Ticks (Acari: Ixodidae) of the Blue and White Nile Ecosystems in the Sudan with Particular Reference to the Rhipicephalus sanguineus Group


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ABSTRACT


Twenty-four adult ixodid tick species, infesting livestock and some wildlife hosts along the Blue and White Nile in the Sudan, were identified. Three species, Boophilus geigyi, Rhipicephalus camicasi and R. bergeoni, were recorded for the first time from the Sudan. Tick numbers on indigenous breeds of cattle (Bos indicus) were relatively low, ranging between 1.7 and 40.5 per animal. Young cattle grazing with the herd carried significantly fewer ticks than older animals. With the exception of B. annulatus and R. simus, which have extended their distribution further north into Blue Nile, Gezira and Khartoum Provinces, the distribution patterns of the most important cattle ticks have been relatively unchanged over the past 30 years.

The Rhipicephalus sanguineus group was represented by six species. R. camicasi was the only species present on cattle, sheep and goats in the north in Kassala and Khartoum Provinces, whereas this species occurred sympatrically with R. guilhoni and R. turanicus further south in Gezira and Blue Nile Provinces. In the Southern Region of the Sudan only R. turanicus and R. guilhoni were present, the latter being by far the predominant species, with peak activity towards the end of the rains in the Jonglei Canal Area. R. bergeoni was collected once, from cattle near the Ethiopian
border in Blue Nile Province, whereas R. sanguineus sensu stricto was collected throughout the study area, from domestic dogs only. Finally, R. sulcatus was found once on a hare.

The distributions of the common tick species are correlated with the occurrence of tick-borne diseases of domestic animals and recommendations for the control of tick-borne diseases and their vectors in the Sudan are given.

INTRODUCTION

Since Hoogstraal’s (1956) major study on African Ixodoidea “Ticks of the Sudan with special reference to Equatoria Province”, relatively little systematic research on the distribution of ticks and tick-borne diseases in the Sudan has been carried out. Karrar et al. (1963) provided data on the tick fauna of livestock in Kassala Province with particular reference to the vector of heartwater, Amblyomma lepidum. Osman (1978) reported 20 tick species infesting domestic animals in Darfur Province and later (Osman et al., 1982) studied the ecological distribution of ticks on livestock in the Kordofan Region of the Sudan. Osman et al. stated that Rhipicephalus sanguineus group ticks were relatively numerous and extensively distributed, but some taxonomic confusion is apparent in their work.

Jonglei Province (as it existed at the time of this study, 1980–1982) in the Southern Sudan appeared to be among the least-studied areas in the Sudan. The ecosystem of this province is likely to be radically modified on completion of the Jonglei Canal Project (Anon., 1983), and baseline data on the tick fauna will be required in the planning of new integrated agricultural production systems.

In this paper the distribution and abundance of adult ticks infesting cattle are provided with emphasis on the ecosystems of the Blue and White Nile. The distribution of some important tick species is related to the prevalence of reported tick-borne diseases in the area. Finally, we aim to clarify the taxonomic status of ticks of the R. sanguineus group in the Sudan.

MATERIALS AND METHODS

Whole-body tick collections were made from domestic animals and wildlife hosts in selected areas of central and southern Sudan. Collections were preserved in 70% alcohol and examined under a stereoscopic microscope. Most ticks were identified by using the keys in Hoogstraal (1956) and those in Matthysse and Colbo (in press). R. sanguineus group ticks were identified according to the descriptions in Pegram (1979, 1984). In some cases female genital apertures were dissected, cleared in 5% KOH, mounted and examined.

In central Sudan the study area comprised the triangle between the White Nile and the Blue Nile, enclosing parts of Khartoum, Gezira and Blue Nile Provinces. The collection sites formed a transect running north–south from