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Permian Insects from Paraná Basin, South Brazil  
IV Homoptera — 2 — Cicadidea

Irajá Damiani Pinto (\*) (\*\*)

ABSTRACT

A Permian Homoptera Cicadoidea insecta *Probolecicada gondwanica* Pinto, gen. et sp. nov. from a new family Probolecicadidae is described as well as a new species for the Genus *Probole* Handlirsch, 1904. The specimens were found at Iratí Formation associated to other insects, crustaceans, fish scales and plants, at Rio Grande do Sul State, South Brazil.

SINOPSIS

É descrito *Probolecicada gondwanica* Pinto, gen. et sp. nov., inseto homóptero cicadoide permiano de nova família Probolecicadidae, assim como uma nova espécie do Gênero *Probole* Handlirsch, 1904. Ocorre associado a outros insetos, crustáceos, escamas de peixes e plantas, na Formação Iratí, no Estado do Rio Grande do Sul, Sul do Brasil.

INTRODUCTION

This work follows a series of papers describing the fauna discovered at an outcrop at the Km 185+500 (ex Km 78) of the road BR 290 Porto Alegre-Uruguaiana, State of Rio Grande do Sul.

From that place was already published three new Mecopterans of the Permochoristidae (Pinto, 1972), one Neuropteran of the Permithonidae (Pinto et Ornellas), 1980; and one Homopteran of the Pereboridae (Pinto et Ornellas, 1981). These insects were associated to other insects (Coleoptera, Permocupedidae), crustaceans (Pygocephalomorpha) fish scales and plants (Glossopteridales).

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#### SYSTEMATICS

Phylum ARTHROPODA  
Classis Insecta  
Sub-classis Pterigota  
Infra-classis Neoptera  
Super-ordo Paraneoptera  
Ordo Homoptera  
Sub-ordo Cicadomorpha  
Super-familia Cicadidea

##### Familia Prosbolecicadidae nov.

**DIAGNOSIS** Tegmina broad with strong costal margin, wide costal space and strong radius. Costa notched at the apex of  $R_{1a}$  forming a kind of nodus; and a marked angle at the end of  $Cu_2$ , between the claval and distal portion of the posterior margin. It presents a differentiation on the texture of the membrane of the basal and distal portion, the basal portion with dotted pits separated from the distal portion by a nodal line.

RS forkig distally. M with four branches and Cu with two branches curving backwards. The bifurcation of RS and Cu being at the same level and M more basad. Nodal line intersecting RS,  $M_{1+2}$ ,  $M_{3+4}$ ,  $Cu_{1a}$ , and  $Cu_{1b}$  distant from their origin.

Clavus with two widely separated veins fusing distally to form a y-vein. Cross-veins not very distinct apparently present r-m and m-cu.

Genotype *Prosbolecicada gondwanica* Pinto, gen. et sp. nov.

**REMARKS** This family differs from the Prosbolidae Handlirsch, 1904, in not having the nodal line intersecting RS, M and Cu at the bifurcation level and from Cicadoprosbolidae Evans 1956, in the absence of r and m cross-veins; in RS and Cu bifurcating at the same level near and before the nodal line and M bifurcating basally widely distant from the nodal line.

*Probolecicada gondwanica* Pinto, gen. et sp. nov.

Text-fig. 1; Pl. I fig. 3; Pl. II fig. 1 ab

Designatio nominis: Transitional form between Prosbolidae and Cicadidae and found at Gondwanaland.  
Holotypus: Positive and negative impression of a tegmina M.P., UFRGS, n° MP-1-5263.  
Locus typicus: A cutting at the Km 185+500 of the road BR 290 Porto Ale gre-Uruguaiana, RS, Brazil.  
Stratum typicum: Irati Formation, Upper Permian.

DIAGNOSIS Tegmina 20.7 mm long and 9.0 mm wide with two to four veinlets between  $R_{1a}$  e  $R_{1b}$ ; two cross-vein r-m and m-cu;  $M_1+M_2$  forking before  $M_3+M_4$ .

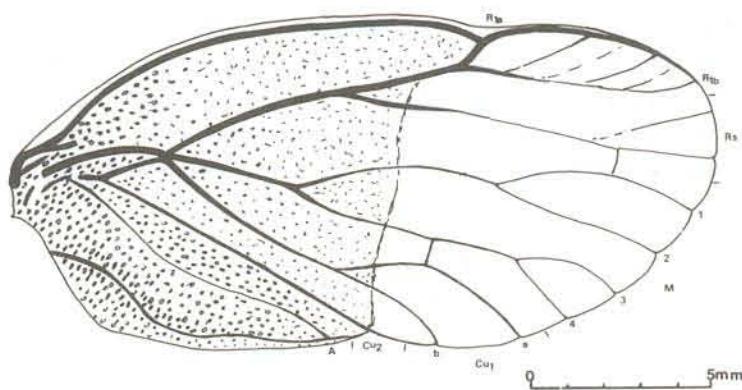


Fig. 1 - *Probolecicada gondwanica* Pinto, gen. et sp. nov.

DESCRIPTION Tegmina yellow-brownish, oval, slightly convex at the costal margin with a clear nodus, outer margin sloping gradually backwards. Clavus and basal part of tegmen limited by the nodal line, covered all over with dotted pits. Nodal line between  $R_1$  and the end of  $Cu_2$  moderately distinct, crossing  $M_1+M_2$  and  $M_3+M_4$  widely distant from M fork. SCA runs longitudinally at the costal margin until  $R_{1a}$ . Common stem M+R slightly curved and in front of it a short distinct remain of SCP. R branches at the nodus in  $R_{1a}$  and  $R_{1b}$  between  $R_{1a}$  and  $R_{1b}$  two to four veinlets. RS arises at almost midlength and branches distally. M short, forking before RS at half way from the nodal line;  $M_1+M_2$  forking earlier than  $M_3+M_4$  and has almost the same size than its branches.  $M_1$  and  $M_2$  curved slightly backwards and  $M_4$  almost straight directed backwards;

CuA forking later than M at the same level where SC arises, their branches simple and curved backwards; Cu straight, A<sub>1</sub> and A<sub>2</sub> sinuous and linked distally to form a Y-vein. Cross-veins are not very clear apparently has only r-m and m-cu.

REMARKS This species, as Becker-Migdisova suggested to the author is a transitional form between Prosbolidae and Cicadidae. It presents some similarity to several species described by Tillyard (1918, 1921, 1926) but as can be seen in Pl. I, it is quite similar, except for the early forking of M at half way from the nodal line, to *Probole reducta* Becker-Migdisova, 1935 (Pl. I fig. 1) and *Probole jucunda* Becker-Migdisova, 1935 (Pl. I fig. 2). In this differential character it approaches *Evanscicada speciosa* Becker-Migdisova, 1961 (Pl. I fig. 7), but RS origin and Cu fork are not in the same level and also *Evanscicada* has many branches and many cross-veins. The Australian species *Austroprobole maculata* Evans, 1943, (Pl. I fig. 4), *Austroproboles vandijkii* Riek, 1973 (Pl. I fig. 6) and the African species *Beauforticus dixi* Riek, 1976, (Pl. I fig. 8), are similar to *Cicadoprobolus sogutensis* Becker-Migdisova, 1947 (Pl. I fig. 5), but differ from the present species by the disposition of the RS origin and by the forking of M which results in *Cicadoprobolus* and allied forms in a short R and in a long M while the opposite occurs in *Probolecicada*.

Familia PROSBOLIDAE Handlirsch, 1904  
Genus PROBOLE Handlirsch, 1904

*Probole iratiensis* Pinto, sp. nov.

Text-fig. 2, Pl. I fig. 10, Pl. II fig. 2 (ab)

Holotypus: A distal half part of a hind wing. MP, UFRGS, MP-I-5271

Locus typicus: Km 185+500 of the road BR 290, Porto Alegre-Uruguiana, RS, Brazil.

Stratum typicum: Irati Formation, Upper Permian.

DIAGNOSIS Hind wing with about 16,5 mm of length (inferred). R with four distal veinlets; M branching just after the branching of CuA. M<sub>1</sub>+M<sub>2</sub> branching at midlength; M<sub>3</sub>+M<sub>4</sub> branching distally; the branches M<sub>3</sub> and M<sub>4</sub> one third the size of M<sub>1</sub> or M<sub>2</sub>. Two cross-veins: r-m and m-cu.

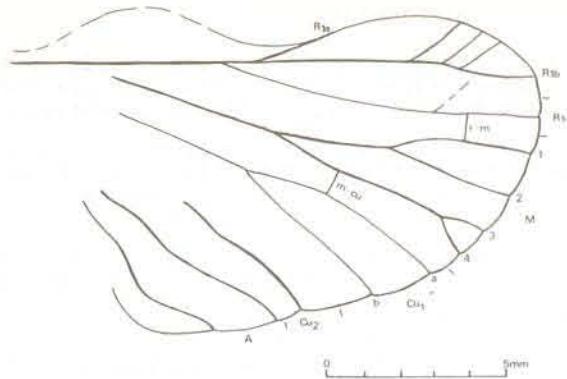


Fig. 2 - *Probole iratiensis* Pinto, sp. nov.

**DESCRIPTION** A distal part of a hind wing measuring 9,0 mm of width and presumably 16,5 mm as total length. This part of the wing shows quite well all the veins except SC. It presents an incision, at midlength of the anterior margin where probably there is the SC vein that is not definitely seen; the outer margin sloping gently backwards; R straight forking at midlength;  $R_1$  straight outwards;  $R_2$  straight curving backwards at the distal side and forward again; between  $R_1$  and  $R_2$  three veinlets; RS is simple and originated at the incision of the wing; CuA branching slightly later than R; and M slightly later than CuA; the common stalk  $M_1+M_2$  almost equal in size to its branches  $M_3+M_4$  almost eight times the size of its branches  $M_3$  and  $M_4$ ; CuA branch long,  $Cu_{al}$  slightly curved forwards; CuP curving slightly backwards just before the margin;  $A_1$  and  $A_2$  curving in an arch backwards. Two cross-veins: m-r and m-cu.

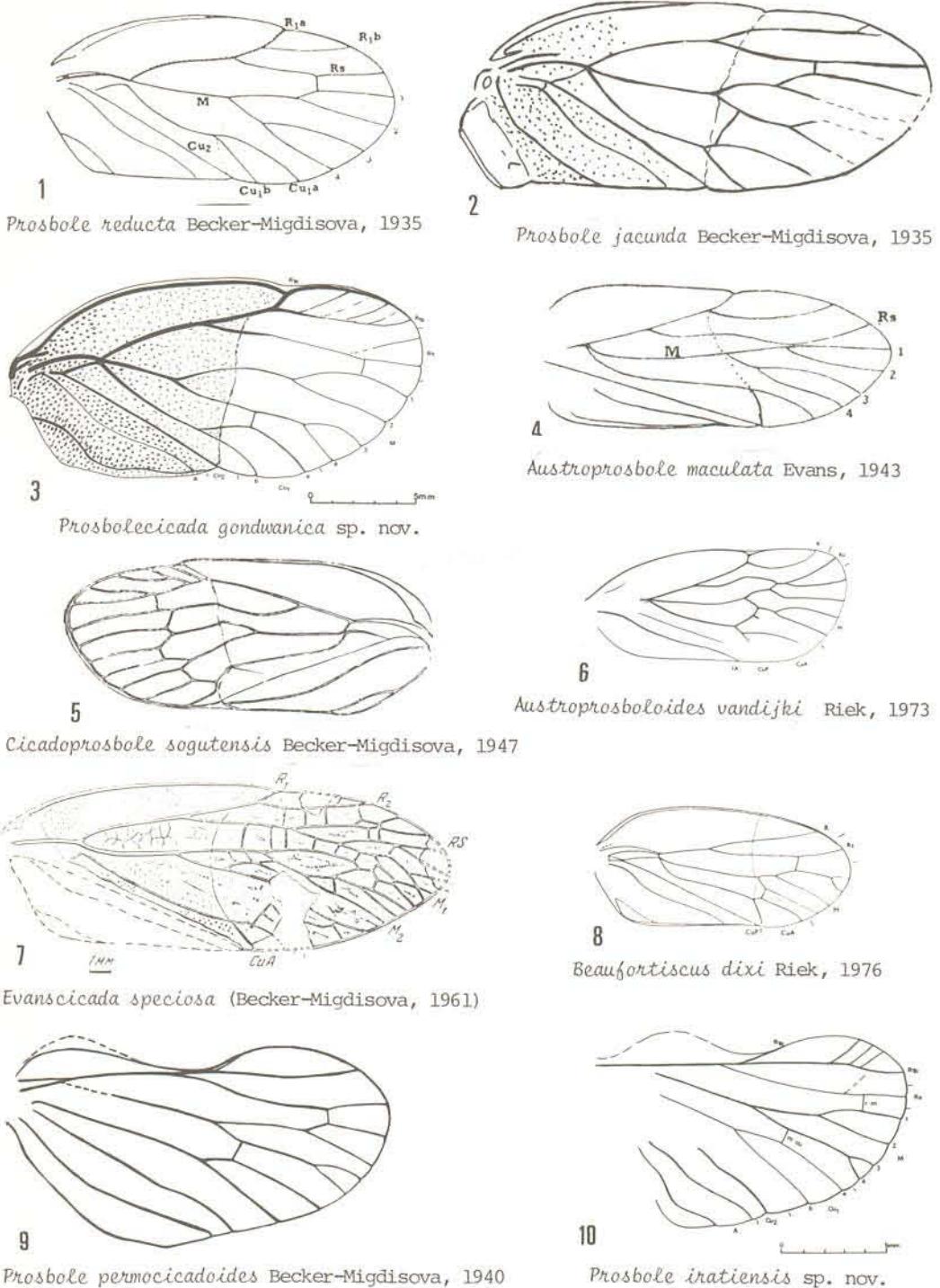
**REMARKS** This species is quite similar to *Probole permicicadoides* Becker-Migdisova, 1940 from Iva-Gora, USSR (Pl. I fig. 9). It differs from it by the presence of veinlets between  $R_{1a}$  and  $R_{1b}$ .

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**PLATE I**

Fig. 1-10 - Figures of representatives Prosbolidiforms insects in parallel with the new species.



**PLATE II**

Fig. 1a, b - *Probolecicada gondwanica* Pinto, gen. et sp. nov.  
Holotypus - UFRGS, MP-I-5263 - Irati Formation, Upper  
Permian - Rio Grande do Sul State, Brazil.

Fig. 2a, b - *Probole iratiensis* Pinto, sp. nov.  
Holotypus - UFRGS, MP-I-5271 - Irati Formation, Upper  
Permian - Rio Grande do Sul State, Brazil.



1a



1b



2a



2b

0 5 MM