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## Low effective population sizes in *Amblyomma variegatum* in West Africa: implication for the sustainability of acaricide-based control programs

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Effective population sizes have rarely been estimated in ticks despite the importance of this parameter for evaluating the evolutionary and adaptive potential of tick populations. This work was aimed at evaluating the effective population sizes of *Amblyomma variegatum*. In addition to the direct losses it imposes on livestock, this tick is the main vector of *Ehrlichia ruminantium*, the agent of heartwater (cowdriosis) that induces up to 80% mortality in susceptible sheep and goats. The usage of acaricide footbaths seems as the most accurate way to protect livestock from all the deleterious effects of *A. variegatum*. The durability of such a protection would depend on the potential of *A. variegatum* to evolve acaricide resistances.

We developed microsatellite markers to estimate the effective population sizes of *A. variegatum* in three neighbor villages from Burkina Faso. As sampling involved two tick generations, effective population sizes were independently estimated by two methods insensitive to heterozygosity: the first one is based on linkage disequilibrium analysis within sampling while the second uses the changes in allele frequencies across generations. Both methods estimated the number of reproducing ticks as ranging from two to a few tens reproductive adults per village and cohort. Such small estimates plead for low probabilities of both apparition and selection for acaricide resistance mutants, a result congruent with the rarity of records of acaricide resistance in *A. variegatum*. This situation will be compared with that of the southern cattle tick *Rhipicephalus microplus* that show much larger effective population sizes and numerous reports of acaricide resistances. Meanwhile, we will also examine how the biology of *A. variegatum* can explain such low estimates in effective population sizes.