

SIMULIUM

(DIPTERA NEMATOCERA)

Fam. SIMULIIDÆ.

BY

P. FREEMAN (London).

The collection reported upon here was sent to me for study through the kindness of Pr. V. VAN STRAELEN, President of « Institut des Parcs Nationaux du Congo Belge », who had heard that I was preparing a revision of the Ethiopian species of *Simulium*, in collaboration with Dr. BOTHA DE MEILLON of South African Institute for Medical Research. When that revision is eventually published the species dealt with here will be treated at much greater length.

There are 74 specimens in this collection belonging to at least eight species of *Simulium*. It is unfortunate that 48 of the specimens are females, in not very good condition, belonging to the group of small dark species with golden scales on the thorax and a dark basal mark on the tibiae. This species group includes *S. unicornutum* POMEROY and *S. duodecimum* GIBBINS and a number of others, the females of which are practically inseparable.

The localities between [] are without the Park's region.

Genus **SIMULIUM** LATREILLE.

About 100 species have been described from the Ethiopian Region, falling in general into fairly well defined species groups based on the structure of the male genitalia and pupal respiratory filaments. At the moment it appears probable that a proportion of the described species are really pupal forms of other species : it is hoped to be incorporated further information on this point in the main revision of the Ethiopian species.

Simulium dentulosum ROUBAUD.

Simulium dentulosum ROUBAUD, 1915, Bull. Soc. ent. France, pp. 294-295.
Simulium gilvipes POMEROY, 1920, Ann. Mag. n. Hist., **6**, (9), pp. 75-76.
Simulium ruwenzoriensis GIBBINS, 1934, Trans. R. ent. Soc. Lond., **82**,
 pp. 63-70.

DISTRIBUTION :

Mission G. F. DE WITTE : Rutshuru (r. Musugereza), 1.100 m, 9.VII.1935,
 1 ♀; Ruhengeri (riv. Penge), 1.800-1.825 m, 4-5.X.1934, 1 ♀.

Mission H. DAMAS : Kalondo (Kivu), 1.750 m, 6-9.VIII.1935, 2 ♀ ♀.

S. dentulosum is a large distinctive species with toothed claws in the female and a patch of silvery scales on the pleural membrane. It does not bite man but can be very troublesome because of its habit of swarming around the head and crawling into the hair, ears, and eyes. Other records in the literature are : Abyssinia, Mt. Kenya, Mt. Elgon, Ruwenzori Range, Cameroons (Bangan), S. Rhodesia (Melsetter and Umtali), Cape Province.

Simulium damnosum THEOBALD.

Simulium damnosum THEOBALD, 1903, Rep. Sleeping Sickness Comm., III,
 London, p. 40.

DISTRIBUTION :

Mission G. F. DE WITTE : May-ya-Moto, 950 m, 9.X.1934, 2 ♀ ♀; Kanyabayongo (Kabasha), 1.760 m, 7.XII.1934, 1 ♀; Rutshuru (environs du poste), 1.285 m, 18-23.VI.1934, 1 ♀; [Uele : Monga (riv. Bili), 450 m, 18.IV-8.V.1935, 1 ♀].

This is the best known of the Ethiopian species and is a vicious man-biter; it is responsible, so far as is known, for most of the onchocerciasis in Africa — the other species acting as a vector, *S. neavei* ROUBAUD, having a more restricted distribution. It has a wide distribution in Africa, and, although it is a pest in many regions, in other places it appears not to bite man but to confine its attentions to other animals and to birds. Where it does bite, it prefers the legs and lower regions of the body.

It is readily distinguished from all other known African species by the great enlargement of the anterior tarsi.

Simulium elgonense GIBBINS.

- Simulium elgonense* GIBBINS, 1934, Trans. R. ent. Soc. Lond., **82**, pp. 91-94.
Simulium tisiphone DE MEILLON, 1936, Publ. S. Afr. Inst. med. Res., **7**, pp. 210-212.
Simulium loangolense ROUBAUD et GRENIER, 1943, Bull. Soc. Path. exot., **36**, pp. 292-299.

DISTRIBUTION :

Mission G. F. DE WITTE : Ruhengeri (riv. Penge), 1.800-1.825 m, 4-5.X.1934, 1 ♀.

It is probable that this well known species should be considered as a form of *S. medusæforme* POMEROY. The only adult difference between the two species lies in the grey tomentose pattern on the female thorax, in *medusæforme* there are four grey areas separated by three black stripes, in *elgonense* the two central grey areas are short, so that the centre of the mesonotum is occupied by a dark area. In every other respect the adults, of both sexes, of the two species are identical. The pupæ may be separated because the central primary filament of the respiratory organ of *elgonense* is forked whereas that of *medusæforme* is simple.

If *elgonense* is reduced in status to a form of *medusæforme* then two other species, *africanum* GIBBINS and *hargreavesi* GIBBINS will also automatically be reduced to the same status.

Neither *elgonense* nor *medusæforme* is known to bite man. *Medusæforme* was stated by SCHWETZ (1930, Ann. Soc. Belg. Méd. trop., 10, p. 18, and again in later papers) to have attacked both himself and natives in his caravan in the village, of Bas-Lomami (Stanleyville); re-examination of his specimens has shown them to be *S. albivirgatum* WANSON et HENRARD, a species not described at the time SCHWETZ was writing.

S. elgonense is widely distributed and common over most of Africa, being recorded from the Sudan to the Cape and across to Sénégal.

Simulium adersi POMEROY.

- Simulium hirsutum* var. *adersi* POMEROY, 1921, Bull. ent. Res., **12**, p. 459.
Simulium adersi GIBBINS, 1934, Trans. R. ent. Soc. Lond., **82**, p. 56.

DISTRIBUTION :

Mission G. F. DE WITTE : Kalondo (lac Ndalaga, Mokoto), 1.750 m, 22-27.III.1934, 1 ♀.

This specimen is very rubbed but probably belongs to this species.

Simulium adersi is another widely distributed species and is of some interest because it was found by GIBBINS breeding in lake Victoria. He

found the pupæ attached to rocks along the shores of islands in the lake; here they were subject to wave action which produced a habitat similar to a stream.

Like *S. dentulosum*, it has a patch of scales on the pleural membrane and toothed claws in the female, but there the resemblance ends as they belong to quite different species groups on male genital and pupal characters. GIBBINS records it biting on the islands of lake Victoria, but there are no other records of it biting man and it is not generally recognised as a noxious species.

***Simulium cervicornutum* POMEROY.**

Simulium cervicornutum POMEROY, 1920, Ann. Mag. nat. Hist., 6, (9), pp.73-75.

DISTRIBUTION :

Mission G. F. DE WITTE : Rutshuru, 1.285 m, 28.VII.1933, 1 ♀; lac Magera, 2.000 m, 26-27.II.1934, 1 ♀.

These two specimens are probably referable to this species, but being females, they are not easy to separate from allied species, especially as their condition is poor.

***Simulium duodecimum* GIBBINS.**

Simulium duodecimum GIBBINS, 1936, Trans. R. ent. Soc. Lond., 85, pp. 223-227.

DISTRIBUTION :

Mission G. F. DE WITTE : Rutshuru, 1.285 m, 23-25.XII.1933, 1 ♂.

Only this one specimen, being a male, can be referred to this species with any degree of certainty. Doubtless, a number of the females mentioned below also belong here, but in the absence of reliable characters it is not possible to separate them from *unicornutum*, *rotundum*, and others.

It is recorded from the Kasai district of Belgian Congo, Ruanda-Urundi, Uganda and Kenya.

***Simulium unicornutum* POMEROY.**

Simulium unicornutum POMEROY, 1920, Ann. Mag. nat. Hist., (9), 6, p. 79.

Simulium wolfsi WANSON et HENRARD, 1944, E. Afr. med. Journ., 21, pp. 38-39

DISTRIBUTION :

Mission G. F. DE WITTE : Rutshuru, 1.285 m, 23-25.XII.1933, 1 ♂.

Again, only this one specimen can be referred to this species with any degree of certainty, but it is certain that many of the females mentioned below will belong here.

This is one of the commonest species of this group; the female mesonotum is dark and covered in good specimens with scales which vary from golden to coppery, the abdomen has golden scales on the basal segments and dark ones on the remainder which is shining; leg colour is variable, the femora may be all brown or they may be yellow with brown tips, similarly the tibial colour varies but there is usually distinguishable a dark mark near the base as well as the apical darkening. Unfortunately these characters apply equally well to *rotundum*, *duodecimum* and others, rendering them very difficult species to deal with, unless males or pupae are available.

The distribution of the females of doubtful identity is as follows :

Mission G. F. DE WITTE : May-ya-Moto, 950 m, 9.XI.1934, 1 ♀; Burunga (Mokoto), 2.000 m, 9-19.III.1934, 11 ♀♀; Rwindi, 1.000 m, 20-24.XI.1934, 2 ♀♀; escarpement de Kabasha, 1.500 m, 12.XII.1934, 9 ♀♀; Kanyabayongo (Kabasha), 1.760 m, 7.XII.1934, 4 ♀♀; Rutshuru, 1.285 m, 2-3.I.1934, 1 ♀; 11.VII.1934, 3 ♀♀; 23-25.XII.1933, 2 ♀♀; Rutshuru (riv. Rutshuru), 1.000 m, 3.VII.1935, 1 ♀; Rutshuru (riv. Rodahira), 1.200 m, 1.VII.1935, 2 ♀♀; Rutshuru (Buhanya), 1.200 m, 6.VII.1935, 2 ♀♀; Rutshuru (riv. Kanzarue), 1.200 m, 15.VII.1935, 1 ♀; Rutshuru (riv. Fuku), 1.250 m, 2.VII.1935, 1 ♀; Kalondo (lac Ndalaga, Mokoto), 1.750 m, 22-27.III.1934, 3 ♀♀; [Uele : Monga (riv. Bili), 450 m, 18.IV-8.V.1935, 2 ♀♀]; Burunga, Ouest Kamatembe, 2.000 m, 9-20.III.1934, 3 ♀♀.

***Simulium rotundum* GIBBINS.**

Simulium rotundum GIBBINS, 1936, Trans. R. ent. Soc. Lond., **85**, pp. 241-242.

DISTRIBUTION :

Mission G. F. DE WITTE : Luofu, 1.700 m, 10.XII.1934, 2 ♂♂, 8 ♀♀.

These ten specimens were the only ones caught in this locality, and as both the males belonged to *S. rotundum*, it seems probable that the females belong to the same species.

The species is very similar to *unicornutum* and, like it, is very wide spread. The curious barrel-shaped respiratory filaments of the pupa, closed at both ends in a perfect specimen, have the same honey-comb surface structure as have the filaments of *unicornutum*. The only difference between the adults appears to be the shape of the ventral plate of the male genitalia, which is more or less « shouldered » in *unicornutum* but smoothly rounded in *rotundum*.