

RESEARCH NOTE

## Current Spread of *Triatoma infestans* at the Expense of *Triatoma sordida* in Bolivia

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*Triatoma infestans* is the most widespread synanthropic species of Triatominae and the most important vector of Chagas disease in South America. The progressive geographical expansion of this species from its silvatic focus of origin in the Cochabamba valley of Bolivia (JP Dujardin et al. 1987 *J Med Entomol* 24: 40-45) was probably associated with human migration into the continent (CJ Schofield 1988 *Biosystematics of haematophagous insects*, p. 285-312. MW Service Oxford). *Triatoma sordida*, a species associated with silvatic and peridomestic habitats, is currently found in houses in some rural areas of Bolivia, particularly in La Paz and Santa Cruz departments (E De Muynck 1977 *Bol Inform CENETROP* 3: 41-51, F Noireau et al. 1995 *J Med Entomol* 32: 594-598). The analysis of the present distribution of *T. sordida* in Bolivia, in comparison to 20 years ago data, gives a clear indication of the reduction of the area within which this species is found in houses and its substitution by *T. infestans*, the most important vector of Chagas disease in this country.

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Our first study area was the Yungas in the department of La Paz. The Yungas are steep-sided valleys covered with subtropical forest in the foothills of the Eastern Andean Cordillera. Both *T. infestans* and *T. sordida* were reported more than 50 years ago in several main villages such as Chulumani, Coripata and Coroico; *T. sordida* was the only triatomine species collected in many houses in Chulumani and Villa La Fuente (S Mazza 1942 *Prensa Med Arg* 29: 1-15). In spite of the competitive superiority of *T. infestans* over *T. sordida* in houses, probably due to its faster development coupled with the greater accessibility to blood offered by man and domestic animals, the coexistence of both species in this region was likely to have been due to the relative human stability in this period (E Juarez & EP de C Silva 1982 *Rev Saude Públ* 16 (supl.): 1-36, Schofield 1988 *loc. cit.*, ME Bar et al. 1994 *Rev Saude Públ* 28: 59-68). An entomological survey performed 50 years later, in 1992, in the small towns of Coroico, Coripata and Chulumani, as well as villages situated in the valleys surrounding them, pointed out the dispersal of *T. infestans*. 795 domestic triatomines were collected and taxonomically identified by morphology (all specimens) and genetics (confirmation of the taxonomic status for nymphal instars by isozyme analysis). All specimens belonged to *T. infestans* species except one 4th-instar nymph of the *T. sordida* species. The spread of *T. infestans* and the associated virtual disappearance of *T. sordida* from houses had very likely occurred in association with the intense human migratory flow from the endemic regions of Bolivia to the Yungas during the 1950-1976 period (in the Yungas, the yearly increasing rate of population was 3.62% compared to 2.05% for Bolivia as a whole; Censo Nacional de Población y vivienda, Bolivia, 1992).

The Velasco province, located in the north of Santa Cruz department, was the second study area. This province, which forms part of the Chiquitania region, is made up of a mosaic of woodlands and wooded savannas. Until recently *T. sordida* was the only triatomine species reported to colonize houses in this province (De Muynck 1977 *loc. cit.*, J Salcedo et al. 1980 *Bol Inform CENETROP* 6: 2-10). An entomological survey was performed in 1994 following the same process of taxonomic identification as described above. It pointed out the rapid penetration of *T. infestans* to this region during the last 15 years: among 26 investigated localities in the Velasco Province, *T. sordida* was found as the only species infesting houses in 18 localities (69%), while *T. infestans* was collected in 8 other localities associated or not with *T. sordida*. The few localities infested by *T. infestans*



are situated in areas which have recently experienced substantial human migrations (during the 1976-1992 period, the yearly increasing rate of Velasco population was 3.50% compared to 2.11% for Bolivia as a whole; Censo Nacional de Población y vivienda, Bolivia, 1992). On the contrary, isolated villages located off the lines of communication and consequently less affected by migration are still free of *T. infestans*. Nevertheless, such isolated villages may be considered as being at risk to the short-term spread of *T. infestans*. Such

is the case in Tacoigo, located in the middle of the area considered as free of *T. infestans*, one specimen of this last species was recently collected in association with 65 *T. sordida*. These surveys show that in Bolivia as elsewhere *T. infestans*, when introduced into new areas, quickly displaces *T. sordida* from human dwellings.

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