NOTES ON THE HABITS OF GLOSSINA FUSCA.

By J. B. DAVEY, M.B. (Lond.), D.T.M. (Liverpool),

Medical Officer, Nyasaland Administration.

Much attention has recently been devoted to the habits of Glossina palpalis, but G. fusca, which I have had the opportunity of observing and collecting in several localities in Nyasaland, has received little notice; the latter has long been known to be most active in the evening, but further points in its habits have come to my notice, and they appear to be worth recording.

Localities in Nyasaland where G. fusca occurs.

There are two places in Nyasaland where, for some years, G. fusca has been known to occur, viz. (1) near Masinjiri's village, in the Elephant Marsh, near the Lower Shire River: they were, I believe, first found here by Major Pearce, Acting Governor of Nyasaland; (2) at Kaporo, near the north end of Lake Nyasa, where Dr. J. E. S. Old discovered them. Some years ago Mr. Crawshay reported them from near the South Rukuru River, but attempts to find them there recently have not been successful. One or two specimens are also said to have been captured near Monkey Bay. Recently, in travelling down Lake Nyasa by boat, I encountered G. fusca at five places in the Marimba and Central Angoniland districts near the lake shore.

Numerical Distribution.

At Masinjiri's and Kaporo I have found the flies numerous on all of several visits, and there was little difficulty in collecting a score or more in an evening. In the Marimba and Central Angoniland districts, five (three males, two females) was the maximum number found at any one place, although several hours were spent in searching for them in some instances.

G. fusca would appear then to occur under two conditions: firstly, in considerable numbers over a limited area—they do not seem to extend over wide tracts of country as does G. morsitans; they may be found evening after evening occupying almost precisely the same stretch of road or path, as at Masinjiri's and Kaporo, where they occur along about a thousand yards of path. Secondly, in very small numbers, as in the localities near the Marimba and Central Angoniland shores of the lake. It should, however, be observed that Masinjiri's and Kaporo were visited in the dry, the other places in the wet, season.

Nature of the Country.

In all the places, excepting one referred to below, there is abundant shade and, in most, there is a considerable growth of creepers in addition to the usual young forest trees; it was observed that the *G. fusca* were most numerous under the largest trees. There is water close at hand in all cases; in the lake districts *G. fusca* was usually found within six hundred yards of the lake and, at more than one place where *G. morsitans* was also found, one noticed that the latter occupied the country further from the lake than *G. fusca*; on one occasion, however, both were caught within a few yards of one another.

At one place in Marimba district a single specimen of *G. fusca* was caught about 7 A.M., a few yards from the lake, amongst some "bango" reeds, and, at this place, there were but three or four stunted trees within a mile of the lake, the country being open grassy plain.

On another occasion a single specimen was caught settling on the finger of a native standing under a tree in the middle of a small village, the huts composing which were somewhat scattered amongst palms and other trees.

All the localities in which *G. fusca* was found are relatively low-lying, Masinjiri’s being about 300 and the lake about 1300 feet above sea-level.

Time of Activity.

*G. fusca* is extremely difficult to find, except in the evening and very early morning. About 4 P.M. it seems to emerge from its hiding place and settle on dried leaves, sticks or dust on paths, apparently lying in wait for a meal. I have noticed that game, on its way to water in the evening, often stands for a time on emerging from the forest on to a path, and would thus afford the fly an opportunity for feeding. As a rule, *G. fusca* seems ready to bite human beings in the evening, but it does not set to work with the rapidity and voracity that *G. morsitans* often exhibits. I have noticed, as did also the natives with me, that both *G. morsitans* and *G. fusca* often preferred to settle on my kakhi shirt rather than on the bare legs or back of the native, but the former, when in a voracious mood, would settle direct on some bare part of myself or a native and begin to bite almost immediately.

In the very early morning *G. fusca* has been observed flying about and apparently taking its departure to its day haunts.

At Kaporo, where *G. fusca* is fairly numerous, I succeeded, after some trouble, in finding it in the middle of the day. It then was resting on tree-trunks, 2 or 3 feet from the ground, and was difficult to detect and capture, as it selected trees surrounded by creepers and undergrowth, and hid away in crevices in the bark or under the origin of branches. It appeared to rest motionless until disturbed, when it quickly flew round to the other side of the tree or to an adjoining tree, never going far, and making no attempt to
HABITS OF GLOSSINA FUSCA.

settle on and bite one. There were none to be found at their usual evening haunt on the path, which was only a few yards distant. *G. fusca* rests with the head directed upwards or downwards and raised off the tree-trunk by the legs: the abdomen, at its hinder part, almost touches the tree; sometimes it moves sideways on its legs round a tree-trunk on seeing an intruder approach. One pair was observed *in coitu* on a tree at midday, the terminal abdominal segment of the male, which was on the back of the female, being curved round the terminal segment of the latter; at intervals the male made a rapid vibratory movement of the wings: the wings of the female were slightly abducted from the body. They were so firmly locked that one was able to capture and kill them without causing separation. Attempts to find larvæ and pupæ by digging round the bases of various trees were unsuccessful.

Relation to Game.

At all places where *G. fusca* was found, game (antelope, warthog, etc.) was abundant. On one occasion, after searching for tsetse for some time without success, I came upon and shot two bush-pigs about sunset, and on going up to them found several *G. fusca* alighting upon and apparently trying to suck blood from the pigs. This was in the wet season. One female extruded an immature larva on capture.

Relation of the Sexes.

Of 117 *G. fusca* captured at Kaporo in the evenings in August (dry season), all were males. Seven were captured at the same place and time of year about midday, and of these four were males and three were females.

Trypanosomes in the Abdominal Contents.

Twenty-two males were examined: in two, very numerous trypanosomes, resembling *T. grayi*, were found; in the others examination gave a negative result.

[To the above valuable and interesting account of the habits of *G. fusca*, it may be well to add the following notes recently received from Dr. E. H. Allon Pask, Medical Officer, Dowa, Nyasaland:—“*G. fusca*. Lake shore, between Mkula River and Chima River; collected 18.iii.10, on native path and in village, 7–9 A.M., sandy soil, scant vegetation, and also in track through high grass, scantily wooded. Edge of Lake Nyasa about 400 yards away; in other places further still; separated from water by high reeds. Wet season. Found in association with *G. morsitans*. Fly not numerous, about a dozen *G. fusca* caught and two *G. morsitans*.” And again: “*G. fusca*. Lake shore, mouth of Lingadni River, collected 19.iii.10, in a village; one
caught at 4 P.M. and one after sunset (biting a native). Fairly thick forest surrounding village; about half a mile from water's edge. Wet season. No other species of Glossina caught, but G. morsitans plentiful a mile away. Goats are kept in the village. Only two specimens obtained here."

In a letter received from Mr. S. A. Neave as this goes to press, he states that he has taken one specimen of G. fusca on the Muwona stream, some ten miles north of Chiromo. He considers it highly probable that this species occurs throughout a wide area in Nyasaland, but that owing to the small numbers in which it occurs in any one spot, it is frequently overlooked unless a prolonged search is made.

The only place south of the Zambesi in which G. fusca is at present known to occur is Bamboo Creek, on the Beira Railway, where it was taken by Mr. Lt. E. W. Bevan.

In view of the possibility that this species may prove to be a carrier of sleeping sickness any details as to its occurrence or habits are of importance, especially as regards Nyasaland and Rhodésia.—Ed.]