

## An update on the ecological distribution of the Ixodidae ticks in Zimbabwe

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**Abstract** In total 7657 ticks were collected from 121 dip tanks in 12 districts representative of Zimbabwe's five ecological regions between September 2013 and May 2014. Based on morphological traits four genera and 13 species of ticks were identified. *Amblyomma hebraeum* (60.3 %), *Rhipicephalus microplus* (58.7 %), *Rhipicephalus decoloratus* (47.1 %), *Rhipicephalus appendiculatus* (56.2 %), *Rhipicephalus evertsi evertsi* (67.8 %), *Rhipicephalus* (near) *punctatus* (13.2 %), *Hyalomma truncatum* (38 %) and *Hyalomma rufipes* (46.3 %) were found in all the ecological regions of the country. *Amblyomma variegatum* and *Rhipicephalus compositus* (0.8 %) were only found in the north central part of the country while *Rhipicephalus simus* (5 %) had a sparse distribution. The *Haemaphysalis leachi* group (1.7 %) and *Rhipicephalus sanguineus* (1.7 %) were found whenever dogs were sampled suggesting these could be widespread throughout the

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country. The study confirmed the continued limited distribution of *A. variegatum* (3.3 %) in the north central parts of the country, whereas *A. hebraeum* was found to have a wide distribution also encroaching areas of high rainfall and lower temperatures where it was not previously recorded. A parapatric relationship existed between these two *Amblyomma* species. *Rhipicephalus appendiculatus* was also widely distributed although its presence was dominant in the cooler and wetter parts of the country. The traditionally held view that *Hyalomma* species and *R. evertsi evertsi* can survive well under diverse conditions is upheld in this study. *Rhipicephalus microplus* was also present in dry regions but its adaptability to these regions requires further investigation.

**Keywords** Ticks · Ecology · Distribution · Zimbabwe

## Introduction

Ticks are the major veterinary pests parasitizing livestock in Zimbabwe with at least 60 % of all livestock mortalities being related to tick-borne and tick-related diseases (Department of Veterinary Service 2013, unpublished). Globally 867 tick species have been described with 10 % of these being of veterinary importance (Jongejan and Uilenberg 2004). In Southern Africa about 90 species of ticks have been described, 35 of these being associated with domestic animals and 15 being of economic importance (Spickett et al. 2011; Walker 1991). The major factors that affect distribution of ticks are environmental suitability (Cumming 1999) and the presence of suitable hosts (Tonnesen et al. 2004). Previous studies have attempted to describe and map the distribution of ticks in Zimbabwe (Mason and Norval 1980; Peter et al. 1998). However there is a need to continually update such information due to spatial and temporal changes which might influence tick distribution. Over the past 15 years, the Zimbabwean government has implemented a land reform programme which has resulted in changes in land use patterns. This will eventually have a cascading effect also on tick distribution as through livestock movements ticks would migrate to other areas in which they were not known to occur and if the environment is suitable they may become established in those localities (Léger et al. 2013). The *Boophilus* ticks commonly referred to as the blue ticks are ticks which are particularly affected by such movements, because as one-host ticks they remain for a long time on the animal from larva to adult, with females dropping off as engorged ticks to lay eggs on the ground and hence the chances of them moving with the animal are high. Recent studies have focused on the relationship that exists between this sub-group of the *Rhipicephalus* species and results have indicated that *Rhipicephalus microplus* is displacing other ticks of the same genus in West Africa, South Africa, Tanzania, Mozambique and more recently also in Namibia (De Clercq et al. 2012; De Matos et al. 2009; Lynen et al. 2008; Nyangiwe et al. 2013a, b). In Zimbabwe, Mason and Norval (1980) reported that the exotic *R. microplus* was displacing the autochthonous *Rhipicephalus decoloratus* in the eastern parts of the country with unconfirmed reports suggesting that because of the 1980–1983 drought *R. microplus* could actually have disappeared from the country (Norval et al. 1992), while subsequent research revealed that *R. microplus* was still limited to the eastern and northern parts of the country (Katsande et al. 1996) and that it could periodically spread into the interior areas of Zimbabwe (Smeenk et al. 2000). It still remains to be seen whether *R. microplus* has established in the interior of the country and whether it has displaced the local *R. decoloratus* ticks. Therefore the present study was carried out with a view of gathering preliminary information and empirical evidence on the distribution of ticks in