

**Contribution to the Knowledge of West African Chironomidae  
(Diptera - Nematocera).  
Chironomids from the Guinean Republic**

by

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Using a light trap, six samples of chironomid imagines have been collected in the Guinean Republic. The catches are analysed in order to establish the geographical distribution of these insects within the African continent, based on previously known and newly gathered information in that field. In so far as these samples have been collected in the northern area of the State, the identified species belong to the sahelo-soudanian chironomid fauna. No new or endemic species have been identified among the 41 taxa captured.

According to the sampling period (low water levels and general dryness of the country) the specific densities of each sample are low but their specific diversity can be considered to be high.

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Despite their obviously important function in tropical aquatic ecosystems, and despite their role as a substantial food source for numerous entomophagous fishes, the African chironomids remain a little studied or even unstudied group. Accurate identification of larval and pupal stages requires the reconstitution of the whole developmental cycle by means of controlled rearings. This is not always successful and is very time consuming.

Catches of adults can be carried out more easily by using light traps during the course of other hydrobiological works. Even if such studies do not lead to a great advancement in African chironomidology, they at least provide a better knowledge of the geographical distribution of these Diptera on a continent where information in that field is very scarce.

Of the numerous collections made in West Africa in recent years in the course of various hydrobiological studies those made in the Republic of Guinea are analysed here and the results presented on the following pages. The present work



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follows notes previously published on the same topic (Dejoux, 1973, 1976) in an attempt to advance the knowledge of the African entomofauna.

### PREVIOUS KNOWLEDGE OF GUINEAN CHIRONOMIDS

To our knowledge, only three species of chironomids have been recorded from the Republic of Guinea until now (Kieffer, 1918). They are the following ones:

- *Chironomus scotti* Kieffer
- *Rheotanytarsus guineensis* (Kieffer)
- *Pseudosmittia guineensis* (Kieffer)

It is almost certain that this scarce material came from accidental collections not made in order to study these Diptera.

We previously mentioned (Dejoux, 1976) that probably at least one hundred different species of chironomids occur in each African State. Therefore, it is not surprising that present collections allow us to list numerous as yet unrecorded taxa in that part of Africa.

### METHODS

The collections considered here were made with a very rudimentary light trap. It consisted of a simple gas camping lamp placed in the middle of a white enamel plate 30 x 40 cm large and containing a little water with a small amount of washing powder. This detergent reduces the water surface tension, so that when insects attracted by the light and more or less stunned by the heat of the lamp fall down onto the plate they immediately sink.

After one or two hours of trapping the content of the plate is passed through a sieve to remove the insects. They are preserved in small vials containing 70% alcohol.

The attraction radius of that simple and cheap trap is in the range of a hundred meters in an open area but can be reduced to 5 to 10 meters in gallery forest. In all cases, the samples can only be considered to be representative of the fauna living in the close surrounding biotopes. However, one must keep in mind that a light trap like this is not nearly as attractive for Orthocladiinae as is a CDC light trap or other vapour lamps.

### THE SAMPLING SITES

Collections were made in six different localities distributed from East to West, all over the country. Their accurate positions are on fig. 1. Some precisions about the types of biotope are presented below.

#### Site G 1

The collection was made on the Sankarani river, an affluent of the Niger, on the 20.III.1980. The sampling place was located on riffles bordered on both sides by deep and slow moving river sections. The discharge was low and the rocks were thickly covered by a small phanerogam: *Tristicha trifaria*. Water transparency was more than 2 meters.

This site is close to the Tiriro village, which is about 30 km south of Mandiana, in the eastern part of Guinea.

#### Site G2

Located on the Milo, a right affluent of the Niger, this site is close to the village of Boussounou, about 40 km South of KanKan, on the Kissidougou road. The river is very large and the transparency was about 3 meters on the sampling date (21.III.1980). The sample was collected in a shallow area covered with small stones, in a fast flowing section, very rich in aquatic invertebrates.

#### Site G3.

The studied catch comes from the Niger. Trapping was done at the level of a submersible section of a road crossing the river. The place is called Diaraguella and is located about 10 km south west of Kouroussa on the way to the Gbafara rapids. At this place, the river is large and very shallow, the bottom is sandy and the water is clear (transparency greater than depth). At the sampling date (22.III.1980) there was a slight water acceleration at the level of the pipes crossing under the road.

#### Site G4.

The high basin of the Senegal river has been sampled on the 23.III.1980 near the Sokotoro bridge on the Dabola - Mamou road. The Senegal, which is there called Bafing, is still a narrow river, flowing across a rocky area. Immersed flat stones are heavily colonized by *Tristicha trifaria* but invertebrates are quite scarce, probably because of the washing activities of numerous people coming from a big village located near the Sokoto bridge.

#### Site G5.

Located on the Konkoulo, near Pita, this site sampled the 28.IV.1980 was strongly polluted by domestic effluents coming from a small village established upstream. Little water was flowing on the flat stones which were covered with sticky algae. There was much organic detritus accumulated in the rockpools and in the standing water sections of that small river. The poorness of our catch is certainly related to that pollution.

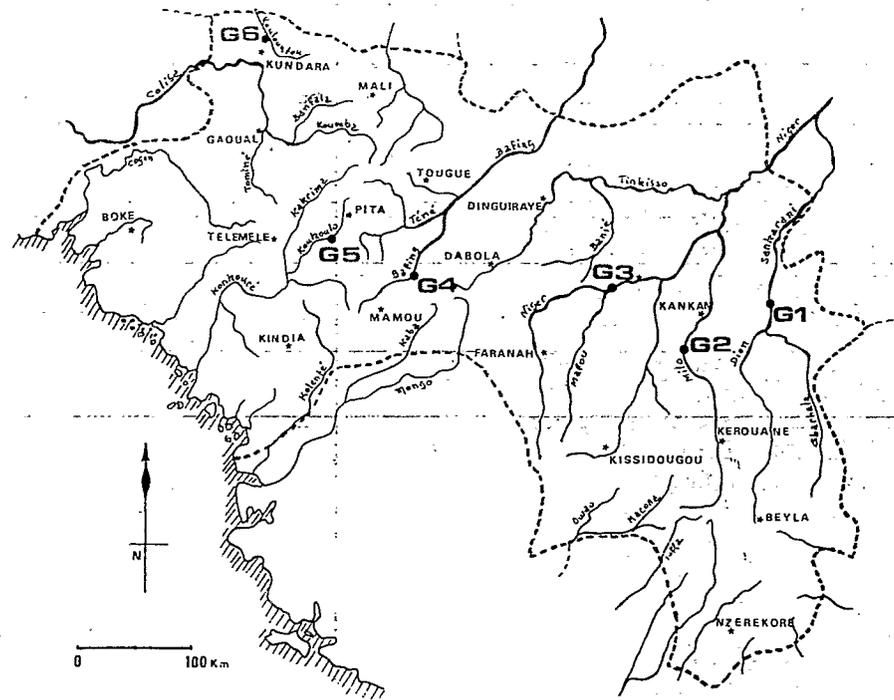


Fig. 1. Map of the Republic of Guinea showing the six collection sites, G1-G6.

#### Site G6.

The high basin of the Koulountou, an affluent of the Gambia, has been sampled the 23.IV.1980 near Kundara on the North-West border of the Fouta Djallon mountain. The catch was made in the deeply embanked river near a small still water pool which remained after the cessation of flow. The canopée was very thick and it is evident that the captured insects came mainly from that restricted water body.

## RESULTS

A detailed list of the catches is presented in Table 1. In the following lines, we will indicate the African distribution of only some species, the presence of which in the Guinean Republic provides more information about their extent on the African continent.

### 1 - Chironominae - Tribe Chironomini.

#### Genus *Chironomus*

It is a common fact that the genus *Chironomus* is never well represented in lotic environments. Only two species were collected. One, *C. imicola*, is very common in all of Africa and the second (a single female) has not been possible to identify.

#### Genus *Polypedilum*

Ten species which belong to this genus were found in the catches, nine of them being unequally distributed among the sampling sites.

*P. deletum*, a very common species in all of West Africa was the most abundant and was present at 5 of the 6 sites visited.

*P. tenuitarsis*, was until now only recorded from Senegal in the western part of Africa, but was often collected in Central Africa (Chad, Nigeria, Cameroon, Sudan, Zaire), as well as in South Africa.

*P. albosignatum*, has a more restricted distribution and was only noted in Senegal, Mali, Chad and Sudan until the present. It is a rare species, never collected in great numbers!

*P. alboguttatum*, which was only found in the Ivory Coast, Chad, Sudan and Uganda seems to be even more infrequent.

#### Genus *Pentapedilum*

It is only represented by one species, *P. wittei*, now recorded from 9 African countries distributed all over the continent.

#### Genus *Dicrotendipes*

This genus is not well represented in our catches since we were only able to distinguish two species, as compared to the 18 which are known from Africa south of the Sahara (Freeman, 1957). Of our two species, *D. sudanicus* is common everywhere in Africa, and *D. crispus* seems to be absent south of the Equator. At least it has never been mentioned from that part of Africa but it is well known from east to west in the Sahelian region.

#### Genus *Kiefferulus*

*K. chloronotus* is a widespread species in the entire Afrotropical region, and is often found in lotic environment during the low water period.

#### Genus *Xenochironomus*

Of the three known African species, only one (*X. trisetosus*) was present in the catches. It is the less common one and its occurrence at three of the six sampled sites can be considered to be unusual.

Table 1. Details of the chironomid catches from the Republic of Guinea.

Identified species	Sites and numbers of adults collected
Chironominae	
Tribe Chironomini	
<i>Chironomus</i>	
<i>C. imicola</i> Kief.	G 3 (1♀)
<i>C. sp.</i>	G 1 (1♀)
<i>Polypedilum</i>	
<i>P. deletum</i> Goet.	G 1 (1♂, 2♀); G 2 (4♂, 2♀); G 3 (1♀); G 4 (1♂, 3♀); G 6 (16♂, 28♀)
<i>P. annulatus</i> Kief.	G 4 (1♂, 9♀)
<i>P. alboguttatum</i> Kief.	G 1 (1♂)
<i>P. longicrus</i> Kief.	G 4 (12♂, 21♂)
<i>P. griseoguttatum</i> Kief.	G 1 (1♂)
<i>P. tenuitarse</i> Kief.	G 1 (1♀); G 2 (1♀)
<i>P. albosignatum</i> Kief.	G 3 (2♀)
<i>P. melanophilum</i> Kief.	G 2 (2♂)
<i>P. brunneicorne</i> Kief.	G 4 (1♂)
<i>P. dewulfi</i> Goet.	G 4 (1♂, 1♀)
<i>Pentapedilum</i>	
<i>P. wittei</i> Free.	G 1 (7♂, 2♀); G 2 (1♂)
<i>Dicrotendipes</i>	
<i>D. crispus</i> Free.	G 1 (2♂, 1♀); G 2 (4♀)
<i>D. sudanicus</i> Free.	G 4 (1♀)
<i>Kiefferulus</i>	
<i>K. chloronotus</i> Kief.	G 6 (1♀)
<i>Xenochironomus</i>	
<i>X. trisetosus</i> Kief.	G 2 (1♀); G 4 (1♂, 2♀); G 5 (6♂, 1♀)
<i>Paracladopelma</i>	
<i>P. graminicolor</i> Kief.	G 1 (1♂)
<i>Stictochironomus</i>	
<i>S. festivus festivus</i> Kief.	G 1 (1♂); G 2 (4♀); G 4 (3♂, 4♀); G 6 (1♂, 4♀)
<i>S. caffarius</i> Kief.	G 6 (6♀)
<i>Microtendipes</i>	
<i>M. taitae</i> Kief.	G 4 (1♂)
<i>M. lentiginosus</i> Free.	G 4 (3♀)
<i>Stenochironomus</i>	
<i>S. albicoxa</i> Free	G 2 (1♀)
<i>S. edwardsi</i> Free.	G 1 (1♂)
<i>S. spatuliger</i> Kief.	G 4 (2♂)
<i>Nilodosis</i>	
<i>N. fusca</i> Kief.	G 2 (2♀); G 4 (3♀); G 6 (3♀)
<i>Kribiocosmus</i>	
<i>K. ornatipes</i> Kief.	G 1 (1♂)
<i>Nilothauma</i>	
<i>N. pictipenne</i> Kief.	G 1 (6♀)
<i>Kribiodosis</i>	
<i>K. clavigera</i> Kief.	G 1 (5♀); G 2 (1♂, 1♀); G 4 (1♂)
<i>Lauterborniella</i>	
<i>L. fuscoguttata</i> Kief.	G 1 (1♂, 1♀); G 4 (1♂)
Tribe Tanytarsini	
<i>Tanytarsus</i>	
<i>T. nigricornis</i> Goet.	G 4 (2♂, 2♀)

<i>Cladotanytarsus</i>	
<i>C. lewisi</i> Free.	G 1 (2♂, 6♀); G 2 (2♂, 4♀); G 3 (5♂, 3♀)
<i>C. pseudomancus</i> Goet.	G 1 (1♂)
<i>C. capensis</i> Free.	G 6 (3♂, 1♀)
<i>Rheotanytarsus</i>	
<i>R. fuscus</i> Free.	G 4 (13♂, 4♀)
Tanypodinae	
Tribe Tanypodini	
<i>Clinotanytarsus</i>	
<i>C. rugosus</i> Free.	G 2 (7♀)
Tribe Macropelopiini	
<i>Procladius</i>	
<i>P. (Psilotanytarsus) reidi</i> Free.	G 1 (5♀); G 2 (1♂, 1♀); G 3 (1♀)
Tribe Pentaneurini	
<i>Ablabesmyia</i>	
<i>A. appendiculata</i> Kief.	G 2 (1♀); G 4 (2♂); G 6 (1♂, 3♀)
<i>A. melaleuca</i> Goet.	G 4 (4♂)
<i>A. pictipes</i> Kief.	G 1 (1♂, 1♀); G 3 (1♀); G 4 (2♂)
<i>Nilotanytarsus</i>	
<i>N. comatus</i> Free.	G 1 (1♂, 1♀); G 3 (1♂); G 4 (1♂)
<i>Conchapelopia</i>	
<i>C. cygnus</i>	G 2 (1♀)

Genus *Paracladopelma*

Only one male of *P. graminicolor* was found at one site! No other species belonging to that genus are known from Africa. The present species has only been recorded from Mali and the Ivory Coast until today, and has to be considered as rare.

Genus *Stictochironomus*

Of the two species collected, *S. caffarius*, previously recorded from 15 African Countries, is undoubtedly that which has the best known geographical distribution. On the other hand, *S. festivus festivus* is to date recorded in 10 countries only, mainly located in West Africa. Both species are very common.

Genus *Microtendipes*

Again two species were collected, *M. taitae* and *M. lentiginosus*. Apparently they are uncommon, previously recorded only from South and Equatorial Africa. The whole of our recent collections made in West Africa led us to suppose that the first species is widely distributed all over the continent (Senegal, Guinea, Ivory Coast, High Volta, Ghana...), while the second one is until now only known from Senegal and High Volta.

Genus *Stenochironomus*

*S. albicoxa* is a common species in West Africa and also in Sudan and Zaire.

*S. edwardsi* on the other hand seems to be rarer in West Africa and was only recorded in High Volta, and from South Africa.

*S. spatuliger*, finally, is a widespread species south of the Sahara and its presence in Guinea was to be expected.

Genus *Kribiocosmus*

We have found *K. ornatipes* in the catch from the Sankarani at Tiro. It is the only species known from Africa until now. Previously collected only from Ghana, Niger, Cameroon and Zaire, this species can be regarded as a rare one.

Genus *Nilothauma*

Again, only one species is mentioned from Africa south of the Sahara, but we recently found two new ones in the Ivory Coast which will be described elsewhere. The species described by Kieffer (1921), *N. pictipenne*, has been often collected in Sudan but is also recorded from Senegal, Ivory Coast, and Chad.

Genus *Kribiodosis*

The only species of that genus from Africa was present in Guinea at three of the six sampled sites. This species is also noted in High Volta, Nigeria, Cameroon, Rhodesia, and Zaire.

Genus *Lauterborniella*

The collected species (*L. fuscoguttata*) is widespread in the whole of the Sahelo-Sudanian region, from Senegal to Sudan.

## 2 - Chironominae - Tribe Tanytarsini

Five species which belong to that tribe were collected in Guinea.

Genus *Rheotanytarsus*

*R. fuscus*, present at one site, was only known from the Ivory Coast in West Africa.

Genus *Cladotanytarsus*

Three species, unequally distributed all over Africa were collected. *C. lewisi* is a very common one from West to East in the Sahelian region; *C. pseudomancus* is

widespread in all of Africa and *C. capensis* is only recorded from High Volta and Chad, apart from South Africa where the type-series comes from.

Genus *Tanytarsus*

The only species collected (*T. nigricornis*) seems to be rare in West Africa and the present record is the first one from that part of the continent. It is better represented in the eastern part of Africa where records have been made from Ethiopia, Uganda, Zaire and South Africa. *T. nigricornis* is also known in Israel and Yemen.

## Tanypodinae

Seven species of 5 different genera were found in the collections.

Genus *Conchapelopia*

The species recorded, *C. cygnus*, is common everywhere on the African continent.

Genus *Nilotanytus*

Only one species, *N. comatus* was present in the samples studied, whose distribution is also wide in the whole of Africa.

Genus *Ablabesmyia*

Among the three species collected *A. melaleuca* is the only one which is not widespread in Africa, its distribution being limited to West Africa, Chad, Uganda and Zaire.

Genus *Procladius* subgenus *Psilotanytus*

The species collected, *P. reidi*, seems to be quite rare on the continent and is only known from Chad, Cameroon and Sudan. It was found in Guinea at three of the sites sampled.

Genus *Clinotanytus*

Only one species belonging to that genus has been collected: *C. rugosus*. It is a species mainly living in standing waters covered by aquatic vegetation, widespread all over West and Central Africa.

## CONCLUSIONS

Firstly it must be established that the studied samples were collected during the dry season and that the low water period of all rivers was very marked during the year 1980. Such an unfavourable ecological factor could partly explain the low specific richness of the studies collections (Table 2).

Table 2. Specific richness and diversity of the differend collections of chironomids made in the Republic of Guinea.

Sites	G1	G2	G3	G4	G5	G6
Specific richness (number of collected species)	17	14	8	20	1	7
Number of collected individuals	71	40	16	102	7	67
Shannon index of specific diversity	3.15	3.46	2.38	3.34	-	1.77

By contrast, the diversity is high, especially at the sites G1, G2 and G4, which are located on the main rivers. The maximal value was found on the Sankarani where the discharge was still high and the flow quite fast. It is also on that site that we have found the maximal benthic invertebrates population density (Dejoux - Troubat, 1981).

The diversity found on sites G5 and G6 was very low, a fact which we have to correlate with the morphological aspect of the sampled biotopes which were, during that low water period, more like water holes than rivers!

A total of 303 individuals were collected and if we consider such a sample as a whole, the related diversity is 4,34 bits, a very high value. 41 species have been identified and again such a high number, compared to the smallness of the collection, shows a high specific richness.

Finally it has to be considered that these figures are slightly underestimated since we were not able to identify twenty-two females belonging to six different species.

From a biogeographical point of view, this short analysis of adult chironomid samples from Guinea gives us a useful complement of information about the distribution of species living in the Sahelian region. No new species have been found, probably because there were no samples collected from big rivers of the Fouta Djallon mountain or from the South Eastern forest area of Guinea, both regions where endemic species could be expected.

## RÉSUMÉ

Six récoltes de Chironomidae réalisées au piège lumineux en République de Guinée ont été analysées en fonction des connaissances actuelles de la répartition de ces insectes à l'échelle du continent africain. Dans la mesure où ces récoltes sont toutes situées dans la région nord du pays, les espèces qui les composent présentent une grande affinité avec la faune chironomidienne sahélosoudanaïenne. Aucune espèce nouvelle ou endémique n'a été répertoriée parmi les 41 qui composent l'ensemble des captures.

En raison de la période à laquelle les récoltes ont été faites (étiage des cours d'eau et forte sécheresse), les densités spécifiques de chaque échantillon sont faibles mais leur diversité spécifique élevée.

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