitangensis Wang & Zhang, 2007
Palaeontinodes separatus Wang & Zhang, 2007
Plachutella magica Wang, Zhang & Fang, 2006
Sinopalaeocossus trinervus Wang, Zhang & Fang, 2006
Sinopalaeocossus eumorphus (Wang & Ren, 2007) Wang, Zhang & Szwedo, 2009
= *Quadraticossus eumorphus* Wang, Wang & Ren, 2008
Sinopalaeocossus fangi (Wang & Ren, 2007) Wang, Zhang & Szwedo, 2009
= *Quadraticossus fangi* Wang & Ren, 2007
Sinopalaeocossus laevis (Wang & Ren, 2007) Chen, Zhang, Wang, Zheng & Wang, 2016
= *Hamicossus laevis* Wang & Ren, 2007
Sinopalaeocossus longicaulis (Wang & Ren, 2007) Wang, Zhang & Szwedo, 2009
= *Quadraticossus longicaulis* Wang & Ren, 2007

Sinopalaeocossus amoenus Chen, Zhang & Wang, 2016
Suljuktocossus chifengensis Wang & Zhang, 2007
Suljuktocossus coloratus (Wang, Zhang & Fang, 2006) Wang, Zhang & Szwedo, 2009
= *Fletcheriana colorata* Wang, Zhang & Fang, 2006
Suljuktocossus yinae Wang & Ren, 2007
Synapocossus sciacchitanoae Wang, Shih & Ren, 2013
Procercopidae
Anthoscytina longa Hong, 1983
= *Anthoscytina perpetua* Li, Shih & Ren, 2013
Anthoscytina brevineura Chen, Wang & Zhang, 2015
Anthoscytina elegans Chen, Wang & Zhang, 2015
Anthoscytina daidaleos Fu, Huang & Engel, 2018
Jurocercopis grandis Wang & Zhang, 2009
Paracicadella beipiaoensis Hong, 1983
Procercopina daohugouensis Fu & Huang, 2020
Procercopina lini Fu & Huang, 2020
Titanocercopis borealis Chen, Zhang & Wang, 2015
Protopsyllidiidae
Poljanka hirsuta Yang, Yao & Ren, 2012
Sinoalidae
Jiania crebra Wang, Szwedo & Zhang, 2012
Jiania gracila Wang, Szwedo & Zhang, 2012
Juroala minuta (Fu & Huang, 2019) Fu & Huang, 2019
= *Parasinoala minuta* Fu & Huang, 2019
Juroala daidaleos Fu & Huang, 2019
= *Parasinoala daohugouensis* Fu & Huang, 2019
Juroala daohugouensis Chen & Wang, 2019
= *Parasinoala magnus* Fu & Huang, 2019
Juroala pulchra Fu & Huang, 2021
Jiania sp. (*In* Chen *et al*., 2017)
Luanpingia daohugouensis Fu, Cai & Huang, 2018
Luanpingia youchongi Fu & Huang, 2019
Shufania hani Chen, Zhang, Wei & Wang, 2017
Sinoala parallelivena Wang, Szwedo & Zhang, 2012
Stictocercopis wuhuaensis Fu & Huang, 2018
Sinojuraphididae
Sinojuraphis ningchengensis Huang & Nel, 2008
Tettigarctidae
Hirtaprosbole erromera Liu, Yao & Ren, 2016
Macrotettigarcta obesa Chen & Wang, 2016
Maculaprosbole zhengi Zheng, Chen & Wang, 2016
Sanmai kongi Chen, Zhang & Wang, 2016
Sanmai mengi Chen, Zhang & Wang, 2016
Sanmai xuni Chen, Zhang & Wang, 2016
Shuraboprosbole daohugouensis Wang & Zhang, 2009
Shuraboprosbole media Wang & Zhang, 2009
Shuraboprosbole minuta Wang & Zhang, 2009
Sunotettigarcta hirsuta Li, Wang & Ren, 2012
*Tianyuprosbole zheng*i Chen, Wang, Zhang & Wang, 2014

Coleorrhyncha
Progonocimicidae
Cicadocoris brunneus (Hong, 1983) Dong, Yao & Ren, 2013
= *Mesoscytina brunnea* Hong, 1983
= *Mesocimex lini* Wang, Szwedo & Zhang, 2009
Cicadocoris assimilis Dong, Yao & Ren, 2013
Cicadocoris sinensis (Hong, 1983) Dong, Yao & Ren, 2013
= *Mesocimex sinensis* Hong, 1983
= *Cicadocoris varians* Dong, Yao & Ren, 2012
= *Cicadocoris anisomeridis* Dong, Yao & Ren, 2014
Cicadocoris parvus Jiang & Huang, 2017

Heteroptera
Belostomatidae (= Corixidae)
**Jiulongshanocorixa genuina* Zhang, 2010
Karataviella popovi Zhang, 2010
Yanliaocorixa chinensis (Lin, 1976) Hong, 1983
= *Karataviella chinensis* Lin, 1976
= *Daohugocorixa vulcanica* Zhang, 2010
Miridae
Mirivena robusta Yao, Cai & Ren, 2007
Pachymeridiidae
Corollpachymeridium heteroneurus Lu, Yao & Ren, 2011
Nitoculus regillus Yao, Cai & Ren, 2008
Peregrinpachymeridium comitcola Lu, Yao & Ren, 2011
Sinopachymeridium popovi Yao, Cai & Ren, 2006
Viriosinervis stolidus Yao, Cai & Ren, 2008
Rhopalidae
Grandicaputus bipunctatus Yao, Cai & Ren, 2006
Longiclavula calvata Yao, Cai & Ren, 2006
Miracorizus punctatus Yao, Cai & Ren, 2006
Originicorizus pyriformis Yao, Cai & Ren, 2006
Quatlocellus liae Yao, Cai & Ren, 2006
Vetanthocoridae
Pumilanthocoris gracilis Hou, Yao, Zhang & Ren, 2012
Pumilanthocoris obesus Hou, Yao, Zhang & Ren, 2012

Permopsocida
Archipsyllidae
Archipsylla sinica Huang, Nel, Azar & Nel, 2008

Thripida
Lophioneurida
Mesopsocus divaricatus Hong, 1983
= *Lophiosina lini* Nel, Retana-Salazar, Azar, Nel & Huang, 2014
Undacypha bournieri Nel, Retana-Salazar, Azar, Nel & Huang, 2014
Undacypha kreiteris Nel, Retana-Salazar, Azar, Nel & Huang, 2014

Hymenoptera
Anaxyelidae
Brachysyntexis acuta Kopylov, Rasnitsyn, Zhang & Zhang, 2020
Brachysyntexis brevicornis Kopylov, Rasnitsyn, Zhang & Zhang, 2020
Brachysyntexis laticella Kopylov, Rasnitsyn, Zhang & Zhang, 2020
Brachysyntexis minuta Kopylov, Rasnitsyn, Zhang & Zhang, 2020
Brachysyntexis rohweri Kopylov, Rasnitsyn, Zhang & Zhang, 2020
Brachysyntexis sinensis Kopylov, Rasnitsyn, Zhang & Zhang, 2020
Brachysyntexis sp. (*In* Kopylov *et al*., 2020)
Brachysyntexis sp. (*In* Kopylov *et al*., 2020)
Brachysyntexis sp. *cf. B. sinensis* (*In* Kopylov *et al*., 2020)
Brachysyntexis sp. *cf. B. brachyura* (*In* Kopylov *et al*., 2020)
Daosyntexis primus Kopylov, Rasnitsyn, Zhang & Zhang, 2020
Anomopterellidae
Anomopterella huangi Zhang & Rasnitsyn, 2008
Anomopterella ampla Li, Rasnitsyn, Shih & Ren, 2013
Anomopterella brachystelis Li, Rasnitsyn, Shih & Ren, 2013
Anomopterella coalita Li, Rasnitsyn, Shih & Ren, 2013
Anomopterella divergens Li, Rasnitsyn, Shih & Ren, 2013
Anomopterella ovalis Li, Rasnitsyn, Shih & Ren, 2013
Anomopterella brevis Li, Shih & Ren, 2014
Anomopterella pygmea Li, Shih & Ren, 2014
Synaphopterella patula Li, Rasnitsyn, Shih & Ren, 2013
Ephialtitidae
Asiephialtites lini Rasnitsyn & Zhang, 2010
Karataus daohugouensis Zhang, Zhang, Rasnitsyn, Wang & Ding, 2014
Karataus exilis Zhang, Zhang, Rasnitsyn, Wang & Ding, 2014
Karataus orientalis Zhang, Zhang, Rasnitsyn, Wang & Ding, 2014
Karataus strenuus Zhang, Zhang, Rasnitsyn, Wang & Ding, 2014
Karataus vigoratus Zhang, Zhang, Rasnitsyn, Wang & Ding, 2014
Praeproapocritus vulgatus Rasnitsyn & Zhang, 2010
Praeproapocritus flexus Li, Shih & Ren, 2013
Proapocritus atropus Rasnitsyn & Zhang, 2010

Proapocritus densipediculus Rasnitsyn & Zhang, 2010
Proapocritus elegans Rasnitsyn & Zhang, 2010
Proapocritus formosus Rasnitsyn & Zhang, 2010
Proapocritus sculptus Rasnitsyn & Zhang, 2010
Proapocritus longantennatus Rasnitsyn & Zhang, 2010
Proapocritus parallelus Li, Shih & Ren, 2013
Proapocritus bialatus Li, Shih & Ren, 2014
Proapocritus lini Zhang, 2020
Proephialtitia acantha Li, Shih, Rasnitsyn & Ren, 2015
Proephialtitia tenuata Li, Shih, Rasnitsyn & Ren, 2015
Stephanogaster pristinus Rasnitsyn & Zhang, 2010
Stephanogaster ningchengensis Ding, Zheng, Zhang & Zhang, 2013
Stephanogaster rasnitsyni Ding & Zhang, 2016
Stephanogaster integra Li, Shih, Li & Ren, 2019
Symphytopterus graciler Wang, Li & Shih, 2015

Heloridae
Archaeohelorus hoi Shih, Feng & Ren, 2011
Archaeohelorus polyneurus Shi, Zhao, Shih & Ren, 2014
Archaeohelorus tensus Shi, Zhao, Shih & Ren, 2014

Karatavitidae
Karatavites junfengi Rasnitsyn & Zhang, 2010
Karatavites ningchengensis Shih, Li & Ren, 2017
Postxiphydria daohugouensis Rasnitsyn & Zhang, 2010
Postxiphydria ningchengensis Rasnitsyn & Zhang, 2010
Postxiphydroides strenuus Rasnitsyn & Zhang, 2010
Praeparyssites orientalis Rasnitsyn, Ansorge & Zhang, 2006
Praeratavites daohugou Rasnitsyn, Ansorge & Zhang, 2006
Praeratavites perspicuus Rasnitsyn & Zhang, 2010
Praeratavites wuhuaensis Rasnitsyn & Zhang, 2010
Praeratavites rasnitsyni Shih, Li & Ren, 2017
Praeratavitoides amabilis Rasnitsyn & Zhang, 2010

Kuafuidae
Kuafua polyneura Rasnitsyn & Zhang, 2010

Mesoserphidae
Apiciserphus augustus Li, Rasnitsyn, Shih & Ren, 2016
Basiserphus longus Li, Rasnitsyn, Shih & Ren, 2016
Choriserphus bellus Li, Rasnitsyn, Shih & Ren, 2016
Choriserphus gigantus Li, Rasnitsyn, Shih & Ren, 2016
Juraserphus modicus Zhang & Chen, 2017
Karataoserphus sinicus (Ping, 1928) Li, Rasnitsyn, Shih & Ren, 2016
= *Parailacus sinicus* Ping, 1928
Karataoserphus adaequatus Li, Rasnitsyn, Shih & Ren, 2016
Karataoserphus gracilentus Li, Rasnitsyn, Shih & Ren, 2016
Mesoserphus venustus Li, Rasnitsyn, Shih & Ren, 2016
Novserphus ningchengensis Li, Rasnitsyn, Shih & Ren, 2016
Ozososerphus cuboidus Li, Rasnitsyn, Shih & Ren, 2016
Ozososerphus lepidus Li, Rasnitsyn, Shih & Ren, 2016
Ozososerphus ovatus Li, Rasnitsyn, Shih & Ren, 2016
Sinoserphus lillianae Shih, Feng & Ren, 2011
Sinoserphus shihae Shih, Feng & Ren, 2011
Sinoserphus wui Shih, Feng & Ren, 2011
Sinoserphus flexilis Li, Rasnitsyn, Shih & Ren, 2016
Sinoserphus grossus Li, Rasnitsyn, Shih & Ren, 2016
Sinoserphus petilus Li, Rasnitsyn, Shih & Ren, 2016
Yanliaoserphus jurassicus Shih, Feng & Ren, 2011

Mirolydidae
Mirolyda hirta Wang, Rasnitsyn & Ren, 2017

Pamphiliidae
Scabolyda orientalis Wang, Rasnitsyn, Shih & Ren, 2014

Pamphilioidea *incertae sedis*
Prolyda dimidia Wang, Shih, Rasnitsyn & Wang, 2016
Prolyda elegantula Wang, Shih, Rasnitsyn & Wang, 2016

Pelecinidae
Archaeopelecinus jinzhouensis Shih, Liu & Ren, 2009
Archaeopelecinus tebbei Shih, Liu & Ren, 2009
Cathaypelecinus daohugouensis Shih, Liu & Ren, 2009

Praeaulacidae
Archaulacus probus Li, Shih & Ren, 2014
Aulacogastrinus hebeiensis Zhang & Rasnitsyn, 2008
Aulacogastrinus insculptus Zhang & Rasnitsyn, 2008
Aulacogastrinus longaciculatus Zhang & Rasnitsyn, 2008
Aulacogastrinus sp. (*In* Zhang & Rasnitsyn, 2008)
Eonevania robusta Rasnitsyn & Zhang, 2010
Eosaulacus giganteus Zhang & Rasnitsyn, 2008
Eosaulacus granulatus Zhang & Rasnitsyn, 2008
Nevania delicata Zhang & Rasnitsyn, 2007
Nevania exquisita Zhang & Rasnitsyn, 2007
Nevania ferocula Zhang & Rasnitsyn, 2007
Nevania malleata Zhang & Rasnitsyn, 2007
Nevania retenta Zhang & Rasnitsyn, 2007
Nevania robusta Zhang & Rasnitsyn, 2007
Nevania perbella Li, Shih & Ren, 2014
Nevania aspectabilis Li, Shih & Ren, 2014
Praeaulacon elegantulus Zhang & Rasnitsyn, 2008
Praeaulacon ningchengensis Zhang & Rasnitsyn, 2008
Praeaulacus afflatus Zhang & Rasnitsyn, 2008
Praeaulacus daohugouensis Zhang & Rasnitsyn, 2008
Praeaulacus exquisitus Zhang & Rasnitsyn, 2008
Praeaulacus orientalis Zhang & Rasnitsyn, 2008
Praeaulacus robustus Zhang & Rasnitsyn, 2008
Praeaulacus scabratus Zhang & Rasnitsyn, 2008
Praeaulacus sculptus Zhang & Rasnitsyn, 2008
Praeaulacus obtutus Li, Shih & Ren, 2014
Praeaulacus subrhombeus Li, Shih & Ren, 2014
Praeaulacus tenellus Li, Shih & Ren, 2014
Praeaulacus byssinus Wang, Li & Shih, 2015
Sinaulacogastrinus eucallus Zhang & Rasnitsyn, 2008
Sinaulacogastrinus solidus Rasnitsyn & Zhang, 2010
Sinevania speciosa Rasnitsyn & Zhang, 2010

Praesiricidae
Brevisiricius partialis Wang, Rasnitsyn, Shih, Sharkey & Ren, 2016
Limbisiricius aequalis Wang, Rasnitsyn, Shih, Sharkey & Ren, 2016
Limbisiricius complanatus Wang, Rasnitsyn, Shih, Sharkey & Ren, 2016

Xyelidae
Abrotoxyela lepida Gao, Ren & Shih, 2009
Abrotoxyela multiciliata Gao, Ren & Shih, 2009
Abrotoxyela curva Zheng, Chen, Zhang & Zhang, 2020
Aequixyela immensa Wang, Rasnitsyn & Ren, 2014
Cathayxyela extensa Wang, Rasnitsyn & Ren, 2014
Daohugoa rasnitsyni Ding & Zhang, 2016
Daohugoa bella Wang, Rasnitsyn & Ren, 2019
Daohugoa longa Wang, Rasnitsyn & Ren, 2019
Magnaxyela rara Zheng, Chen, Zhang & Zhang, 2020
Platyxyela unica Wang, Shih & Ren, 2012
Platyxyela tenuis Zheng, Hu, Chen, Chen, Zhang & Rasnitsyn, 2021
Scleroxyela daohugouensis Zheng, Hu, Chen, Chen, Zhang & Rasnitsyn, 2021

Xyelotomidae
Abrotoma robusta Gao, Ren & Shih, 2009
Aethotoma aninomorpha Gao, Shih, Engel & Ren, 2016
Paradoxotoma tsaiae Gao, Ren & Shih, 2009
Xyelocerus diaphanus Gao, Ren & Shih, 2009
Xyelotoma macroclada Gao, Ren & Shih, 2009

Xyelydidae
Brevilyda provecta Wang & Rasnitsyn, 2016
Ferganolyda charybdis Rasnitsyn, Zhang & Wang, 2006
Ferganolyda chungkuei Rasnitsyn, Zhang & Wang, 2006
Ferganolyda scylla Rasnitsyn, Zhang & Wang, 2006
Ferganolyda eucalla Wang, Rasnitsyn, Shih & Ren, 2015
Ferganolyda insolita Wang, Rasnitsyn, Shih & Ren, 2015
Medilyda distorta Wang & Rasnitsyn, 2016
Medilyda procera Wang & Rasnitsyn, 2016

Strenolyda marginalis Wang & Rasnitsyn, 2016
Strenolyda retrorsa Wang & Rasnitsyn, 2016

Raphidioptera
Juroraphidiidae
Juroraphidia longicollum Liu, Ren & Yang, 2014
Mesoraphidiidae
Mesoraphidia daohugouensis Lyu, Ren & Liu, 2015
Ororaphidia megalocephala Engel & Ren, 2008
Ororaphidia bifurcata Lyu, Ren & Liu, 2017
Styporaphidia magia Engel & Ren, 2008

Megaloptera
Corydalidae
Eochauliodes striolatus Liu, Wang, Shih, Ren & Yang, 2012
#Jurochauliodes ponomarenkoi Wang & Zhang 2010

Neuroptera
Aetheogrammatidae
Ectopogramma kalligrammoides Engel, Huang & Lin, 2011
Berothidae
Sinosmylites fumosus Makarkin, Yang & Ren, 2011
Sinosmylites rasnitsyni Makarkin, Yang & Ren, 2011
Chrysopidae
Mesypochrysa. makarkini Nel, Delclos & Hutin, 2005
= *Mesypochrysa cf. intermedia* Panfilov, 1980
Mesypochrysa sinica Khramov, Liu, Zhang & Jarzembowski, 2016
Grammolingiidae
Chorilingia euryptera Shi, Wang, Yang & Ren, 2012
Chorilingia parvica Shi, Wang, Yang & Ren, 2012
Chorilingia peregrina Shi, Wang, Yang & Ren, 2012
Chorilingia translucida Shi, Wang, Yang & Ren, 2012
Grammolingia boi Ren, 2002
Grammolingia binervis Shi, Wang & Ren, 2013
Grammolingia sticta Shi, Wang & Ren, 2013
Grammolingia uniserialis Shi, Wang & Ren, 2013
Leptolingia jurassica Ren, 2002
Leptolingia tianyiensis Ren, 2002
Litholingia eumorpha Ren, 2002
Leptolingia calonervis Shi, Yang & Ren, 2011
Leptolingia imminuta Liu, Shi & Ren, 2011
Litholingia polychotoma Ren, 2002
Litholingia rhora Ren, 2002
Litholingia ptesa Shi, Yang & Ren, 2011
Ithonidae
Guithone bethouxi Zheng, Ren & Wang, 2016
Jurapolystoechotes melanolomus Ren, Engel & Lü, 2002
Lichenipolystoechotes angustimaculatus Fang, Zheng & Wang, 2020
Lichenipolystoechotes ramimaculatus Fang, Ma & Wang, 2020
Meilingius giganteus Ren, Engel & Lü, 2002
Kalligrammatidae
Affinigramma myrioneura Yang, Wang, Labandeira, Shih & Ren, 2014
Apochrysogramma rotundum Yang, Makarkin & Ren, 2011
Huiyingogramma formosum Liu, Zheng, Zhang, Wang, Fang & Zhang, 2014
Kalligramma albifasciatum Yang, Makarkin & Ren, 2014
Kalligramma brachyrhyncha Yang, Wang, Labandeira, Shih & Ren, 2014
Kalligramma circularia Yang, Wang, Labandeira, Shih & Ren, 2014
Kalligramma elegans Yang, Makarkin & Ren, 2014
Kalligramma paradoxum Liu, Zheng, Zhang, Wang, Fang & Zhang, 2014
Kalligramma delicatum Liu, Khramov & Zhang, 2015
Kalligramma sp. (*In* Yang *et al*., 2014)
Kalligrammula lata Liu, Khramov, Zhang & Jarzembowski, 2015
Kallihemerobius pleioneurus Ren & Oswald, 2002
Kallihemerobius aciedentatus Yang, Wang, Labandeira, Shih & Ren, 2014
Kallihemerobius almacellus Yang, Wang, Labandeira, Shih & Ren, 2014
Kallihemerobius feroculus Yang, Wang, Labandeira, Shih & Ren, 2014
Limnogramma hani Makarkin, Ren & Yang, 2009
Limnogramma mongolicum Makarkin, Ren & Yang, 2009
Protokalligramma bifasciatum Yang, Makarkin & Ren, 2011
Sinokalligramma jurassicum Zhang, 2003
Stelligramma allochroma Yang, Wang, Labandeira, Shih & Ren, 2014
Mantispidae
Clavifemora rotundata Jepson, Heads, Makarkin & Ren, 2013
Mesochrysopidae
Protoaristenymphes daohugouensis Yang, Makarkin & Ren, 2012
Nymphidae
Daonymphes bisulca Makarkin, Yang, Shi & Ren, 2013
Liminympha makarkini Ren & Engel, 2007
Nymphites bimaculatus Shi, Makarkin & Ren, 2013
Nymphites sp. (*In* Shi *et al*., 2013)
Osmylidae
Allotriosmylus uniramosus Yang, Makarkin & Ren, 2010
Arbusella magna Khramov, Liu & Zhang, 2019
Archaeosmylidia fusca Makarkin, Yang & Ren, 2014
Enodinympha translucida Ren & Engel, 2007
Epiosmylus panfilovi Ren & Yin, 2002
Juraheterosmylus antiquatus Wang, Liu, Ren & Shih, 2010
Juraheterosmylus astictus Wang, Liu, Ren & Shih, 2010
Juraheterosmylus minor Wang, Liu, Ren & Shih, 2010
Jurakempynus bellatulus Wang, Liu, Ren & Shih, 2011
Jurakempynus epunctatus Wang, Liu, Ren & Shih, 2011
Jurakempynus sinensis Wang, Liu, Ren & Shih, 2011
Jurakempynus loculosus Ma, Shih, Ren & Wang, 2020
Mirokempynus profundobifurcus Ma, Shih, Ren & Wang, 2020
Nilionympha imperfecta Ren & Engel, 2007
Nilionympha pulchella Ren & Engel, 2007
Nilionympha shantouensis Li, Ren & Wang, 2018
Palaeothyridosmylus septemaculatus Wang, Liu & Ren, 2009
Palaeothyridosmylus sp. (*In* Wang *et al*., 2009)
Ponomarenkius excellens Khramov, Liu & Zhang, 2019
Ponomarenkius sp. (*In* Khramov *et al*., 2019)
Tenuosmylus brevineurus Wang, Liu & Ren, 2009
Vetosmylus maculosus Ma, Shih, Ren & Wang, 2020
Vetosmylus tentus Ma, Shih, Ren & Wang, 2020
Osmylopsychopidae
Daopsychops bifasciatus Peng, Makarkin & Ren, 2015
Daopsychops clausus Peng, Makarkin & Ren, 2015
Daopsychops cubitalis Peng, Makarkin & Ren, 2015
Daopsychops dissectus Peng, Makarkin & Ren, 2015
Daopsychops inanis Peng, Makarkin & Ren, 2015
Eupypsychops confinis Peng, Makarkin & Ren, 2015
Eupypsychops ferox Peng, Makarkin & Ren, 2015
Nematopsychops unicus Peng, Makarkin & Ren, 2015
Ochropsychops multus Peng, Makarkjin & Ren, 2015
Stenopteropsychops trifasciatus Peng, Makarkin & Ren, 2015
Panfiloviidae
Epipanfilovia oviformis Yang, Makarkin & Ren, 2013
Parakseneuridae
Parakseneura albadelta Yang, Makarkin & Ren, 2012
Parakseneura albomacula Yang, Makarkin & Ren, 2012
Parakseneura cavomaculata Yang, Makarkin & Ren, 2012
Parakseneura curvivenis Yang, Makarkin & Ren, 2012
Parakseneura directa Yang, Makarkin & Ren, 2012

Parakseneura emarginata Yang, Makarkin & Ren, 2012
Parakseneura inflata Yang, Makarkin & Ren, 2012
Parakseneura metallica Yang, Makarkin & Ren, 2012
Parakseneura nigrolinea Yang, Makarkin & Ren, 2012
Parakseneura nigromacula Yang, Makarkin & Ren, 2012
Parakseneura undula Yang, Makarkin & Ren, 2012
Parakseneura sp. indet. A. (*In* Yang *et al*., 2012)
Parakseneura sp. indet. B. (*In* Yang *et al*., 2012)
Parakseneura sp. indet. C. (*In* Yang *et al*., 2012)
Parakseneura sp. indet. D. (*In* Yang *et al*., 2012)
Pseudorapisma angustipenne Yang, Makarkin & Ren, 2012
Pseudorapisma jurassicum Yang, Makarkin & Ren, 2012
Pseudorapisma maculatum Yang, Makarkin & Ren, 2012

Psychopsidae
Cretapsychops decipiens Peng, Makarkin, Yang & Ren, 2010
Gigantopsychops reticulatus Peng, Makarkin & Ren, 2015

Saucrosmylidae
Bellinympha dancei Wang, Ren, Shih & Engel, 2010
Bellinympha filicifolia Wang, Ren, Liu & Engel, 2010
Daohugosmylus castus Liu, Zhang, Wang, Fang, Zheng, Zhang & Jarzembowski, 2014
Huiyingosmylus bellus Liu, Zhang, Wang, Fang, Zheng, Zhang & Jarzembowski 2013
Laccosmylus calophlebius Ren & Yin, 2003
Laccosmylus cicatricatus Fang, Ren, Liu & Wang, 2018
Laccosmylus latizonus Fang, Ren, Liu & Wang, 2018
Rudiosmylus ningchengensis Ren & Yin, 2003
Saucrosmylus sambneurus Ren & Yin, 2003
Ulrikezza aspoeckae Fang, Ren & Wang, 2015
Ulrikezza sp. (*In* Fang *et al*., 2015)

Coleoptera
Archostemata
Cupedidae
Latocupes angustilabialis (Tan, Huang & Ren, 2007) Kirejtshuk, Nel & Kirejtshuk, 2016
= *Mesocupes angustilabialis* Tan, Huang & Ren, 2007
= *Latocupes collaris* (Tan, Huang & Ren, 2007) Kirejtshuk, Nel & Kirejtshuk, 2016
= *Mesocupes collaris* Tan, Huang & Ren, 2007
Latocupes latilabialis (Tan, Huang & Ren, 2007) Kirejtshuk, Nel & Kirejtshuk, 2016
= *Mesocupes latilabialis* Tan, Huang & Ren, 2007
Notocupes pingi Ponomarenko & Ren, 2010

Ommatidae
Diluticupes applanatus (Tan & Ren, 2009) Kirejtshuk, 2020
= *Brochocoleus applanatus* Tan & Ren, 2009
Diluticupes magnus (Tan & Ren, 2009) Kirejtshuk, 2020
= *Brochocoleus magnus* Tan & Ren, 2009
Diluticupes validus (Tan & Ren, 2009) Kirejtshuk, 2020
= *Brochocoleus validus* Tan & Ren, 2009
Gracilicupes crassicruralis Tan, Ren & Shih, 2006
Gracilicupes tenuicruralis Tan, Ren & Shih, 2006
Pareuryomma magnum (Tan & Ren, 2009) Kirejtshuk, 2020
= *Brochocoleus magnus* Tan & Ren, 2009

Asiocoleidae
Loculitricoleus flatus Tan & Ren, 2009
Loculitricoleus tenuatus Tan & Ren, 2009

Schizophoridae
Abrohadeocoleodes eurycladus Tan, Ren, Shih & Yang, 2013
Abrohadeocoleodes nii Tan, Ren, Shih & Yang, 2013
Abrohadeocoleodes ooideus Tan, Ren, Shih & Yang, 2013
Abrohadeocoleodes patefactus Tan, Ren, Shih & Yang, 2013
Homocatabrycus liui Tan, Ren & Shih, 2007
Menopraesagus explanatus Tan, Ren & Shih, 2007
Menopraesagus grammicus Tan, Ren & Shih, 2007
Menopraesagus oryziformis Tan, Ren, Shih & Yang, 2013
Menopraesagus oxycerus Tan, Ren & Shih, 2007
Sinoschizala darani Jarzembowski, Yan, Wang & Zhang, 2012

Adephaga
Coptoclavidae
**Daohugounectes primitivus* Wang, Ponomarenko & Zhang, 2009

Trachypachidae
Eodromeus daohugouensis Wang, Zhang & Ponomarenko, 2012
Eodromeus robustus Wang, Zhang & Ponomarenko, 2012
Unda chifengensis Wang, Zhang & Ponomarenko, 2012

Geadephaga *incertae sedis*
Carabilarva gongi Zhao, Zhao, Fang, Chen & Wang, 2019

Polyphaga
Jurodidae (Polyphaga *incertae sedis*)
Jurodes daohugouensis Yan, Wang, Ponomarenko & Zhang, 2014
Jurodes pygmaeus Yan, Wang, Ponomarenko & Zhang, 2014

Lasiosynidae (Polyphaga *incertae sedis*)
Anacapitis plata Tan & Ren, 2009
Bupredactyla magna Kirejtshuk, Chang, Ren & Shih, 2010
Lasiosyne daohugouensis Kirejtshuk, Chang, Ren & Shih, 2010
Lasiosyne euglyphea Tan, Ren & Shih, 2007
= *Pappisyne eucallus* Tan & Ren 2009
= *Pappisyne lasiospatha* Tan & Ren 2009
Lasiosyne fedorenkoi Kirejtshuk, Chang, Ren & Shih, 2010
Lasiosyne gratiosa Kirejtshuk, Chang, Ren & Shih, 2010
Lasiosyne quadricollis Kirejtshuk, Chang, Ren & Shih, 2010

Derodontidae
Juropeltastica sinica Cai, Lawrence, Ślipiński & Huang, 2014

Dascillidae
Parelateriformius capitifossus Yan & Wang, 2010
Parelateriformius communis Yan & Wang, 2010
Parelateriformius mirabdominis Yan & Wang, 2010
Parelateriformius villosus Yan & Wang, 2010

Byrrhoidea *incertae sedis*
Serecoleus nadbitovae Yan, Wang, Jarzembowski & Zhang, 2015
Sinanthobium daohugouense Cai & Huang, 2013

Schizopodidae
Sinoparathyrea bimaculata Pan, Chang & Ren, 2011
Sinoparathyrea gracilenta Pan, Ren & Shih, 2011
Sinoparathyrea robusta Pan, Chang & Ren, 2011

Elateroidea *incertae sedis*
Clavelater ningchengensis Dong & Huang, 2011
Paraprotagrypnus superbus Chang, Zhao & Ren, 2009
Protagrypnus robustus Chang, Kirejtshuk & Ren, 2009

Artematopodidae
Sinobrevipogon jurassicus Cai, Lawrence, Ślipiński & Huang, 2015
Tarsomegamerus mesozoicus Zhang, 2005

Eucnemidae
Paradesmatus baiae Chang, Kirejtshuk & Ren, 2009
Desmatus ponomarenkoi (Chang, Kirejtshuk & Ren, 2009) Muona, Chang & Ren, 2020
= *Paradesmatus ponomarenkoi* Chang, Kirejtshuk & Ren, 2009

Cerophytidae
Jurassophytum cleidecostae Yu, Ślipiński & Pang, 2019

Elateridae

Alloioscarabaeidae
Alloioscarabaeus cheni Bai, Ahrens, Yang & Ren, 2012

Lucanidae
Juraesalus atavus Nikolajev, Wang, Liu & Zhang, 2011

Ochodaeidae
Mesochodaeus daohugouensis Nikolajev & Ren, 2010

Staphylinidae
Juroglypholoma antiquum Cai, Huang, Thayer & Newton, 2012
Mesapatetica aenigmatica Cai, Huang, Newton & Thayer, 2014
Protolisthaerus jurassicus Cai, Beattie & Huang, 2015

Dermestidae
Paradermestes jurassicus Deng, Ślipiński, Ren & Pang, 2017
Peltidae
Sinopeltis amoena Yu, Leschen, Ślipiński, Ren & Pang, 2012
Sinopeltis jurassica Yu, Leschen, Ślipiński, Ren & Pang, 2012
Lophocateridae
Cervicatinius complanus Tan & Ren, 2007
Trogossitidae
Latitergum glabrum Yu, Ślipiński, Leschen, Ren & Pang, 2014
Marginulatus venustus Yu, Ślipiński, Leschen, Ren & Pang, 2014
Prionoceridae
Idgiaites jurassicus Liu, Ślipiński, Leschen, Ren & Pang, 2015
Melyridae
Sinomelyris praedecessor Kolibáč & Huang, 2019
Melyrid lineage, family incertae sedis.
Juraniscus majeri Kolibáč & Huang, 2019
Cleridae
Protoclerus korynetoides Kolibáč & Huang, 2016
Wangweiella calloviana Kolibáč & Huang, 2016
Tenebrionoidea *incertae sedis*
Archaeoripiphorus nuwa Hsiao, Yu, Deng & Pang, 2017
Wuhua jurassica Wang & Zhang, 2011
Wuhua peregrina Bao, Zhang, Walczyńska, Wang & Rust, 2019
Boganiidae
Palaeoboganium jurassicum Liu, Ślipiński, Lawrence, Ren & Pang, 2017
Parandrexidae
Parandrexis agilis Lu, Shih & Ren, 2015
Parandrexis beipiaoensis Hong, 1983
= *Parandrexis longicornis* Lu, Shih & Ren, 2015
Parandrexis oblongis Lu, Shih & Ren, 2015
Parandrexis parvula Martynov, 1926
Monotomidae
Jurorhizophagus alienus Cai, Ślipiński & Huang, 2015
Belidae
Sinoeuglypheus daohugouensis Yu, Davis & Shih, 2019

Trichoptera
Hydrobiosidae
Pulchercylindratus punctatus Gao, Yao & Ren, 2013
Necrotauliidae
Acisarcuatus variradius Liu, Zhang, Yao & Ren, 2014
Acisarcuatus locellatus Zhang, Shih & Ren, 2017
Philopotamidae
Juraphilopotamus lubricus Wang, Zhao & Ren, 2009
Liadotaulius daohugouensis Wu & Huang, 2012
Liadotaulius limus Zhang, Shih & Ren, 2017
Rhyacophilidae
Declinimodus setulosus Gao, Yao & Ren, 2013
Family *incertae sedis*
Caddis cases spp. (*In* Wu & Huang, 2011)

Lepidoptera
Ascololepidopterigidae
**Ascololepidopterix multinerve* Zhang, Shih, Labandeira & Ren, 2013
**Pegolepidopteron latiala* Zhang, Shih, Labandeira & Ren, 2013
**Trionolepidopteron admarginis* Zhang, Shih, Labandeira & Ren, 2013
Eolepidopterigidae
Aclemus patulus Zhang, Shih, Labandeira & Ren, 2015
**Akainalepidopteron elachipteron* Zhang, Shih, Labandeira & Ren, 2013
**Dynamilepidopteron aspinosus* Zhang, Shih, Labandeira Ren, 2013
**Grammikolepidopteron extensus* Zhang, Shih, Labandeira & Ren, 2013
**Longcapitalis excelsus* Zhang, Shih, Labandeira & Ren, 2013
**Petilicorpus cristatus* Zhang, Shih, Labandeira & Ren, 2013
**Quadruplecivena celsa* Zhang, Shih, Labandeira & Ren, 2013
Seresilepidopteron dualis Zhang, Shih, Labandeira & Ren, 2013
Mesokristenseniidae
**Kladolepidopteron oviformis* Zhang, Shih, Labandeira & Ren, 2013
**Kladolepidopteron parva* Zhang, Shih, Labandeira & Ren, 2013
**Kladolepidopteron subaequalis* Zhang, Shih, Labandeira & Ren, 2013
Mesokristensenia angustipenna Huang, Nel & Minet, 2010
Mesokristensenia latipenna Huang, Nel & Minet, 2010
Mesokristensenia sinica Huang, Nel & Minet, 2010
**Mesokristensenia trichophora* Zhang, Shih, Labandeira & Ren, 2013
Family *incertae sedis*
gen. et sp. *incertae sedis* (*In* Zhang *et al*., 2013)

Mecoptera
Bittacidae
Composibittacus bipunctatus Liu, Shih, Bashkuev & Ren, 2016
Composibittacus reticulatus Liu, Shih, Bashkuev & Ren, 2016
Decoribittacus euneurus Li & Ren, 2009
Decoribittacus stictus Li & Ren, 2009
Exilibittacus lii Yang, Ren & Shih, 2012
Exilibittacus foliaceus Liu, Shih & Ren, 2014
Exilibittacus plagioneurus Liu, Shih & Ren, 2014
Formosibittacus macularis Li, Ren & Shih, 2008
Jurahylobittacus astictus Li, Ren & Shih, 2008
Karattacus longialatus Li & Ren, 2009
Mongolbittacus daohugouensis Petrulevičius, Huang & Ren, 2007
Mongolbittacus oligophlebius Liu, Shih & Ren, 2014
Mongolbittacus speciosus Liu, Shih & Ren, 2014
Orthobittacus maculosus Liu, Shih, Bashkuev & Ren, 2016
Orthobittacus suni Kopeć, Krzemiński, Soszyńska-Maj, Cao & Ren, 2017
Preanabittacus validus Yang, Shih & Ren, 2012
Choristopsychidae
Choristopsyche tenuinervis Martynov, 1937
Choristopsyche asticta Qiao, Shih, Petrulevičius & Ren, 2013
Choristopsyche perfecta Qiao, Shih, Petrulevičius & Ren, 2013
Paristopsyche angelineae Qiao, Shih, Petrulevičius & Ren, 2013
Cimbrophlebiidae
Bellicimbrophlebia angusta Yang, Shih & Ren, 2013
Bellicimbrophlebia cruciata Yang, Shih & Ren, 2013
Bellicimbrophlebia disvena Yang, Shih & Ren, 2013
Bellicimbrophlebia eumorpha Yang, Shih & Ren, 2013
Bellicimbrophlebia heteroneura Zhang, Shih, Zhao & Ren, 2015
Cimbrophlebia amoena Zhang, Shih, Zhao & Ren, 2015
Cimbrophlebia gracilenta Zhang, Shih, Zhao & Ren, 2015
Juracimbrophlebia ginkgofolia Wang, Labandeira, Shih & Ren, 2012
Mirorcimbrophlebia daohugouensis Yang, Shih & Ren, 2013
Perfecticimbrophlebia laetus Yang, Shih & Ren, 2012
Telobittacus bellus Yang, Shih & Ren, 2013
Telobittacus decorus Zhang, Shih, Zhao & Ren, 2015
Eomeropidae
Jurathauma simplex Zhang, Shih, Petrulevičius & Ren, 2011
Tsuchingothauma shihi Ren & Shih, 2005
Tsuchingothauma gongi Zhao, Zhao, Chen, Zhang & Wang, 2019
Holcorpidae
Conicholcorpa stigmosa Li, Shih, Wang & Ren, 2017
Conicholcorpa longa Zhang, Shih & Ren, 2021
Mesopsychidae
Epicharmesopsyche pentavenulosa Shih, Qiao, Labandeira & Ren, 2013
Lichnomesopsyche daohugouensis Ren, Labandeira & Shih, 2010

Lichnomesopsyche gloriae Ren, Labandeira & Shih, 2010
Lichnomesopsyche prochorista Lin, Shih, Labandeira & Ren, 2016
Vitimopsyche pristina Lin, Shih, Labandeira & Ren, 2016
Nannochoristidae
Itaphlebia jeniseica Novokshonov, 1997
= *Netropanorpodes sentosus* Sun, Ren & Shih, 2007
Itaphlebia multa Novokshonov, 1997
= *Protochoristella polyneura* Sun, Ren & Shih, 2007
Itaphlebia decorosus (Sun, Ren & Shih, 2007) Cao, Shih, Bashkuev & Ren, 2016
= *Netropanorpodes decorosus* Sun, Ren & Shih, 2007
Itaphlebia ruderalis (Ren in Ren *et al*., 1995) Cao, Shih, Bashkuev & Ren, 2016
= *Protochoristella formosa* Sun, Ren & Shih, 2007
= *Stylopanorpodes eurypterus* Sun, Ren & Shih, 2007
Itaphlebia exquisita Liu, Zhao & Ren, 2010
Itaphlebia laeta Liu, Zhao & Ren, 2010
Itaphlebia amoena Cao, Shih, Bashkuev & Ren, 2016
Itaphlebia longiovata Cao, Shih, Bashkuev & Ren, 2016
Orthophlebiidae
Gigaphlebia riccardii (Petrulevičius & Ren, 2012) Soszyńska-Maj, Krzemiński, Kopeć, Cao & Ren, 2018
= *Orthophlebia riccardii* Petrulevičius & Ren, 2012
Juraphlebia eugeniae Soszyńska-Maj & Krzemiński, 2020
Longiphlebia stigmosa (Qiao, Shih & Ren, 2012) Soszyńska-Maj, Krzemiński, Kopeć, Cao & Ren, 2018
= *Orthophlebia stigmosa* Qiao and Ren, 2012
Mesopanorpa luanpingensis Hong, 1983
Mesopanorpa densa Zhang, 1996
Orthophlebia extensa Martynov, 1937
Orthophlebia elenae Willmann & Novokshonov, 1998
Orthophlebia nervulosa Qiao, Shih & Ren, 2012
Orthophlebia chinensis Soszyńska-Maj, Kopeć & Ren, 2020
Panorpidae
Jurassipanorpa impunctata Ding, Shih & Ren, 2014
Jurassipanorpa sticta Ding, Shih & Ren, 2014
Protorthophlebiidae
Protorthophlebia punctata Soszyńska-Maj, Krzemiński & Kopeć, 2020
Pseudopolycentropodidae
Pseudopolycentropus daohugouensis Zhang, 2005
Pseudopolycentropus janeannae Ren, Shih & Labanderia, 2010
Pseudopolycentropus novokshonovi Ren, Shih & Labanderia, 2010
Sinopolycentropus rasnitsyni Shih, Yang, Labandeira & Ren, 2011
Pseudopulicidae
Hadropsylla sinica Huang, Engel, Cai & Nel, 2013
Pseudopulex Jurassicus Gao, Shih & Ren, 2012
Pseudopulex wangi Huang, Engel, Cai & Nel, 2013
Family *incertae sedis*
Fortiholcorpa paradoxa Wang, Shih & Ren, 2013
Miriholcorpa forcipata Wang, Shih & Ren, 2013

Diptera
Anisopodidae
Jurolaemargus yujiagouensis (Hong, 1983) Evenhuis, 1994
= *Laemargus yujiagouensis* Hong, 1983
Leptoplecia laevis Hong, 1983
Gansuplecia triporata Hong & Wang, 1990
Megarhyphus rarus Zhang, 2007
Mesorhyphus blagoderovi Wojtoń, Kania, Krzemiński & Ren, 2019
Archisargidae
Archirhagio striatus Zhang & Zhang, 2003
Archirhagio zhangi Zhang, Yang & Ren, 2009
= *Archirhagio mostovskii* Zhang, 2014
Archirhagio varius Zhang, 2014
Archirhagio gracilentus Wang, Shih, Ren & Wang, 2017
Archisargus spurivenius Zhang, Yang, Ren & Shih, 2007
Archisargus strigatus Zhang, Yang, Ren & Shih, 2007
Archisargus aequinervus Feng, Wang, Shih, Ren & Wang, 2019
Calosargus (*Calosargus*) *antiquus* Zhang, Yang & Ren, 2007
Calosargus (*Calosargus*) *bellus* Zhang, Yang & Ren, 2007
Calosargus (*Calosargus*) *daohugouensis* Zhang, Yang & Ren, 2007
Calosargus (*Calosargus*) *hani* Zhang, Yang & Ren, 2007
Calosargus (*Calosargus*) *tenuicellulatus* Zhang, Yang & Ren, 2007
Calosargus (*Calosargus*) *validus* Zhang, Yang & Ren, 2007
Calosargus (*Pterosargus*) *sinicus* Zhang, 2010
Daohugousargus eximius (Zhang, Yang & Ren, 2008) Zhang, 2012
= *Sharasargus eximius* Zhang, Yang & Ren, 2008
Flagellisargus (*Changbingisargus*) *parvus* Zhang, 2017
Flagellisargus (*Flagellisargus*) *cf. sinicus* Zhang, 2012
Flagellisargus (*Flagellisargus*) *robustus* Zhang, 2012
Flagellisargus (*Flagellisargus*) *sinicus* Zhang, 2012
Flagellisargus (*Flagellisargus*) *venustus* Zhang, 2012
Mesosolva daohugouensis Zhang & Zhang, 2003
Mesosolva sinensis Zhang, Yang & Ren, 2010
= *Mesosolva jurassica* Zhang, Yang & Shih, 2010
Mesosolva zhangae (Zhang, Ren & Shih, 2010) Zhang, 2012
= *Brevisolva daohugouensis* Zhang, Ren & Shih, 2010
Novisargus rarus Zhang, 2014
Ovisargus (*Ovisargus*) *singulus* Zhang, 2014
Sharasargus fortis Zhang, Yang & Ren, 2008
Sharasargus maculus Zhang, 2014
Tabanisargus daohugouensis Zhang, 2014
Uranorhagio asymmetricus (Zhang, Yang & Ren, 2010) Zhang, 2012
= *Strenorhagio asymmetricus* Zhang, Yang & Ren, 2010
= *Strenorhagio conjugovenius* Zhang, Yang & Ren, 2010
= *Mostovskisargus portentosus* Zhang, 2010
= *Mostovskisargus signatus* Zhang, 2010
Uranorhagio daohugouensis Zhang, Yang & Ren, 2010
Uranorhagio deviatus (Zhang, Yang & Shih, 2010) Zhang, 2012
= *Strenorhagio deviatus* Zhang, Yang & Shih, 2010
= *Strenorhagio grimaldi* Zhang, Ren & Shih, 2010
Athericidae
#Qiyia jurassica Chen, Wang, Engel, Wappler, Jarzembowski, Zhang, Wang, Zheng & Rust, 2014
Axymyiidae
Juraxymyia fossilis (Zhang, 2004) Zhang, 2010
= *Psocites fossilis* Zhang, 2004
= *Crenoptychoptera vicina* Hao, Dong & Ren, 2009
Psocites pectinatus (Hong, 1983) Zhang, 2004
= *Parapsocus pectinatus* Hong, 1983
= *Crenoptychoptera decorosa* Hao, Dong & Ren, 2009
= *Crenoptychoptera vulgaris* Hao, Dong & Ren, 2009
Raraxymyia parallela Shi, Zhu, Shih & Ren, 2013
Raraxymyia proxima Shi, Zhu, Shih & Ren, 2013
Sinaxymyia rara Zhang, 2010
Blephariceridae
Blephadejura propria Lukashevich, Huang & Lin, 2006
Brianina longitibialis Zhang & Lukashevich, 2007
Megathon brodskyi Zhang & Lukashevich, 2007
Eoptychopteridae
Proptychopterina opinata Lin & Lukashevich, 2006
Kovalevisargidae
Kerosargus sororius Zhang, 2011
Kovalevisargus brachypterus Zhang, 2011
Kovalevisargus macropterus Zhang, 2011
Limoniidae
Architipula chinensis Zhang 2004
Architipula insolita Zhang, 2006
Architipula trichoclada Zhang, 2006
Architipula conformis Hao & Ren, 2009
Cretolimonia excelsa Gao, Shih, Zhao & Ren 2015

Eotipulina eximia Zhang, 2006
Eotipuloptera dignata Zhang, 2006
Mesotipula gloriosa Gao, Shih, Zhao & Ren 2015
Mesosciophilidae
Jurasciophila curvula Li & Ren, 2009
Jurasciophila lepida Li & Ren, 2009
Mesosciophila eucalla Zhang, 2007
Mesosciophila abstracta Zhang, 2008
Mesosciophila sigmoidea Wang, Zhao & Ren, 2012
Mesosciophilodes synchrona Zhang, 2008
Paramesosciophilodes ningchengensis Zhang, 2007
Paramesosciophilodes eximia Zhang, 2008
Paramesosciophilodes aequus Wang, Zhao & Ren, 2012
Paramesosciophilodes bellus Gao, Shi, Shih & Ren, 2015
Paramesosciophilodes rarissima Gao, Shi, Shih & Ren, 2015
Similsciophila singularis Shi, Shih & Ren, 2014
Similsciophila sinuata Shi, Shih & Ren, 2014
Nemestrinidae
Ahirmoneura neimengguensis Zhang, Yang & Ren, 2008
Orientisargidae
Orientisargus illecebrosus Zhang, 2012
Hennigmatidae
Daohennigma panops Lukashevich, Huang & Lin, 2006
Pediciidae
Praearchitipula abnormis (Hao & Ren, 2009) Gao, Shih, Kopeć, Krzemiński & Ren, 2015
= *Architipula abnormis* Hao & Ren, 2009
Praearchitipula apprima Gao, Shih, Kopeć, Krzemiński & Ren, 2015
Praearchitipula mirabilis Gao, Shih, Kopeć, Krzemiński & Ren, 2015
Perissommatidae
Perissordes pilosus Lukashevich, Huang & Lin, 2006
Protobrachyceridae
Protobrachyceron sinensis Zhang, Yang & Ren, 2008
Protopleciidae
Epimesoplecia elenae Zhang, 2007
Epimesoplecia shcherbakovi Zhang, 2007
Epimesoplecia ambloneura Lin, Shih & Ren, 2015
Epimesoplecia macrostrena Lin, Shih & Ren, 2015
Epimesoplecia plethora Lin, Shih & Ren, 2015
Epimesoplecia prosoneura Lin, Shih & Ren, 2015
Epimesoplecia stana Lin, Shih & Ren, 2015
Mesoplecia mediana Zhang, 2007
Mesoplecia sinica Zhang, 2007
Mesoplecia anfracta Hao & Ren, 2009
Mesoplecia antiqua Hao & Ren, 2009
Mesoplecia coadnata Hao & Ren, 2009
Mesoplecia fastigata Lin, Shih & Ren, 2014
Mesoplecia plena Lin, Shih & Ren, 2014
Protorhyphidae
Protorhyphus neimonggolensis Zhang, 2007
Protorhyphus jurassicus Wojtoń, Kania, Krzemiński & Ren, 2019
Protorhyphus lukashevichae Wojtoń, Kania, Krzemiński & Ren, 2019
Ptychopteridae
Eoptychoptera ansorgei Ren & Krzemiński, 2002
Eoptychoptera jurassica Ren & Krzemiński, 2002
Eoptychopterina elenae Ren & Krzemiński, 2002
= *Eoptychopterina gigantea* Zhang, 2004
Eoptychopterina adnexa Hao, Ren & Shih, 2009
Eoptychopterina antica Hao, Ren & Shih, 2009
Eoptychopterina mediata Hao, Ren & Shih, 2009
Eoptychopterina postica Liu, Shih & Ren, 2012
Eoptychopterina sp. (*In* Huang & Cai *in* Huang, 2016)
Rhagionemestriidae
Jurassinemestrinus orientalis Zhang, 2010
Rhagionempididae
Ussatchovia gracilenta Zhang, 2010
Ussatchovia robusta Zhang, 2010
Rhagionidae
Achrysopilus neimenguensis Zhang, Yang & Ren, 2008
Daohugorhagio elongatus Zhang, 2013
Elliprhagio macrosiphonius Han, Cai, Ren & Wang, 2019
Lithorhagio megalocephalus Zhang & Li, 2012
Palaeoarthroteles jurassicus Zhang, 2011
Palaeoarthroteles pallidius Zhang, 2011
Palaeobolbomyia sinica Zhang, 2010
Parachrysopilus jurassicus Zhang, 2013
Protorhagio parvus Zhang & Li, 2012
Sinorhagio daohugouensis Zhang, Yang & Ren, 2006
Sinorhagio sinuatus Zhang, 2013
Trichorhagio gregarius Zhang, 2013
Strashilidae
Parazila saurica Vršanský & Ren, 2010
Strashila daohugouensis Huang, Nel, Cai, Lin & Engel, 2013
Vosila sinensis Vršanský & Ren, 2010
Tanyderidae
Praemacrochile chinensis Krzemiński & Ren, 2001
Praemacrochile vulcanium Zhang, 2004
Praemacrochile dryasis Dong, Shih, Skibińska, Krzemiński & Ren, 2015
Praemacrochile ovalum Dong, Shih, Skibińska, Krzemiński & Ren, 2015
Protanyderus astictum Dong, Shih, Skibińska, Krzemiński & Ren, 2015
Trichoceridae
Eotrichocera (*Archaeotrichocera*) *ephemera* Zhang, 2006
Eotrichocera (*Archaeotrichocera*) *amabilis* Dong, Shih & Ren, 2014
Eotrichocera (*Archaeotrichocera*) *longensis* Dong, Shih & Ren, 2014
Eotrichocera (*Archaeotrichocera*) *spatiosa* Liu, Shih & Ren, 2012
Tanyochoreta (*Sinotrichocera*) *parva* Zhang, 2006
Tanyochoreta (*Tanyochoreta*) *chifengica* Zhang, 2006
Tanyochoreta (*Tanyochoreta*) *integera* Zhang, 2006

Arachnida

Opiliones
Sclerosomatidae
Mesobunus martensi Huang, Selden & Dunlop, 2009
Mesobunus dunlopi Giribet, Tourinho, Shih & Ren, 2012
Family *incertae sedis*
Daohugopilio sheari Huang, Selden & Dunlop, 2009
Araneae
Archaeidae
Patarchaea muralis Selden, Huang & Ren, 2008
Plectreuridae
Eoplectreurys gertschi Selden & Huang, 2010
Mongolarachnidae
Mongolarachne jurassica Selden, Shih & Ren, 2013
Nephilidae
Nephila jurassica Selden, Shih & Ren, 2011
Family *incertae sedis*
Sinaranea metaxyostraca Selden, Huang & Ren, 2008
Zhizhu daohugouensis Selden, Ren & Shih, 2015
Caestaranea jurassica Selden, Huang & Garwood, 2020
Onychopalpus thomisoides Selden, Huang & Garwood, 2020
Sinaranea brevicrus Selden, Huang & Garwood, 2020

Branchiopoda

Anostraca
Chirocephalidae
gen. et sp. *incertae sedis* (*In* Shen & Huang, 2008)

Family *incertae sedis*
Daohugounaias chenigen Luo, Jarzembowski, Fang, Wang & Xiao, 2020
Diplostraca
Triglyptidae
Triglypta haifanggouensis (Chen, 1976) Liao, Shen & Huang, 2017
= *Euestheria haifanggouensis* Chen, 1976

MOLLUSCA

Bivalvia

Unionoida
Ferganoconchidae
Ferganoconcha sibirica Chernyshev, 1937

VERTEBRATA

Amphibia

Caudata
Cryptobranchidae
Chunerpeton tianyiensis Gao & Shubin, 2003
Family *incertae sedis*
Jeholotriton paradoxus Wang, 2000
Liaoxitriton daohugouensis Wang, 2004
Pangerpeton sinensis Wang & Evans, 2006

Reptilia

Squamata
Family *incertae sedis*
Indeterminate squamate A
Indeterminate squamate B
Pterosauria
Anurognathidae
Jeholopterus ningchengensis Wang, Zhou, Zhang & Xu, 2002
Rhamphorhynchidae
Pterorhynchus wellnhoferi Czerkas & Ji, 2002
Family *incertae sedis*
Daohugoupterus delicatus Cheng, Wang, Jiang & Kellner, 2014
Dinosauria
Eumaniraptora
Pedopenna daohugouensis Xu & Zhang, 2005
Maniraptora
Epidendrosaurus ningchengensis Zhang, Zhou, Xu & Wang, 2002
Scansoriopterygidae
Epidexipteryx hui Zhang, Zhou, Xu, Wang & Sullivan, 2008
Ambopteryx longibrachium Wang, O'Connor, Xu & Zhou, 2019

Mammalia

Docodonta
Docodontidae
Castorocauda lutrasimilis Ji, Luo, Yuan & Tabrum, 2006
Tegotheriidae
Microdocodon gracilis Zhou, Bhullar, Neander, Martin & Luo, 2019
Docodonta *incertae sedis*
Agilodocodon scansorius Meng, Ji, Zhang, Liu, Grossnickle & Luo, 2015
Yinotheria
Shuotheriidae
Pseudotribos robustus Luo, Ji & Yuan, 2007
Volaticotheria
Volaticotheriidae
Volaticotherium antiquus Meng, Hu, Wang, Wang & Li, 2006

PLANTAE

Chlorophyta

Chlorophyceae
gen. et sp. *incertae sedis* (*In* Dong *et al*., *in* Huang, 2016)

Bryophyta

Hepaticae
Daohugouthallus ciliiferus Wang, Krings & Taylor, 2010
Ningchengia jurassica Heinrichs, Wang, Ignatov & Krings, 2014
Metzgerites sp. (*In* Dong *et al*., *in* Huang, 2016)
Muscites spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)

Pteridophyta

Polypodiopsida
Gleicheniales
Clathropteris sp. or *Hausmannia* sp. (*In* Pott & Jiang, 2017)

Lycopsida
Lycopodiales
Lycopodites spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)

Sphenopsida
Equisetites lamagouense Zhang & Zheng, 1987
Equisetites sp. (*In* Na *et al*., 2017)
Annulariopsis sp. (*In* Dong *et al*., *in* Huang, 2016)

Filicopsida
Cladophlebis nebbensis (Brongniart) Nathorst, 1876
Cladophlebis spp. (*In* Na *et al*., 2017; Dong *et al*., *in* Huang, 2016)
Coniopteris spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)
Eboracia lobifolia (Phillips) Thomas, 1911
Eboracia spp. (*In* Dong *et al*., *in* Huang, 2016)
Gonatosorus cf. lobifolius Burakova, 1961 (*In* Na *et al*., 2017)
Huasmannia sp. (*In* Na *et al*., 2017)
Sphenopteris sp. (*In* Na *et al*., 2017)

Gymnospermae

Pteridospermopsida
Caytoniales
Sagenopteris sp. *cf. Sagenopteris philippsii* Harris, 1964 (*In* Pott & Jiang, 2017)
Sagenopteris spp. (*In* Dong *et al*., *in* Huang, 2016)
Caytonia sp. (*In* Dong *et al*., *in* Huang, 2016)

Cycadopsida
Bennettitales
Anomozamites haifanggouensis (Kimura, Ohana, Zhao & Geng, 1994) Zheng & Zhang, 2003
Anomozamites sinensis (Zhang & Zheng, 1987) Pott, 2017
Anomozamites villosus (Pott, McLoughlin, Wu & Friis, 2012) Na, Sun & Wang, 2017
Anomozamites spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017; Pott & Jiang, 2017)
Cycadolepis sp. *cf. Anomozamites haifanggouensis* (Kimura, Ohana, Zhao & Geng, 1994) Zheng & Zhang, 2003 (*In* Pott & Jiang, 2017)
Cycadolepis spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)
Jacutiella sp. *cf. Jacutiella denticulata* Zhang & Zheng, 1987 (*In* Pott & Jiang, 2017)
Pterophyllum lamagouense Zhang & Zheng, 1987

Pterophyllum spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017; Pott & Jiang, 2017)
Wielandiella villosa (Pott, McLoughlin, Wu & Friis, 2012) Pott, 2015
Williamsonia sp. (*In* Dong *et al*., *in* Huang, 2016)
Nissoniopteris sp. (*In* Dong *et al*., *in* Huang, 2016)

Cycadeoidales
Weltrichia daohugouensis Li & Zheng, 2004

Ginkgopsida
Ginkgoales
Ginkgo cuneifolia Tan, Dilcher, Wang & Sun, 2018
Ginkgo daohugouensis Tan, Dilcher, Wang & Sun, 2018
Ginkgo parvifolia Tan, Dilcher, Wang & Sun, 2018
Ginkgo cf. huttoni (Sternberg) Heer,1948 (*In* Na *et al*., 2017)
Ginkgo spp. (*In* Na *et al*., 2017)
Ginkgoites sibirica (Heer) Walkom, 1924
Ginkgoites sp. *cf. Ginkgoites huttonii* (Sternberg) Heer (*In* Pott & Jiang, 2017)
Ginkgoites spp. (*In* Zhou *et al*., 2007; Dong *et al*., *in* Huang, 2016)
Pseudotorellia ephela (Harris, 1935) Florin, 1936
Sphenobaiera czekanowskiana (Heer) Florin, 1936
Sphenobaiera eximia Na, Sun & Wang, 2017
Sphenobaiera longifolia (Pomel) Florin, 1936
Yimaia capituliformis Zhou, Zheng & Zhang, 2007
Baiera spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)
Czekanowskiales
Czekanowskia rigida Heer, 1876
Ixostrobus lepidus (Heer) Harris, 1974
cf. Ixostrobus sp. (*In* Pott & Jiang, 2017)
Ixostrobus spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)
Phoenicopsis (*Windwardia*) *daohugouensis* Huang, Sun, Wang, Na, Li & Li, 2016
Phoenicopsis sp. *cf. Phoenicopsis speciosa* Heer, 1876 (*In* Pott & Jiang, 2017)
Sphenarion angusitae Huang, Dilcher, Wang, Na, Li, Li & Sun, 2017
Solenites orientalis Sun, Zheng & Mei, 2001
Solenites spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)
Leptostrobus sp. *cf. Leptostrobus laxiflora* Heer, 1876 (In Pott & Jiang, 2017)
Leptostrobus spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)

Coniferopsida
Coniferales
Austrohamia acanthobractea (Zhang, D'Rozario, Wang, Li & Yao, 2012) Dong, Wang, Yang & Sun, 2018
= *Yanliaoa daohugouensis* Tan, Dilcher, Wang & Sun, 2018
= *Sequoia jeholensis* (Endo, 1951) Ma, Ferguson, Liu & Xu, 2021
Brachyphyllum cf. Brachyphyllum longispicum Sun, Zheng & Mei (*In* Pott & Jiang, 2017)
Brachyphyllum sp. (*In* Dong *et al*., *in* Huang, 2016)
Pityophyllum nordenskioeldii (Heer) Nath, 1897
Pityospermum spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)
Schizolepis daohugouensis Zhang, D'Rozario, Yao, Wu & Wang, 2011
Schizolepis moelleri (Seward) Sun & Zheng, 2001
Yanliaoa sinensis (Pan, 1977) Tan, Dilcher, Wang & Sun, 2018
Cephalotaxopsis cf. Leptophylla (Wu, 1999) Sun & Zheng, 2001 (*In* Dong *et al*., *in* Huang, 2016)
cf. Lindleycladus lanceotatus (Lindley & Hutton) Harris (*In* Na *et al*., 2017)
Elatides sp. *cf. Elatides falcata* Heer, 1976 (*In* Pott & Jiang, 2017)
Amentotaxus sp. (*In* Dong *et al*., *in* Huang, 2016)
Araucarites spp. (*In* Dong *et al*., *in* Huang, 2016)
Cephalotaxopsis spp. (*In* Na *et al*., 2017)
Elatocladus spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)
Frenelopsis sp. (*In* Dong *et al*., *in* Huang, 2016)
Nageiopsis sp. (*In* Dong *et al*., *in* Huang, 2016)
Pityocladus spp. (*In* Dong *et al*., *in* Huang, 2016; Na *et al*., 2017)
Taxus sp. (*In* Dong *et al*., *in* Huang, 2016)

Gnetales
Protognetaceae
Protognetum jurassicum Yang, Xie & Ferguson, 2017

Plant *incertae sedis*
Jurafructus daohugouensis Chen, Hou, Yin & Wang, 2020
Juraherba bodae Han & Wang, 2016
Problematospermum ovale (Turutanova-Ketova) Wang, Zheng & Jin, 2010
Solaranthus daohugouensis Zheng & Wang, 2010
Yuhania daohugouensis Liu & Wang, 2017
Zhangwuia mira Liu, Hou, & Wang, 2019
Carpolithus sp. (*In* Dong *et al*., *in* Huang, 2016)
Conites sp. (*In* Dong *et al*., *in* Huang, 2016)
Sagenopteris sp. (*In* Na *et al*., 2017)
Strobilites sp. (*In* Na *et al*., 2017)

Spores and Pollens

Pteridophytic spores
Calamospora
Deltoidospora
Concavisporites sp. (*In* Zhang *et al*., 2018)
Cyathidites sp. (*In* Zhang *et al*., 2018)

Gymnospermous pollens
Abietineaepollenites
Alisporites australis De Jersey, 1962
Alisporites parvus De Jersey, 1962
Alisporites thomasii (Couper, 1958) Pocock, 1941
Callialasporites trilobatus Balme, 1957
Cerebropollenites mesozoicus (Couper, 1958) Nilsson, 1958
Chasmatosporites
Classopollis classoides (Pflug, 1953) Pocock & Jansonius, 1961
Cycadopites fusiformis (Nilson, 1958) Arjang, 1975
Cycadopites sp. (*In* Dong *et al*., *in* Huang, 2016)
Eucommiidites troedsonii (Erdtman, 1948) Potonié, 1958
Eucommiidites sp. (*In* Dong *et al*., *in* Huang, 2016)
Pinuspollenites alatiopllenites (Rouse, 1959) Liu, 1982
Podocarpidites canadensis Pocock, 1962
Podocarpidites multesimus Bolkhovitina, 1956
Pseudopicea rotundiformis (Malavkina) Bolkhovitina, 1956
Psophosphaera bullulinaeformis (Bolkhovitina, 1949) Zhang, 1978
Quadraeculina anellaeformis Maljavkina, 1949
Quadraeculina limbata Maljackina, 1949
Vitreisporites
Caytonipollenites sp. (*In* Zhang *et al*., 2018)
Cedripites sp. (*In* Zhang *et al*., 2018)
Concarvisporites sp. (*In* Zhang *et al*., 2018)
Spheripollenites sp. (*In* Zhang *et al*., 2018)
Incertae sedis (bisaccates) (*In* Zhang *et al*., 2018)

'#' = based on juveniles; '*' = problematic taxa; '?' is taken from the original paper.

Appendix 2: Haifeng locality insects checklist

Insecta

Odonata
- Family *incertae sedis*
  - #*Samarura gigantea* Brauer, Redtenbacher & Ganglbauer, 1889

Ephemeroptera
- Hexagenitidae
  - #*Shantous lacustris* Zhang & Kluge, 2007
    - = *Mesobaetis sibirica* Brauer, Redtenbacher & Ganglbauer, 1889
- Mesonetidae
  - #*Clavineta eximia* Zhang, 2006
    - = *Mesoneta antiqua* Brauer, Redtenbacher & Ganglbauer, 1889
  - #*Mesoneta beipiaoensis* Wang, 1980
  - *Mesoneta* sp. (*In* Lin, 1976)

Dermaptera
- Family *incertae sedis*
  - *Leicarabus parvus* Hong, 1983

Plecoptera
- Perlariopseidae
  - *Rectonemoura yujiagouensis* Hong, 1983
- Platyperlidae
  - *Platypera platypoda* Brauer, Redtenbacher & Ganglbauer, 1889

Orthoptera
- Haglidae
  - ?*Isfaroptera yujiagouensis* Hong, 1983
  - *Mesoprophalangopsis liaoxiensis* Hong, 1986
- Prophalangopsidae
  - *Allaboilus gigantus* Ren & Meng, 2006
  - *Brunneus haifanggouensis* Hong, 1983
  - *Chifengia batuyingziensis* Wang, 1987
  - *Pycnophlebia obesa* Wang, 1987
  - *Sinoprophalangopsis reticulata* Hong, 1983
  - *Sunoprophalangopsis superba* Ren, 1995

Blattodea
- Blattulidae
  - ?*Blattula liaoningensis* Hong, 1986
  - *Elisama dignata* (Wang, 1987) Vršanský, 2003
    - = *Ctenoblattina dignata* Wang, 1987
- Caloblattinidae
  - *Rhipidoblattina beipiaoensis* Hong, 1983
  - *Sogdoblatta haifanggouensis* Hong, 1983
- Mesoblattinidae
  - *Mesoblattina sinica* Ping, 1928
  - *Mesoblattina* sp. (*In* Wang, 1980)

Hemiptera
Auchenorrhyncha
- Palaeontinidae
  - *Palaeontinodes haifanggouensis* Hong, 1983
  - *Palaeontinopsis cf. latipennis* Martynov, 1937
  - *Palaeontinopsis liaoxiensis* Hong, 1986
  - *Palaeontinopsis sinensis* Hong, 1986
  - *Sinotettgarcta longa* Hong, 1986
- Procercopidae
  - *Anthoscytina longa* Hong, 1983
  - *Anthoscytina hongi* Chen, Wang & Zhang, 2015
    - = *Sinotettegarcta longa* Hong, 1986
  - *Mesocercopis longa* Hong, 1983
- Prosbolidae
  - *Permocicada beipiaoensis* Wang, 1987
- Progonicimicidae
  - *Cicadocoris brunneus* (Hong, 1983) Dong, Yao & Ren, 2013
    - = *Mesoscytina brunnea* Hong, 1983
  - *Cicadocoris sinensis* (Hong, 1983) Dong, Yao & Ren, 2013
    - = *Mesocimex sinensis* Hong, 1983
- Family *incertae sedis*
  - *Paracicadella beipiaoensis* Hong, 1983
  - *Sinotettegarcta longa* Hong, 1986
  - **Pseudopsocus parvus* Hong, 1983

Heteroptera
- Belostomatidae Corixidae
  - *Yanliaocorixa chinensis* (Lin, 1976) Hong, 1983
    - = *Karataviella chinensis* Lin, 1976
- Coreidae
  - *Sinocoris oblonga* Hong, 1983
  - *Sinocoris ovata* Hong, 1983

Sternorrhyncha
- Protopsyllidiidae
  - **Sinopsocus oligovenus* Lin, 1976
- Family *incertae sedis*
  - **Trichopsocus beipiaoensis* Hong, 1983

Thripida
- Family *incertae sedis*
  - *Mesopsocus divaricatus* Hong, 1983

Hymenoptera
- Anaxyelidae
  - *Nygmatius beipiaoensis* Hong, 1983
- Beipiaosiricidae
  - *Beipiaosirex parva* Hong, 1983
- Cephidae
  - *Sinocephus haifangouensis* Hong, 1983
- Heloridae
  - *Mesohelorus haifanggouensis* Wang, 1987
- Sinoryssidae
  - *Sinoryssus suni* Hong, 1983

Raphidioptera
- Inocelliidae
  - *Sinoinocellia liaoxiensis* Wang, 1987

Neuroptera
- Berothidae
  - *Sinosmylites pectinatus* Hong, 1983
- Kalligrammatidae
  - *Kalligramma jurarchegonium* Zhang & Zhang, 2003
- Psychopsidae
  - *Beipiaopsychops triangulata* Hong, 1983

Coleoptera
- Cerambycidae
  - *Parandrexis beipiaoensis* Hong, 1983

Elateridae
Sinolithomerus dolini Dong & Huang, 2009
Eulichadidae
Mesaplus beipiaoensis Hong, 1983
Staphylinidae
Protostaphylinus mirus Lin 1976
Family *incertae sedis*
Beipiaocarabus oblonga Hong, 1983

Trichoptera
Necrotauliidae
Necropsis paludis Hong, 1983

Mecoptera
Bittacidae
Liaobittacus longantennatus Ren, 1993
Nannochoristidae
Itaphlebia ruderalis (Ren, 1995) Cao, Shih, Bashkuev & Ren, 2016
= *Chrysopanorpa ruderalis* Ren, 1995

Diptera
Anisopodidae
Beipiaoplecia malleformis Lin, 1976
Jurolaemargus yujiagouensis (Hong, 1983) Evenhuis, 1994
= *Laemargus yujiagouensis* Hong, 1983
Leptoplecia laevis Hong, 1983
Antefungivoridae
Antefungivora haifanggouensis (Hong, 1983) Ansorge, 1996
= *Archilycoria haifanggouensis* Hong, 1983
Archilycoria haifanggouensis Hong, 1983
Lycoriomimodes producopoda Lin, 1976
Lycoriomimodes oblongus (Hong, 1983)
Mimallactoneura lirata Hong, 1983
Archisargidae
Mesosolva huabeiensis (Hong, 1983) Zhang & Zhang, 2003
= *Prosolva huabeiensis* Hong, 1983
Mesosolva parva Hong, 1983
Axymyiidae
Psocites pectinatus (Hong, 1983) Zhang, 2004
= *Parapsocus pectinatus* Hong, 1983

Kovalevisargidae
Kovalevisargus haifanggouensis Zhang, 2014
Limoniidae
Sinotipula huabeiensis Hong, 1983
Xutipula longipetalis Hong, 1983
Limnorhyphidae
Limnorhyphus haifanggouensis Hong, 1983
Paraxymyiidae
Arcus beipiaoensis Hong, 1983
Paraplecia ovata Hong, 1983
Pleciofungivoridae
Eohesperinus gracilis Hong, 1983
Fera jurassica Hong, 1983
Fera Parva Hong, 1983Protopleciidae
Paraoligus exilus Lin, 1976
Sinoplecia parvita Lin 1976
Sunoplecia liaoningensis Hong, 1983
Sunoplecia longa Hong, 1983
Protorhyphidae
Protorhyphus arcuatus (Hong, 1983) Zhang, 2007
= *Sinorhyphus arcuatus* Hong, 1983
Protorhyphus liaoningicus Zhang, 2007
Family *incertae sedis*
Paucivena elongata Lin, 1976
Platyplecia suni Hong, 1983
?*Platyplecia parva* Hong, 1983

'#' = based on juveniles; '*' = problematic taxa; '?' is taken from the original paper.

Appendix 3: Zhouyingzi locality insects checklist

Insecta

Odonata
- Family *incertae sedis*
  - #*Samarura gigantea* Brauer, Redtenbacher & Ganglbauer, 1889
  - #*Samarura punctaticaudata* Hong, 1983

Ephemeroptera
- Mesonetidae
  - #*Clavineta eximia* Zhang, 2006
    - = *Mesoneta antiqua* Brauer, Redtenbacher & Ganglbauer, 1889

Plecoptera
- Perlariopseidae
  - *Sinotaeniopteryx luanpingensis* Hong, 1983

Orthoptera
- Elecanidae
  - *Elecana reticulata* Handlirsch, 1925
- Prophalangopsidae
  - *Sunoprophalangopsis clathrata* Hong, 1982
  - *Sunoprophalangopsis elegantis* Hong, 1982
  - *Sunoprophalangopsis scupta* Hong, 1982
  - *Sunoprophalangopsis sparsula* Ren, 1995

Blattodea
- Blattulidae
  - *Blattula curvula* (Ren, 1995) Vršanský & Ansorge, 2007
    - = *Parablattula curvula* Ren, 1995
- Caloblattinidae
  - *Fusiblatta arcuata* Hong, 1981
  - *Rhipidoblattina hebeiensis* Hong, 1981
  - *Rhipidoblattina emacerata* Zhang, 1986
  - *Samaroblatta zhouyingziensis* Hong, 1981
  - *Sogdoblatta luanpingensis* Hong, 1981
- Mesoblattinidae
  - *Fusoblatta arcuata* Hong, 1983

Hemiptera
- Sinoalidae
  - *Hebeicercopis triangulata* Hong, 1983
- Palaeontinidae
  - *Gansucossus luanpingensis* (Hong, 1983) Wang, Zhang & Fang, 2006
    - = *Yumenia luanpingensis* Hong, 1983
  - *Sinopalaeocossus scabratus* Hong, 1983
  - *Xucossus zhouyingziensis* Hong, 1983
- Procercopidae
  - *Anthoscytina parallelica* Ren, 1995
- Sinoalidae
  - *Huabeicercopis yangi* Hong, 1983
  - *Luanpingia longa* Hong 1983

Heteroptera
- Belostomatidae Corixidae
  - *Yanliaocorixa chinensis* (Lin, 1976) Hong, 1983
  - *Karataviella macra* Zhang, 1986
  - **Jiulongshanocorixa genuina* Zhang, 2010
- Coreidae
  - *Hebeicoris longa* Hong, 1983
  - *Hebeicoris luanpingensis* Hong, 1983
- Nabidae
  - *Sinanabis brevipes* Zhang, 1986

Sternorrhyncha
- Protopsyllidiidae
  - **Sinopsocus oligovenus* Lin, 1976

Hymenoptera
- Ephialtitidae
  - *Hebeianaxyela clavicornuta* Hong, 1983
- Xyelidae
  - *Sinephialtites glyptus* Zhang, 1986
  - *Yanoxyela hongi* Ren, 1995

Coleoptera
- Chrysomelidae
  - *Mesolaria longala* Zhang, 1986
- Cupedidae
  - *Anthocoleus hebeiensis* Hong, 1983
  - *Celocoleus densus* Hong, 1983
  - *Hebeicupes formidabilis* Zhang, 1986
- Ommatidae
  - *Notocupes* (*Notocupes*) *dischides* Zhang, 1986
- Nitidulidae
  - *Artematopoides longus* (Hong, 1983) Yan & Zhang, 2010
    - = *Sinonitidulina longa* Hong, 1983
  - *Sinonitidulina liugouensis* Hong, 1983
  - *Sinonitidulina luanpingensis* Hong, 1983
  - *Sinonitidulina punctata* Hong, 1983
- Staphylinidae
  - *Protostaphylinus mirus* Lin, 1976

Mecoptera
- Mesopanorpodidae
  - *Sogdochyche zhouyingziensis* Hong, 1983
- Orthophlebiidae
  - *Mesopanorpa luanpingensis* Hong, 1983
  - *Orthophlebia luanpingensis* Hong, 1983
  - *Orthophlebia yaogouensis* Hong, 1983
- Parachoristidae
  - *Jibeiorthophlebia internata* Hong, 2009
  - *Jibeiorthophlebia xiaofanzhangzi* Hong, 2009

Diptera
- Antefungivoridae
  - *Lycoriomimodes luanpingensis* (Hong, 1983) Kovalev, 1990
    - = *Pleciomimella luanpingensis* Hong, 1983
- Luanpingitidae
  - *Luanpingites flavas* Zhang, 1986
- Protendipedidae
  - *Protendipes huabeiensis* Zhang, 1986
- Protopleciidae
  - *Hebeiplecia brunnea* Hong, 1983
  - *Pleciopsis longa* Hong, 1983
- Tipuloidea *incertae sedis*
  - *Raptatores erraticus* Hong, 1983

'#' = based on juveniles; '*' = problematic taxa.

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