FIRST RECORD OF *NOTOCUPES* (COLEOPTERA: CUPEDIDAE) IN LOCALITY DAOHUGOU, MIDDLE JURASSIC OF INNER MONGOLIA, CHINA

A. G. PONOMARENKO[1, 2] and DONG REN[1]

[1]*College of Life Science, Capital Normal University, Beijing 100048, China; e-mail: rendong@mail.cnu.edu.cn*
[2]*Borissiak Paleontological Institute, Russian Academy of Sciences, Profsoyuznaya ul. 123, Moscow, 117997 Russia; e-mail: aponom@paleo.ru*

Abstract.— A new beetle species *Notocupes pingi* **sp. nov.** (Coleoptera: Cupedidae) is described from the well-known fossil site of Daohugou. With more than fifty species, *Notocupes* is the biggest Mesozoic genus of beetles but had not been previously found at this locality.

Key words.— China, Coleoptera, Cupedidae, fossil, Middle Jurassic, new species

INTRODUCTION

The Jurassic fossil bed at Daohugou is one of the two most important fossil insect site in China, localities both by quantity and preservation of fossils. Many thousands of insect specimens have been collected and the beetles are among dominating groups. The family Cupedidae is now relictual, but was very common in the Mesozoic (although they are not found in Lower and Middle Jurassic of Siberian Region). Taking into account available fossils, there is not enough morphological distinction between cupedids and ommatids to regard them as separate families.

Cupedidae is comparatively rare in Daohugou; there exist only two genera and several dozens of specimens from this locality (Tan and Ren 2009). The genus *Notocupes*, the most common and diverse among Mesozoic cupedids, was not described from Daohugou before, and is an unusual case. Normally, in a site that includes cupedids, *Notocupes* is almost always among them. *Notocupes* is a dominant taxon in similar localities, both by geographical position (Yixian, north-east China) and by age (Bakhar and Shar-Teg in Mongolia).

TAXONOMY

The most difficult task in description of fossil beetles is to determine their family attribution. However, Cupedidae and *Notocupes* are exceptional because their body is covered with characteristic tuberculation and their elytra have a distinctive reticular structure with veins and wings membrane. The attribution to *Notocupes* is based on the following characters: long pedicellum, contiguous procoxae, abdomen with tile-like ventrites, elytra with large cells, and two veins closest to the sutural margin converging before the apex.

Order **Coleoptera**

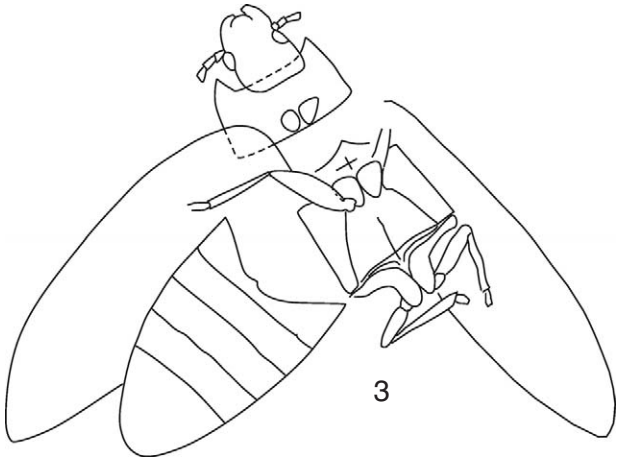
Family **Cupedidae** Laporte, 1836

Tribe **Notocupedini** Ponomarenko, 1968

Notocupes Ponomarenko, 1968

Note. Handlirsch (1906) proposed generic name *Zygadenia* for the isolated elytron of a beetle which possibly belongs to the same genus as *Notocupes*; Ponomarenko (2000) later synonimised *Notocupes*

PL ISSN 0003-4541 © Fundacja *Natura optima dux*
doi: 10.3161/000345410X516812



Figures 1–3. *Notocupes pingi* sp. nov., holotype No CNU, NN 2009 142. (1) Photograph, holotype; (2) the same under alcohol; (3) diagrammatic drawing. Scale bar 1 mm.

with *Zygadenia*. Several genera with the same type of elytra were described and it is better practice to use the name *Zygadenia* for isolated elytra only.

Notocupes pingi sp. nov.
(Figs 1–3)

Etymology. Species named in honor of the first Chinese paleoentomologist, Ping Chzhi.

Description. Rather small, narrow beetle. Head somewhat longer than wide, slightly narrowing anteriorly. Genae and temples longer than eyes, vertex with two flattened elevations. Eyes small. Antennae short, not extending beyond the base of pronotum, pedicellum longer than scape, antennomere 3 shorter than the latter. Pronotum transverse, about 1.8 times as wide as long, very weakly narrowing anteriorly in anterior fourth, anterior edge deep excised. Procoxae contiguous. Disc of pronotum with flat wide elevation divided by longitudinal groove. Mesoventrite large, with cross-like suturae. Mesepimera oblique. Mesocoxae contiguous, weakly narrowed and elongated posteriorly. Metaventrite long (about 1.7 times as long as posterior margin width), its anterior margin about twice as great as posterior one. Metacoxae long, only somewhat shorter than wide. Abdomen gently narrowing from the base, relief of middle abdominal ventrites weak, puncturation of fore and hind regions of ventrites dense, terminal ventrite about 2.5 times as long as penultimate one and about 0.7 time as wide as long. Elytra elongate, each more than 3 times as long as wide, narrowing in apical third, with subsymmetrical apices. Epipleural rim narrow but with complete row of indistinct cells. Main veins of elytra clearly differing from intermediate ones, two veins closest to suture fused in apical tenth of elytra. Cells of elytra small, elongate oval, there are about 30 cells in row. Profemur longest and thick, mesofemur widened in the middle, meta-femur shortest and thin; tibiae longer than femora, rather thin. All over body with small, dense tubercles.

Measurements. Length of beetle about 8.5 mm, width about 3.0 mm; length of head – 1.1mm, width 0.8mm; length of prothorax 1.0 mm, width – 1.8 mm; length of abdomen 3.5 mm; length of elytra: right – 5.8 mm, left

– 5.4 mm; length of fe-mora: anterior – 1.4 mm, intermediate – 1.2 mm, posterior – 0.9 mm; tibias: anterior – 1.2 mm, posterior – 0.9 mm.

Type material. Holotype only, missing parts of antennae and tarsi; there is some distortion by extension of beds, lengh of left elytron has 93% of right one, therefore it is impossible to obtain accurate measurements of size dimensions of the beetle before fossilization. Specimen is registered with the College of Life Science, Capital Normal University, Beijing, No CNU, NN 2009 142. Collected near Daohugou Village, Ningcheng County, Inner Mongolia, China. Middle Jurassic, Jilongshan Formation.

Discussion. The new species is rather small in comparison to the cupedid beetles known from the Early and Middle Jurassic. It is most morphologically similar to *N. sogutensis* Ponomarenko, 1969 from the Lower Jurassic of the Middle Asia, given its body size and elongate body shape, prothorax, shallow relief of abdominal ventrites, and the shape of the terminal ventrite. Nevertheless, it differs from the latter in having a much shorter metaventrite, longer metacoxae, and an indistinct row of cells on the narrow epipleural rim.

ACKNOWLEDGEMENTS

This research is supported by the National Natural Science Foundation of China (No.30430100, 40872022, 30811120038), the Nature Science Foundation of Beijing (No.5082002) and Scientific Research Key Program KZ200910028005 and PHR Project of Beijing Municipal Commission of Education, the grant RFFI 07-04-92105-GFEN_a, Program of the Presidium of the Russian Academy of Sciences "Origin and evolution of biosphere".

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Received: February 15, 2010
Accepted: April 20, 2010