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A NEW LOCALITY FOR THE SAND TAMPAN *ORNITHODOROS SAVIGNYI* (AUDOUIN) IN SOUTHERN AFRICA

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Abstract – A new locality for the sand tampan *(Ornithodoros savignyi)* in southern Africa is described. Sand tampans were found in the Nwambiya sandveld (22°31'S., 31°20'E.) in the northern sector of the Kruger National Park. Environmental conditions for the area is described. The possibility of an earlier linkage of the Nwambiya area with the arid western regions of southern Africa is raised in an attempt to explain this seemingly anomalous locality record.

Introduction

The geographical distribution of the sand tampan *Ornithodoros savignyi* in southern Africa has been documented by Theiler (1962). Since then the sand tampan has been found within the borders of the Kruger National Park (KNP), Republic of South Africa, which is far out of the range of the distribution pattern of Theiler (1962). This report documents this finding as well as associated environmental features of the locality.

Material and Methods

In order to attract and trap sand tampans an adaptation of the carbon dioxide (CO_2) method of Nevill (1964) was used. Instead of utilizing a cylinder or dry-ice as a source of CO_2 an apparatus was rigged up whereby concentrated hydrochloric acid (HCl) slowly dripped onto calcium carbonate ($CaCO_3$) in rock-form, in a flask. This was placed in a larger tin which was submerged flush with the rim in the soil (sand). The true sandveld areas of the KNP (Fig. 1) were surveyed in this manner.

Climatological data were taken from the meteorological station at Pafuri in the northern tip of the Park.

Identification of collected specimens was performed by the Veterinary Research Institute, Onderstepoort.

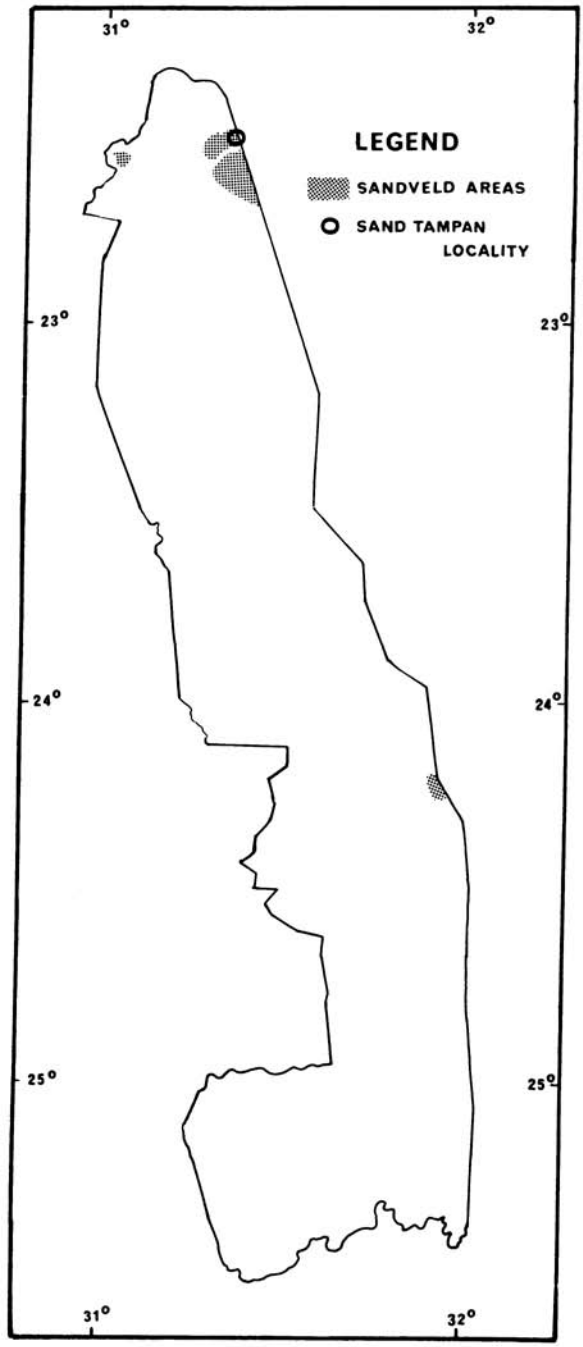

Fig. 1. Map of the Kruger National Park, depicting the true sandveld areas and locality of sand tampans.

Results and Discussion

Sandy areas in the KNP are but few and are rather localized. These areas are shown in Fig. 1. They were all monitored by the technique as described above, but only in the Nwambiya sandveld region (Fig. 1) was the presence of sand tampans detected.

The sand tampans were found not in the true Nwambiya sandveld region, but rather in a very localized focus in the marginal or transitional zone of this area (Fig. 1). This focus was situated along the communal border between the KNP and Mozambique and actually extended for an undetermined distance into Mozambique. On one occasion (1966) the border was traversed and sand tampans collected under a baobab tree *Adansonia digitata,* a few hundred metres inside Mozambique. This must therefore also be considered as the first report of the occurrence of *Ornithodoros savignyi* in Mozambique.

The soil of the Nwambiya and transitional zone consists of deep, loose red to yellow sand of which the origin has not been determined with certainty. Van Wyk (1972) conjectures on the possibility of it being related to the Kalahari sand, and it being transferred there by wind. This explanation is supported by the fact that similar deposits are found north of the Soutpansberg as well as in the south-west of Rhodesia.

The Nwambiya plateau is essentially a very uniform dense low shrub area with *Baphia massaiensis* subsp. *abovata* dominant. On the margin of this region larger trees like *Terminalia sericea* and *Guibourtia conjugata* predominate with shrubs covering the lower stratum. *Adansonia digitata* is a prominent, but associated feature of this area.

Sand tampans were only found in the immediate vicinity of the larger baobab trees where bare loose sand patches with little encroachment by shrubs or grasses were seen initially. The layer of sand was deep, but loose for the first few centimetres only.

Tampans were never caught in great numbers, the most being 231 in a six hour period. Compare this with 4 553 tampans after two hours in a heavily infested area from the Kalahari (Nevill 1964). In winter time nothing was caught. In later years a drastic decline in the population as reflected by catch records, was noticed. This could be ascribed to the change in climate which was experienced during subsequent years.

The rainfall figures, which was obtained seven km to the north of Nwambiya, indicate an average (33 year period) annual rainfall of 381,1 mm for the region, the winter being drier than the summer (Fig. 2). This still falls within the sand tampan preference limits as cited by Theiler (1962). Higher rainfall figures comfortably exceeding the uppermost limit was, however, experienced during the last decade, viz 1967: 469,1 mm, 1968: 568,5 mm; 1969: 478,1 mm; 1970: 270,7 mm; 1971: 376,3 mm; 1972: 694,8 mm; 1973: 328,9 mm; 1974: 700,3 mm; 1975: 598,0 mm; 1976: 655,5 mm; with an average of 514,0 mm for the 10-year period.

During this period vegetation became denser and ground coverage increased strikingly, even to the extent that the previously mentioned open

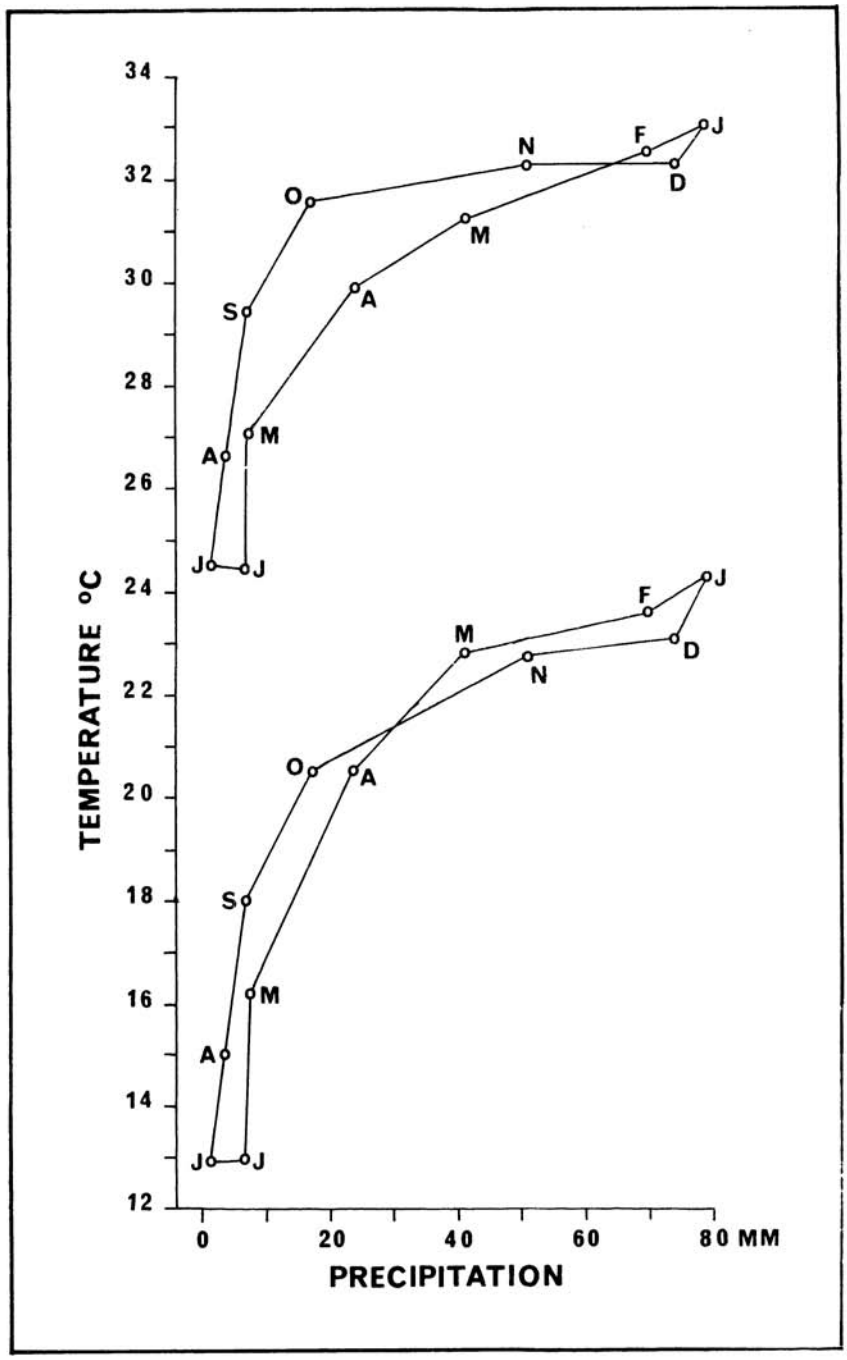

Fig. 2. Bioclimatogram of precipitation and monthly mean of daily maximum and minimum temperatures for Pafuri, Kruger National Park. Precipitation and temperature figures extend over 35 and 16 year periods respectively.

areas under the larger trees became virtually covered with grasses and forbs. The habitat of the tampans must have changed correspondingly, which probably explains their decline in the area.

The Nwambiya is the exclusive habitat in the KNP of Livingstone's suni *Neotragus moschatus,* the yellow golden mole *Calcochloris obtusirostris* and several lower vertebrate species. Spring hare *Pedetes capensis* are plentiful and the resident ungulate fauna include buffalo *Syncerus caffer,* sable antelope *Hippotragus niger,* kudu *Tragelaphus strepsiceros,* nyala *Tragelaphus angasi,* zebra *Equus burchelli,* eland *Taurotragus oryx,* roan antelope *Hippotragus equinus* (rarely), steenbok *Raphicerus campestris,* Sharpe's grysbok *Raphicerus sharpei,* grey duiker *Sylvicapra grimmia* as well as elephant *Loxodonta africana* and warthog *Phacochoerus aethiopicus* (Pienaar 1963). These animals must be considered the main source of food for the tampans in this area.

Theiler (1962) showed an essentially western arid distribution pattern for the sand tampan in southern Africa. This easterly Nwambiya locality record does not fit in with this general pattern. The only possible way in which it can be explained is that the KNP *cum* Mozambique population forms a remnant of an earlier wider distribution, or an earlier linkage of the western arid conditions with the Nwambiya region. Balinsky (1962), in discussing tertiary and quaternary climatic changes pointed out the existence in Africa at different times of a "drought corridor" running across the continent from south-west to north-east. He further stated that "during cold and wet periods the rain forests must have expanded and closed the "drought corridor" completely or at least narrowed it still further, enabling the animals of the wet tropics to migrate from west to east (and from east to west). During hot and dry periods, the drought corridor would have expanded allowing Kalahari and even desert conditions to surge in, linking more closely the arid south-west with the Somaliland arid area, thus accounting for the close links in the fauna of these areas . . ." The existence of a number of common floral and faunal elements between the arid western and Nwambiya regions (Van Wyk 1972; Pienaar 1970; Pienaar, Fitzsimons and Broadly, in press) favours this theory of an earlier corridor. The occurrence of the sand tampan must be considered as yet further corroborative evidence.

Acknowledgements

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