A CULICINE MOSQUITO SURVEY OF THE KRUGER NATIONAL PARK*

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Resumé: The results of a Culicine mosquito survey of the Kruger National Park are discussed and presented in three tables. Possible vectors of Yellow fever encountered were: *Aëdes (Stegomyia) aegypti L., A. (S.) metallicus* Edw., *A. (S.) vittatus* Big., and *A. (Diceromyia) furcifer* Edw. Of further interest is what appears to be the first record of the genus *Orthopodomyia* in Africa south of the Sahara.

1. *Object of the Survey:*

Information is being compiled on the distribution and density of Culicine mosquitoes on the South African sub-continent by the Plague Research Laboratory, in collaboration with the Council for Scientific and Industrial Research, and the South African Institute for Medical Research. The mosquito survey of the Kruger National Park was carried out as part of a larger field expedition planned also to determine the rodent species, their fleas and other ectoparasites in the area, and was carried out from the 12th to the 30th April 1953.

Although the object of the survey was to determine the species of Culicine mosquitoes present in the Park, some Anophelines were caught with the methods used and therefore are also listed.

2. *Description of the Area Surveyed:*

The Kruger National Park is a narrow rectangular-shaped strip of country which lies on the Eastern borders of the Transvaal (Long. 31° to 32° E. and Lat. 22° to 25° 30′ S). In size it is about 40 miles wide and 220 miles long, with flanks throughout its eastern boundary onto the Lebombo Hills and onto the Portuguese Province of Mocambique.

The whole Park with the exception of the prominence known as Pretorius Kop is a low-lying rolling plain with altitude varying from 500′ in the south to 1500′ in the north. Six rivers traverse the area. Five of these, Luvuvhu, Crocodile, Letaba and Olifants are large permanent streams, while the Shingwidzi becomes dry periodically.

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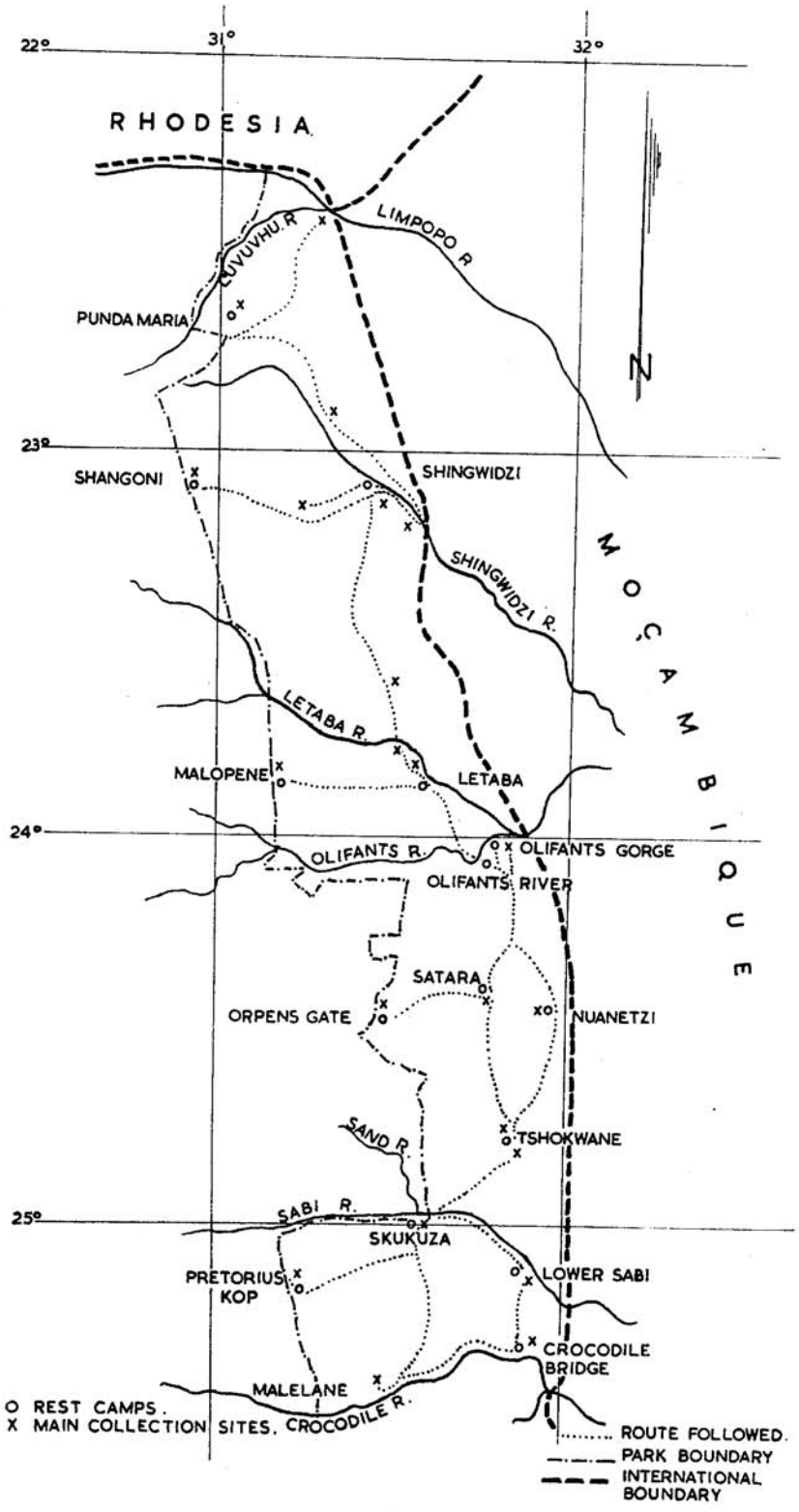
FIGURE 1.


22°
31°
32°
RHODESIA
LUVUVHU R.
LIMPOPO R.
PUNDA MARIA
N
23°
SHANGONI
SHINGWIDZI
SHINGWIDZI R.
MOÇAMBIQUE
LETABA R.
MALOPENE
LETABA
24°
OLIFANTS R.
OLIFANTS GORGE
OLIFANTS RIVER
SATARA
ORPENS GATE
NUANETZI
SAND R.
TSHOKWANE
25°
SABI R.
SKUKUZA
PRETORIUS KOP
LOWER SABI
CROCODILE BRIDGE
MALELANE
CROCODILE R.
O REST CAMPS.
X MAIN COLLECTION SITES.
ROUTE FOLLOWED.
PARK BOUNDARY
INTERNATIONAL BOUNDARY

The soils have mainly been derived from lavas of the Karoo System (Lebombo Hills) and granites. The lavas have produced the rich loams and clays of the east, while weathering of the granite has produced the coarse red sandy loams of the west.

Bushveld savanna of varying height and density covers the entire area. Codd (1951) defines five regions: (1) the large-leaved deciduous *Combretum terminalia-Sclerocarya* open woodland of the Pretorius Kop area; (2) the mixed *Combretum apiculatum* veld of the western half of the Park northwards to the Olifants River; (3) *Acacia nigrescens-Sclerocarya* parklands of the eastern half of the Park northwards to the Olifants River; (4) a large tract of *Copaifera mopani* woodland, varying widely in height and density stretching from the Olifants River northwards to Punda Maria; and (5) a small area of sandveld vegetation between Punda Maria and the Luvuvhu River boundary.

Our attention was largely confined to the *Acacia nigrescens-Sclerocarya* parkland of the south-east and the Mopani woodland north of the Olifants River, while some work was carried out in each of the other regions.

The climate can be described as hot and dry with summer rainfall. Rainfall is usually in the form of thunderstorms resulting in considerable run-off from the soil surface. Average rainfall from Punda Maria to Satara is between 15″ and 20″ per annum. From Satara to the southern boundary the average rainfall is between 20″ and 25″ per annum. Pretorius Kop receives just over 30″ and Punda Maria with its surrounding hills, between 20″ and 25″ per annum (Union of S.A., 1948).

Temperature varies widely from near freezing-point in winter to over 100°F in summer. Isotherms run more or less parallel to the altitude contours of the Park. Mean temperatures are as follows: January (mid-summer); Maximum: 75° to 80° F in the western two thirds of the Park, and 5° F higher in eastern third. July (mid-winter): Maximum: 60° to 65° F over the whole area. The annual mean is 70-75° F throughout the Park (Union of S.A., 1942).

3. *Results of the Survey:*

Table 1 is a summary of all mosquito species taken during the survey; table 2 shows the localities where specimens were found according to the locus system used by Davis (1948); while table 3 is an analysis of breeding and resting places of specimens caught, according to species. Figure 1 shows the route taken through the Park.

A total of 907 mosquitoes was obtained. The majority, 799, were larvae, while 108 were adults. Four genera comprising 25 species were found consisting of three species of *Anopheles*, one of *Orthopodomyia*, twelve of *Aëdes* and nine of *Culex*.

The *Orthopodomyia* species collected in the Kruger National Park appears

Table 1. Summary of all mosquito species found.

Species.	Larvae	Adults	Totals
Anopheles coustani	4	—	4
Anopheles rufipes	2	4	6
Anopheles squamosus	7	1	8
Orthopodomyia sp.	48	1	49
Aëdes fulgens	155	30	185
Aëdes aegypti	66	20	86
Aëdes metallicus	92	11	103
Aëdes calceatus	21	18	39
Aëdes unilineatus	44	5	49
Aëdes vittatus	5	—	5
Aëdes marshalli	220	10	230
Aëdes haworthi	2	—	2
Aëdes dentatus	—	1	1
Aëdes ochraceus	12	1	13
Aëdes lineatopennis	—	1	1
Aëdes furcifer	69	—	69
Culex tigripes	1	—	1
Culex horridus	—	2	2
Culex nebulosus	2	—	2
Culex ethiopicus	—	1	1
Culex annulioris group	3	—	3
Culex theileri	5	—	5
Culex univittatus	2	2	4
Culex simpsoni	18	—	18
Culex decens	21	—	21
Totals	799	108	907