Parasitism of Domestic Swine (Sus scrofa) 
by Amblyomma Ticks (Acari: Ixodidae) on a Farm 
at Monte Negro, Western Amazon, Brazil

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ABSTRACT In January 2001, while conducting a survey of the tick fauna of the State of Rondônia, Brazil, a rural area within Monte Negro county was visited. On one farm within the county the producer maintained a herd of crossbred swine, Sus scrofa L., that was reared under unconfined conditions, with unrestrained access to the pasture and adjacent native Amazon equatorial forest. Inspection of the swine herd produced a total of 77 ticks collected from eight adult pigs (mean, 9.6 ticks per pig) that were identified as Amblyomma naponense (Packard) (26 males, eight females), A. oblongoguttatum Koch (five males, three females), A. ovale Koch (one female) and A. sculpturatum Neumann (one male). One Amblyomma larva and 32 Amblyomma nymphs also were collected from the pigs. Of these, six nymphs were reared in the laboratory until they reached the adult stage, one being an A. oblongoguttatum female and five being A. sculpturatum females.

KEY WORDS Amblyomma naponense, Amblyomma sculpturatum, Amblyomma oblongoguttatum, Amblyomma ovale, ticks, swine

The State of Rondônia, in western Amazônia, has the potential for harboring tick-borne diseases, such as rickettsiosis, erlichiosis, and borreliosis. In recent years the area has undergone massive colonization, with extensive deforestation where houses, farms, forest, humans, and domestic and wild animals share the same habitat.

Brazil contains one of the largest domestic swine herds, Sus scrofa L., in the world (Roppa 1998). In the last century, swine rearing methods have changed dramatically and most of the commercial swine are now confined in proper facilities under regular sanitation procedures, which restrict the animals from direct contact with native fauna and flora. However, in some rural areas, especially in northern Brazil, including Rondônia, domestic pigs reared for subsistence are completely unconfined and have direct access to natural environmental areas in the Amazon forest habitat where many other mammalian hosts and tick species are present.

The only tick species reported from the domestic pig, S. scrofa, in Brazil was Amblyomma cajennense (F.) (Aragão 1911, 1936; Robinson 1926; Evans et al. 2000). In contrast, several tick species have been reported from native wild pigs (Tajassu spp.) in Brazil including Amblyomma brasiliense Aragão, A. cajennense, Amblyomma naponense (Packard), Amblyomma oblongoguttatum Koch, Amblyomma ovale Koch, Boophilus microplus (Canestrini), Ornithodoros brasilianus Aragão, and Ornithodoros rostratus Aragão (Aragão 1911, 1936; Ito et al. 1998; Evans et al. 2000).

In Central America, Fairchild et al. (1966) reported Anocentor nitens (Neumann), B. microplus, A. oblongoguttatum, A. cajennense, A. ovale, Amblyomma tapirorellum Dunn, and Amblyomma coelebs Neumann on S. scrofa from Panama. In British Honduras, Varma (1973) reported A. cajennense from S. scrofa. Jones et al. (1972) presented an extensive list of ticks from Venezuela, but they did not mention any tick species infesting S. scrofa.

The Brazilian Amazon is a new frontier where agriculturally sustainable development and livestock activities have been attempted in the last few decades. The presence of humans and domestic animals in these recently explored areas might result in new, distinct associations and adaptations of the native tick fauna to the newly integrated hosts (Labruna et al. 2000). Here, we report the presence of native tick
species from the Amazon region infesting domestic pigs that have been introduced by humans.

Materials and Methods

During a survey of the tick fauna in Rondônia during January 2001, we visited a farm in the county of Monte Negro (10°18' S; 63°14' W), located at an altitude of ≈206 m. The hot, moist weather was characterized by high levels of precipitation that averaged 2,000 mm annually, with a moderate drought period from April to October. It had a mean temperature that ranged from 25 to 29°C and from 70 to 80% RH throughout the year (Meteorological Station of the Advanced Research Center, University of São Paulo, Monte Negro, RO). The farm had ≈300 beef cattle as the major livestock activity reared in unconfined pastures composed mainly of Brachiaria decumbens Stapf. In addition, the farm had a domestic crossbred swine herd (S. scrofa) that consisted of 14 adults (two boars, three Finish pigs, nine sows) and 15 piglets reared for subsistence. All the pigs were reared unconfined and had unlimited access to pasture and to adjacent forest composed of native Amazon equatorial vegetation. However, all pigs were conditioned, at least once a day, to come to the ranch facility where they were fed with corn. The sound of the owners’ motorcycle every day “called” the pigs: the animals have associated the engine sound with offered corn. We confirmed this on our visit. Pigs returned to the pastures and adjacent forests after feeding on the corn. According to the farm residents, the adjacent forest areas were permanently inhabited by wild pigs (Tayassu spp.), tapirs (Tapirus terrestris L.), and capybaras (Hydrochaeris hydrochaeris Erxleb).

We examined eight adult pigs from the farm swine herd as they were feeding on the corn. Each pig was examined individually and each tick was placed in a dry glass vial with some vegetation and transported alive to laboratory for examination. Whenever possible, immature ticks were reared using rabbit hosts until they reached the adult stage for species identification. They were maintained in an incubator at 25°C and 90% RH for molting.

Results and Discussion

A total of 77 ticks was collected from eight adult pigs (mean, 9.6 ticks per pig). Four species were identified as A. naponense (26 males, eight females), A. oblongoguttatum (five males, three females), A. ocale (one female) and Amblyomma sculpturatum Neumann (one male). One Amblyomma larva and 32 Amblyomma nymphs were also collected from the pigs. Of these, six nymphs were reared in the laboratory to the adult stage, one being an A. oblongoguttatum female and five being females of A. sculpturatum. All ticks were deposited in the FMVZ National Tick Collection, University of São Paulo, São Paulo, SP (accession numbers 410, 426, 427).

Amblyomma naponense was found on all pigs examined. This tick was previously recorded mainly from wild pigs (Tayassu spp.) from Brazil and other Latin America countries (Aragão 1911, 1936; Fairchild et al. 1966; Jones et al. 1972; Need et al. 1991). The other tick species reported in this study were also reported primarily from tapirs, wild pigs (Tayassu spp.), and capybaras. These wild mammal species were reported to

Fig. 1. Domestic pigs coming from the forest and livestock pasture to the ranch facility to be fed with corn. Note the Amazon forest in the background

Fig. 2. Farmer feeding domestic pigs with corn at the ranch facility
be common in the forested areas adjacent to the farm and the presence of ticks found on the domestic pigs was probably a result of their movement into the forest habitat. Further research should be conducted to determine whether domestic pigs would be suitable hosts for one or more *Amblyomma* species in the Amazon area, in the absence of wild hosts. The findings of immature *A. oblongoguttatum* and *A. scapulatum* on domestic pigs suggested that they could be serving as hosts for all parasitic stages of these ticks. *Amblyomma oblongoguttatum* and *A. ovale* have also been reported on domestic pigs in Panama (Fairchild et al. 1966). In southern Brazil, pigs are usually reared in total confinement, which avoids tick infestation from wild life sources. Nevertheless, the situation described here possibly reflects new host–parasite associations particular to the Amazon region, where native hosts and ticks cohabit in an area invaded by domestic pigs. In view of the fact that all the tick species found on the pigs have been reported to infest humans (Aragão and Fonseca 1961, Fairchild et al. 1966, Labruna et al. 2000), these findings could have important implications for the potential transmission of tick-borne diseases to humans, because the pigs were in daily contact with humans. Although there is no available information regarding tick-borne pathogens infecting the *Amblyomma* species from the Amazon region, research is in progress to evaluate such possibility.

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