

RESEARCH NOTE

Peridomiciliary Infestation with *Triatoma sordida* Stal, 1859 in the County of Serra do Ramalho, Bahia, Brazil

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Triatoma sordida Stal, 1859 is a predominantly peridomiciliary species that is now the most common triatomine in Brazil (L Diotaiuti et al. 1995 *Bol Of Sanit Panam* 118: 211-219). Its original habitat was probably the Brazilian "cerrado" (OP Forattini 1980 *Rev Saúde Públ* 14: 265-99) where it occurs mainly under dead or dry bark of trees (MP Barretto 1979, *Epidemiologia*, p. 425-449. In Z Brener & Z Andrade, *Trypanosoma cruzi e Doença de Chagas*, Guanabara Koogan, Rio de Janeiro, L Diotaiuti et al. 1993 *Rev Inst Med Trop São Paulo* 35: 237-245). Due to growing the destruction of its original habitat in the last years, as a consequence of new colonization projects and expansion of cultivated areas, resulting in uncontrolled environment interventions, the population densities of this species have risen considerably in environments modified by human activity (OP Forattini et al. 1974 *Rev Saúde Públ* 8: 265-282), including peridomiciliary ecotopes (Diotaiuti et al. 1995 *loc. cit.*). Knowledge of the ecology of *T.*

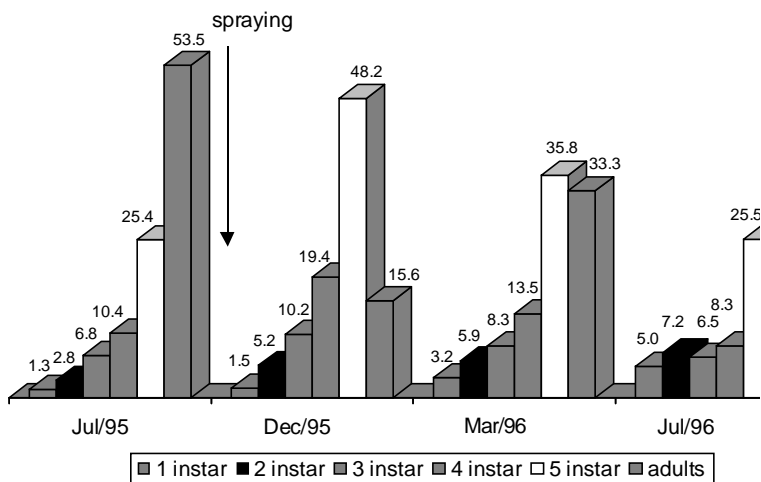
sordida in the peridomicile is an important prerequisite for its control. In order to determine the factors involved in peridomiciliary infestation by this species, a survey of triatomine following spraying with deltamethrin was carried out at domiciliary units (DUs) of Agrovila 12 farm in Serra do Ramalho county, Bahia, Brazil, according to methods already described (L Diotaiuti et al. 1998 *Rev Panam Salud Púb* 3: 21-25). This area had not been treated with insecticides for four years prior to the study. From the 378 DUs studied, 196 were positive (51.9%), with intradomiciliary infestation corresponding to 6% and the peridomiciliary to 99%. A total of 1,937 insects were captured and the infestation index was reevaluated at 4, 8 and 12 months after spraying (Figure). During the pre-intervention survey 48.3% of the peridomiciliary ecotopes studied were found to be infested, particularly those with wood as the main construction material (constituting 92.1% of the ecotopes in the survey), where 95.2% of the insects were captured, followed by those using adobe (6.2%), where 3.8% of the insects were captured and finally those composed of several building materials (1.8%), where 1.1% of the insects were captured. These ecotopes comprised chicken houses (46.7%), pigsties (9.3%), fences (33.9%), bathrooms (0.9%) and miscellaneous others (9.3%); the proportions of insects collected in each ecotope was 69.3, 5.4, 19.4, 0.7 and 5.2% respectively (Table I). A total of 2,934 domestic animals were present in the peridomicile at the time of the survey, of which 78.7% were chickens, 12.5% pigs, 5.2% dogs, 3.1% cats and 0.5% ungulates (goats or oxen). These animals were present in 82.4, 46.6, 51.5, 28.9 and 1.5% respectively of the DUs studied. The blood-meal sources identified by the precipitin test were: birds 56.4%, horses 7.2%, rodents 6.7%, human 2.2%, dogs 1.7%, opossum 0.9%, cats 0.1% and ungulates (goats or oxen) 0.1%. It was not possible to identify the source of 29.2% of insect blood-meals due to insufficient quantities of blood in the stomach. Double or triple meal sources were identified in 114 triatomines. Of the blood-meals analyzed from insects captured in the intradomicile, 11 were positive for birds, 3 for rodents, 3 for horses, 1 for human and 17 did not react. With respect to insects positive for *Trypanosoma cruzi* (0.4%), 5 had ingested bird blood, 4 had ingested horse blood, 1 had ingested rodent blood, 1 bird and horse blood and 6 did not react (Tables II, III). Taking into account that the battery of antisera used probably includes all the main sources of blood available inside the houses, the high proportion (48.6%) of insects captured indoors whose blood meals could not be identified could indicate the difficulty with which *T. sordida* adapts to this en-

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Relative percentage of captured triatomines (*Triatoma sordida*) in Agrovila 12, Serra do Ramalho, Bahia, according to the instar, at the pre-intervention with pyrethroid and at the post-intervention surveys.

TABLE I

Number of ecotopes studied in relation to type, construction materials and number of triatomines captured in pre-intervention survey

Ecotope type	No. ecotopes	No. insects captured
Chicken house	106 (46.7%)	1343 (69.3%)
Pigsty	21 (9.3%)	104 (5.4%)
Fence	77 (33.9%)	375 (19.4%)
Bathroom	2 (0.9%)	14 (0.7%)
Other	21 (9.3%)	101 (5.2%)
Construction material		
Wood	209 (92.1%)	1841 (95.2%)
Adobe	14 (6.2%)	74 (3.8%)
Other (textiles, paper, leather)	4 (1.8%)	22 (1.1%)
Total	227	1937

vironment and its greater predilection for the peridomicile, where all but 27.8% of the insects collected did not react against any of the antisera. No correlation was observed between the population density of *T. sordida* during the four surveys and the frequency of positive reactions against human antiserum. Another notable fact is the occurrence of double meal sources involving birds and one mammal species. These associations were observed for all the antisera, and demonstrated the presence of birds in all the ecotopes studied. Chickens comprise practically all of the birds in the study area and other species such as ducks, turkeys, parrots and other ornamental species were rarely encountered. The absence of triatomines inside the houses during the three post-intervention surveys is indicative of the efficacy of pyrethroid insecticides as a control measure. However complete

TABLE II

Overall percentage of triatomine blood meal sources identified by precipitin test in the four infestation surveys

Survey	Bird	Human	Dog	Horse	Rodent	Opossum	Cat	Goat/Ox	Not identified
1	60.2	2.4	1.5	7.4	3.9	0.4	0	0	27.2
2	64	1.3	0.6	7.5	8.1	1	1	0	24.4
3	47.7	2.9	4.4	5.2	12.5	3.5	0	0.9	33.4
4	31	0.5	0.5	8.9	17.3	0.5	0	0	45.3
Total	1375 (56.4%)	53 (2.2%)	42 (1.7%)	176 (7.2%)	164 (6.7%)	22 (0.9%)	3 (0.1%)	3 (0.1%)	712 (29.2%)

TABLE III

Number of insects reacting to precipitin test which were positive for more than one antisera

Associations	1st investigation	2nd investigation	3rd intervention	4th intervention	Total
Two antisera					
Human/bird	2	1	3	-	6
Human/dog	-	-	1	-	1
Human/rodent	1	-	1	-	2
Bird/dog	3	-	3	-	6
Bird/cat	-	3	-	-	3
Bird/horse	23	7	5	1	36
Bird/goat or ox	2	-	-	-	2
Bird/rodent	12	9	11	3	35
Bird/opossum	1	1	-	-	2
Dog/horse	1	1	-	-	2
Dog/rodent	2	-	-	-	2
Dog/opossum	-	-	1	-	1
Horse/rodent	3	1	1	-	5
Horse/opossum	-	1	-	-	1
Total	50	24	26	4	104
Three antisera					
Human/bird/dog	-	-	2	-	2
Human/bird/rodent	-	-	2	-	2
Bird/dog/horse	1	-	-	-	1
Bird/dog/rodent	-	-	1	-	1
Bird/horse/rodent	1	-	1	-	4
Total	2	0	6	2	10

eradication of triatomines was never achieved in this environment. This can be explained by the rapid degradation of pyrethroid insecticides in outdoor conditions (JCP Dias et al. 1984 *Rev Soc Bras Med Trop* 14-15) and to the availability of refuges allowing some of the insects to avoid contact with insecticides. This observation is corroborated by comparison of the age structures of the population before and after intervention. One year after spraying, the population of *T. sordida* was equivalent to

47.8% of the original number captured, even though large, although the true population size may be much larger if the insects were not removed from the peridomicile during each survey. Nevertheless, the characteristics of the recolonization by *T. sordida* and the time required for the population to regain its original level confirm that a single annual spraying intervention is enough to control this species, as proposed by Diotaiuti et al. 1998 (*loc. cit.*).

