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Permian Insects from Paraná Basin, South Brazil
IV Coleoptera

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ABSTRACT

Two Permian Insects *Kaltanicupes ponomarenkoi* Pinto, sp. nov. and *Protocupoides rohdendorfi* Pinto, sp. nov. of the family Permocupedidae are described. They were found associated to others insects, crustaceans, fish scales and plants at Irati Formation, in Rio Grande do Sul State, South Brazil.

SINOPSIS

São descritos dois Coleopteros (Insecta) do Permiano: *Kaltanicupes ponomarenkoi* Pinto, sp. nov. e *Protocupoides rohdendorfi* Pinto, sp. nov. da familia Permocupedidae. Eles foram encontrados na Formação Irati, associados a outros insetos, crustáceos, escamas de peixes e plantas no Estado do Rio Grande do Sul, Sul do Brasil.

INTRODUCTION

This paper follows thoses describing the associated fauna discovered at a cutting in the road BR 290 Km 185+500 (ex Km 78) Porto Alegre-Uruguaiana, Rio Grande do Sul State.

From that place was registered insects of Mecoptera (Pinto, 1972); Neuroptera (Pinto et Ornellas, 1980); Homoptera (Pinto et Ornellas, 1981); Homoptera (Pinto, 1986) associated to crustaceans (Pygocephalomorpha), fish scales and plants (Glossopteridales).

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Science in USSR. Thanks also to Academy for the honorable invitation to visit its Institutes and the opportunity to study this material and to meet so helpful colleagues.

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Geographical and stratigraphical distribution

These insects were found in a cutting in the road BR 290 Porto Alegre-Uruguaiana, RS, at Km 185+500 (ex Km 78), near Minas do Leão coal mines, in sediments of Irati Formation.

The age of Irati Formation was already discussed in a paper on crustaceans (Pinto, 1971) in the description of Mecopterans Insects (Pinto, 1972a) and Insects and crustaceans (Pinto, 1972b) where the author call attention to the following data:

- a) The crustaceans of Pygocephalomorpha are normally found associated to the reptile *Mesosaurus*, association that corresponds to Upper Dwyka Shales in South Africa.
- b) The Mecopteran insects lead to an age corresponding to the Group Illinsk (Kazanian) or Kuznetzk, groups considered by most of Russian geologists as Upper Permian. However, some others put the Kuznetzk as Upper part of the Lower Permian.

Otherwise the two present species of Coleoptera are: *Kaltanicupes ponomarenkoi* sp. nov. quite similar to *K. acutus* Ponomarenko, 1963 of the Tatarsky Formation, P2, Upper Permian from the Kirovskaye odj. and *Protocupoides rohdendorfi* sp. nov. quite similar to *P. plavilstshikov* Rohdendorf, 1961 from Kuznetzk Formation, Kuznetzk Basin, Kaltan.

The palynological studies (Daemon et Quadros, 1970) have reached also an Upper Permian age, Kazanian for the Irati Formation.

Based on these data the age could be stated as Upper part of the Lower Permian or more probably Upper Permian, Kazanian.

SYSTEMATICS

Phylum	ARTHROPODA
Classis	Insecta
Infra-classis	Neoptera
Super-ordo	Coleopteroidea
Ordo	Coleoptera
Sub-ordo	Archostemata
Familia	Permocupedidae Martinov, 1933

Genus *Kaltanicupes* Rohdendorf, 1961

Kaltanicupes Rohdendorf, 1961 p. 402

Kaltanicupes Ponomarenko, 1963 p. 73; excl. *K. major*

GENERIC-DIAGNOSIS Small to medium size Coleopterae. Elytra slightly convex, cellulate venation, the cells rounds or multiangular irregular. Costal area with a row of small cells. The subcostal area with three rows of cells. R sometimes, goes to the anterior border of the elytra. Cu_2 , normally is not clear. M area with two rows of cells. A_2 turns to the posterior border in its apical third, the second row of its cells goes only to the midlle of the wing. A_3 is clear in spite to being short. The distal half of area behind A_2 with one row of cells.

Type species *Kaltanicupes richteri* Rohdendorf, 1961, Kuznetzk Form., Kaltan.

Kaltanicupes ponomarenkoi Pinto, sp. nov.

Text-fig. 1 Pl. I fig. 1a,b

Designatio nominis: In honour to Dr. A.G. Ponomarenko.

Holotypus: A mold of an elytra and its counter-part. MP, UFRGS MP-I-5269.

Locus typicus: A cutting at Km 185+500 of the road Porto Alegre-Uruguaiana, RS, Brazil.

Stratum typicum: Irati Formation Upper Permian.

DIAGNOSIS Elytra elongate acute of small size, 3.8 mm of length. Base of R-RS with two rows of cells. The second row of cells between M and Cu_2 going after the midlength; after A, three rows of cells.

Fig. 1 - *Kaltanicupes ponomarenkoi* Pinto, sp. nov.

DESCRIPTION Elytra 3.8 mm of length, elongate, slightly wider at the center of the wing and acute at the apex. The costal area very narrow. The subcostal area narrowed backwards and its third row of cells reaching only a little after the midlength of the wing. R is straight. At the base of the wing, between R-RS and Cu_2 -A are two rows of cells, between RS-M and SC-R one and between M and Cu_2 four rows of cells. The second row of cells after Cu_2 goes far from the end of A, but less than one third of the wing length. After A, three cells. The cells are irregularly rounded. The sutural list shows a row of small and feeble cells.

REMARKS This species is quite similar to *Kaltanicupes acutus* Ponomarenko, 1963 from the Kazansk Formation, Upper Permian, Kirovskaya District, USSR, but differs from it in having two rows of cells between R-RS instead of one; the second row of cells at subcostal area goes after the midlength of the wing; the second row of cells between M and Cu_2 going only a little after the midlength and after A having three cells and not six like that species.

Genus *Protocupoides* Rohdendorf, 1961

Protocupoides Rohdendorf, 1961 p. 408

Tomlocupes Rohdendorf, 1961 p. 409

* *Tricupes* Rohdendorf, p. 410

DIAGNOSIS Small coleoptera. Elytra relatively wide. Coastal area with three rows of cells. The basal veins did not unit before the apex of elytra. A_2 is longer goes up to apex of elytra, the second row of cells reach normally the middle of the elytra and only slightly shorter than the first.

Type-species *Protocupoides plavilstshikovi* Rohdendorf, 1961
Upper Permian?, Kuznetzk Basin, Kaltan

Protocupoides rohdendorfi Pinto, sp. nov.

Text-fig. 2, Pl. I fig. 2

Designatio nominis: In honour to Dr. B.B. Rohdendorf

Holotypus: A mold of a part of an elytra and its counter-part. MP., UFRGS, n° MP-I-5266

Locus typicus: A cutting at Km 185+500 of the road Porto Alegre-Uruguaiana, RS, Brazil.

Stratum typicum: Irati Formation, Upper Permian.

DIAGNOSIS Elytra wide 1.22 mm, the preserved distal part has 3.10 mm of length. The second row of cells of A_2 is slightly shorter than the first one; the costal area with three rows of cells in almost all the area, except distally where are two rows of parallel cells.

Fig. 2 - *Protocupoides rohdendorfi* Pinto, sp. nov.

DESCRIPTION A well preserved fragment of a small elytra. The costal and subcostal area having only the distal part preserved. Anterior border slightly convex; posterior border almost straight; apex acute rhomboid. Costal area narrow not well preserved; subcostal area with three rows of cells except distally where are two rows. Four straight basal veins R, M, Cu_2 and A_2 and between them two rows of parallel irregularly round cells. The basal veins reach the apex separately. M is longer than the other. Sutural area with small irregular cells.

REMARKS This species presents great similarity to *Protocupoides plavilshikovi* Rohdendorf, 1961, from the Kuznetzk basin but differs from it in having the cells round and the two rows of cells of A_2 reaching almost the apex of the elytra.

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Fig. 1a, b *Kaltanicupes ponomarenkoi* Pinto, sp.nov.

Fig. 2 *Protocupoides rohdendorfi* Pinto, sp.nov.

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