

7 STUDIES OF THE DISTRIBUTION AND  
SOME BEHAVIOUR ASPECTS OF AFRICAN  
HONEYBEES IN KENYA. 11

By

JOHN STEPHEN KING 'ANG' I MBAYA

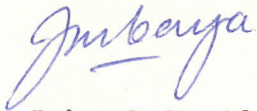
THIS THESIS HAS BEEN ACCEPTED FOR  
THE DEGREE OF..... M.Sc. 1981.....  
AND A COPY MAY BE PLACED IN THE  
UNIVERSITY LIBRARY,

A thesis submitted in part fulfilment  
for the degree of Master of Science  
in the University of Nairobi.

August 1981

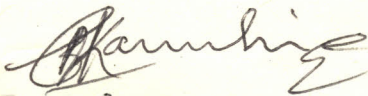
DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.



John S.K. Mbaya

This thesis has been submitted for examination with my approval as University Supervisor.



Dr. G. Karuhize

## SUMMARY

Beekeeping in Kenya is an old enterprise practised by several tribes. Traditional beekeepers kept honeybees in log hives or hunted for honey from hollows in rocks and tree trunks hence producing low quality honey which could not earn the beekeeper an attractive income. The Kenya government realising the importance of the industry set up a beekeeping section to improve its economic importance by studying the honeybee biology and management techniques.

The present work was designed to study the types or races of honeybees prevailing in Kenya and their defensive and foraging activities so as to form a basis for future breeding work. Samples were collected from all over the country. Ten bees were randomly picked from each sample and ten morphological characteristics, the lengths of the proboscis and femur, colour, width and distance of wax mirrors of the third abdominal tergite; width and wing venation angles of the forewing and the cubital and tomentum indices, were measured. The results revealed that some of

the above characteristics showed significant differences from one region to the next and varied with altitude, temperature and vegetation. The proboscis length, the colour, tomentum index and wing width showed the largest variations and were thought most adaptive and from their values, four geographical varieties of honeybees could be separated. These included the most yellow and the smallest Northern Dry region bees similar to Apis mellifera nubica previously reported in Southern Sudan by Ruttner (1976). The small yellow coastal bees similar to Apis mellifera littorea reported earlier in Tanzanian Coast by Smith (1961); the darker yellow grassland plateau bees similar to Apis mellifera scutellata reported in East, Central and South Africa by Ruttner, 1976 and the large dark highland bees similar to Apis mellifera monticola reported in Tanzanian highlands by Smith (1961).

During the comparison of the defensive and foraging activities of highland and coastal colonies, it was found that, the guard bees attack black discs of  $2^{\circ}$  -  $8^{\circ}$  with most attacks on disc  $4^{\circ}$ . The foragers and guard bees commence their flights very early in the morning, before sunrise (5.45 a.m in

average). The activity increased as the temperature increased during the day. The defensive activity in both colonies showed two maxima between 9 and 10.00 a.m and <sup>between</sup> 2 and 3.00 p.m after which it declined towards the evening. The foraging activity increased in the morning reaching a maximum at 1.00 p.m after which it declined to a halt just after sunset (6.45 p.m in average). The Coastal colony showed a higher activity in each case, indicating that they were more active than the highland colonies.

From these observations, colonies should be manipulated later in the day, between 4.00 and 6.00 p.m, when their defensive activity is declining and there is still enough sunlight. For future breeding work, crosses between the coastal and highland stocks may produce a more productive but less defensive hybrid stock.