

CURRENT RESEARCH ON AMAZONIAN TRIATOMINAE

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The amazonian triatomine fauna is distinctive, characterized by a high proportion of endemic species and the absence of members of the genus Triatoma except marginally. Eratyrus mucronatus , Panstrongylus lignarius , Rhodnius paraensis , Rhodnius brethesi and Cavernicola lenti appear to be restricted to the amazonian rainforest (including the Guyanas). R. paraensis and C. lenti are still known only from the type localities, and R. brethesi has only been confirmed in association with the palm Leopoldinia piassaba in the upper Rio Negro and Orinoco basins. Panstrongylus herreri from up to 1500 meters in Peru is very similar morphologically to P. lignarius, with which it hybridizes in the laboratory , but the amazonian population is distinctive. Panstrongylus rufotuberculatus , Microtriatoma trinidadensis , Belminus herreri and Rhodnius pictipes extend into Central America , and the latter species has been reported as far southeast as the brazilian State of Piaui. Only P. geniculatus and C. pilosa , species which also occur in Central America , extend as far as the Atlantic rainforest of southeast Brazil. Triatoma maculata is found at the northern edge of the rainforest in Roraima, and the Old World species Triatoma rubrofasciata continues to breed in the city of Belem. Rhodnius prolixus and related

species are considered below.

The natural habitats of most species are known, due particularly to the work of Miles et al. (1981) in Belém and subsequent collections by workers at INPA in Manaus (Barrett et al. 1986). Mascarenhas (1987) confirmed the association of R. brethesi with piassaba palms and suggested an association with reptiles. The ecological niche of P. rufotuberculatus is not well defined.

Adults, particularly of P. geniculatus, R. pictipes and members of the R. prolixus complex frequently fly into houses situated near vegetation even in metropolitan areas, and the finding, more rarely, of recently engorged specimens suggests that they occasionally feed on the inhabitants. Infection rates with Trypanosoma cruzi are high in these triatomines but there are no records of acute Chagas' disease acquired in the Manaus area. Several cases are known from Belém, however (Souza et al. 1986).

In São Paulo de Olivença, on the upper Solimões river, two additional cases of acute Chagas' disease have been confirmed since the report of França et al. (1980). R. pictipes, "R. robustus" and P. geniculatus have been recorded from the area. In Barcelos on the Rio Negro, serological evidence suggests that infection with T. cruzi may be an occupational hazard in the piassaba industry (Ferraroni et al. 1977). A human case of mixed T. cruzi and T. rangeli infection suggests the involvement of Rhodnius sp.

There is clearly a need for carefully designed epidemiological studies in these areas to evaluate the scale of the problem and investigate transmission dynamics. That such studies have yet to be carried out, eleven years after the publication of Ferraroni's paper, is due partly to formidable logistic difficulties and the need to devote available resources to more "visible" problems such as leishmaniasis.

Although the hypothesis that P. geniculatus is associated particularly with T. cruzi zymodeme III, and arboreal triatomines such as Rhodnius spp with zymodeme I of Barrett et al. (1980) remains unchallenged, the number of T. cruzi isolates from sylvatic triatomines in the Amazon Region that have been analyzed by enzyme electrophoresis is inadequate for a more definite conclusion. Zymodeme analysis carried out at the Instituto Evandro Chagas of trypanosomes isolated from Cavernicola lenti and associated bats (Barrett & Arias, 1985) is consistent with the identification Trypanosoma cruzi marinkellei Baker et al. , 1978 (Izabel C. Rodrigues, personal communication).

Seven examples of Rhodnius pictipes, including V and IV stage nymphs, were collected in a house near São João do Araguaia, Pará, in September 1987, confirming previous reports from Peru and Piauí that this species is capable of colonizing in houses.

Fifty- eight colonies of triatomines are at present maintained at INPA , representing considerable potential for parasitological and other laboratory studies, although priority is at present being given to breeding experiments with Rhodnius spp.

Rhodnius robustus and populations resembling Rhodnius prolixus are so similar that they are difficult to separate on morphological grounds (Lent & Wygodzinsky, 1979) . Populations of R. prolixus and closely related species extend from Central America (R. prolixus) to southern Brazil (R. neglectus) and the arid northeast (R. nasutus) . Amazonian populations exhibit partial sterility in laboratory crosses with colonies from other regions and between themselves. Results available to date from experimental crosses between 14 colonies suggest the following groups :

Group I, corresponding to R. prolixus sensu strictu, fully interfertile : colonies from Honduras, Venezuela Cojedes, Colombia Cundinamarca domiciliary, Colombia Casanare silvatic, Colombia Boyacá domiciliary, Colombia "robustus", Peru "Lima" ex. colony Instituto Oswaldo Cruz, R. prolixus ex. colony Fac. Ciências Médicas Botucatu via Instituto Oswaldo Cruz.

Group II : completely sterile in crosses with group I males, occasional, mostly inviable, hybrid nymphs produced in some crosses with group I females : Goiás municip . Formoso R. neglectus, Bahia and São Paulo R. neglectus , Ceará municip. Itapagé R. nasutus . Ceará and Bahia/São Paulo colonies completely interfertile, partial sterility in crosses with the Goiás colony.

Group III (Amazonian) : Occasional, mostly inviable nymphs produced in crosses with group I females, interfertile hybrids produced in crosses with group I males. Occasional hybrids produced with group II inviable or not interfertile. Amazonas Balbina "robustus" silvatic.

Group IV (Amazonian) : Most crosses with group I produce occasional, inter-fertile hybrids but the products of crosses between these hybrids are usually inviable . Hybrids produced in crosses with group II inviable or not inter-fertile. Crosses with group III males sterile, fertile hybrids produced in crosses with group III females. Pará Tucuruí silvatic.

Group V (Amazonian) : Broadly similar to group IV, but the cross with group IV female produced many infertile eggs and the hybrids were not interfertile , although back-crosses with the parental colonies were fertile. Rondônia Samuel silvatic.

Morphometric data and the results of back-crossing hybrids with parental colonies remain to be analyzed. Since

these insects are relatively easy to collect and rear in the laboratory, biochemical methods such as isoenzyme analysis are indicated for defining populations geographically and detecting hybrid zones or clines.

The number of geographically defined samples studied is still inadequate for a taxonomic revision, and we continue to refer to the amazonian populations as "members of the Rhodnius prolixus complex".

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