

CULICINE MOSQUITOES IN SOUTHERN AFRICA

NEW LOCALITY RECORDS IN THE PROVINCES OF NATAL (UNION OF SOUTH AFRICA), MOZAMBIQUE (PORTUGUESE EAST AFRICA) AND ANGOLA (PORTUGUESE WEST AFRICA), WITH A LIST OF THE SPECIES NOW KNOWN FROM NATAL ⁽¹⁾.

by

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During studies of arthropod-borne viruses in Southern Africa from 1955 to 1960, culicine mosquitoes in a number of regions were collected for attempted virus isolation or for general survey purposes. The study of more than 200,000 specimens led to the detection of species hitherto unrecorded from some of the localities. An especially detailed survey of culicine mosquitoes at Ndumu in northern Natal, Union of South Africa, required a thorough review of the published records of species from this Province. The recent increase of medical knowledge of these mosquitoes warrants a presentation of the new records from the various localities and also a summary of the presently known culicine fauna of Natal. Specimens representing new locality records or having other features of special interest have been deposited in the collections of the South African Institute for Medical Research in Johannesburg.

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A. — MOZAMBIQUE

A list of the mosquitoes known from this Province was prepared in 1959 (WORTH & DE MEILLON, 1960). During March, 1960, three weeks were spent doing further work at Lumbo, a small town on the north coast opposite Mozambique Island, and the following collected species deserve comments.

1. *Aedes (Mucidus) lucianus* MUSPRATT. — Four females were collected at Lumbo and their identification has kindly been confirmed by Mr. JAMES MUSPRATT, of the South African Council for Scientific and Industrial Research. The previously known distribution of the species included several coastal regions in Natal, Union of South Africa (MUSPRATT, 1959). The Lumbo specimens therefore accord with the apparent predilection of *A. lucianus* for coastal habitats.

2. *Aedes (Stegomyia) heischi* VAN SOMEREN. — This species, collected at Lumbo in 1959, was then only tentatively listed as *A. heischi* (WORTH & DE MEILLON, 1960). Five additional females collected at the same place in March, 1960, have been studied by Mr. MUSPRATT, who agrees with the diagnosis. It may therefore be included in the fauna of Mozambique.

3. *Aedes (Aedimorphus) haworthi* EDWARDS. — One female was collected in March, 1960, at Lumbo. This is a new record for the Province.

4. *Aedes (Aedimorphus)* sp. — One female, collected at Lumbo in March, 1960, keys out close to *Aedes (Aedimorphus) gibbinsi* EDWARDS in EDWARDS (1941). The specimen has been studied by Mr. MUSPRATT, who is of the opinion that it is probably a new species. Further material is required before a description would be in order.

5. *Aedes (Neomelanicion) albothorax* (THEOBALD). — On the basis of a few female specimens collected at Lumbo in 1959, it was thought prudent to withhold firm identification of this species. However in 1960 a series of 15 females and 10 males was obtained. Examination of male terminalia by Mr. MUSPRATT has confirmed the determination. This is a further addition to the fauna of Mozambique.

6. *Culex* spp. — Records of *Culex (Neoculex) insignis* (CARTER), *Culex (Culex) sitiens* WIEDEMANN, *C. (C.) thalassius* THEOBALD and *C. (C.) perfuscus* EDWARDS, based on females collected at Lumbo in 1959, were confirmed in 1960 by the collection of male specimens. Mr. MUSPRATT kindly studied the terminalia.

B. — ANGOLA

Knowledge of the mosquitoes of this Portuguese province was recently summarized by GÂNDARA (1956). He admitted that information on distribution and on the fauna as a whole was still scanty. During June, 1960, numerous towns and villages in various parts of the country were visited by air. Local youths were recruited in each settlement to collect mosquitoes for one to three hours. Dry winter conditions prevailed in most of the localities, and mosquitoes were abundant only in the more northern and moister portions of the country.

Mr. J. MUSPRATT has kindly studied the pinned specimens that were brought back to Johannesburg. Species easily recognizable in the field were identified on the spot and discarded. The following list includes all species recorded, with remarks regarding their status. The numbers collected are shown in parentheses and the new locality records are indicated. In addition Mr. MUSPRATT will give further study to a number of other specimens which may represent one or two new species.

1. *Uranotaenia* sp. — Malanje (1). According to Mr. MUSPRATT the damaged specimen is clearly allied to *U. pallidocephala* THEOBALD and *U. philonuxia* PHILIP, neither of which has been recorded from Angola.

2. *Ficalbia* (*Ficalbia*) *uniformis* (THEOBALD). — Malanje (1). New locality record. The closely similar *F. (F.) malfeyti* (NEWSTEAD) has not yet been recorded in Angola, and the present specimen does not lend itself to specific differentiation.

3. *Mansonia* (*Coquillettidia*) *metallica* (THEOBALD). — Caxito (5). New locality record.

4. *Mansonia* (*Coquillettidia*) *aurites* (THEOBALD). — Dundo (Portugalia) (1); Cabinda (1). New records for Angola.

5. *Mansonia* (*Mansonioides*) *africana* (THEOBALD). — Lobito (1); Caxito (362); Catete (100). All new locality records.

6. *Mansonia* (*Mansonioides*) *uniformis* (THEOBALD). — Lobito (1); Catete (253); Dundo (Portugalia) (1); Caxito (113). The last two are new locality records.

The abundance of the two species of *Mansonioides* at Caxito was readily understandable in view of the many irrigation channels serving sugarcane and oil palm plantations. Some of the neglected ditches contained abundant growing vegetation. The source of the two species at Catete was not evident.

7. *Aedes (Mucidus) scatophagoides* (THEOBALD). — Caxito (1). New locality record.

8. *Aedes (Finlaya) ingrami* EDWARDS. — Dundo (Portugalia) (1). New record for Angola. Mr. MUSPRATT comments that the specimen has minor resemblance to *A. (F.) wellmani* (THEOBALD), which has been recorded in Angola by authors cited in GÂNDARA (1956).

9. *Aedes (Stegomyia) aegypti* (LINNAEUS). — Dundo (Portugalia) (1). New locality record.

10. *Aedes (Stegomyia) metallicus* (EDWARDS). — Vila Pereira de Eça (1). New locality records.

11. *Aedes (Stegomyia) africanus* (THEOBALD). — Dundo (Portugalia) (2); Maquela do Zumbo (1). New locality records.

12. *Aedes (Aedimorphus) cumminsi* (THEOBALD). — Dundo (Portugalia) (1); Caxito (4). New records for Angola.

13. *Aedes (Neomelaniconion) circumluteolus* (THEOBALD). — Dundo (Portugalia) (90); Catete (13); Caxito (9, plus 12 atypical specimens). All new locality records.

14. *Culex (Lutzia) tigripes* GRANDPRÉ & CHARMOY. — Nova Lisboa (1); Luso (8), both localities previously recorded. New locality records: Caxito (10); Dundo (Portugalia) (1); Cabinda (1, a male with typical terminalia but externally highly melanistic).

15. *Culex (Neoculex) insignis* (CARTER). — Maquela do Zumbo (1). New record for Angola.

16. *Culex (Culex) poicilipes* (THEOBALD). — Vila Pereira de Eça (2); Caxito (8); Nova Lisboa (1). All new locality records.

17. *Culex (Culex) annulioris* THEOBALD, group. — Dundo (Portugalia) (2), new locality record. Nova Lisboa (1, possibly *C. (C.) aurantapex* ssp. *jinjaensis* EDWARDS). Difficulties within this group require studies of unavailable male terminalia for resolution.

18. *Culex (Culex) thalassius* THEOBALD. — Lobito (132). Mr. MUSPRATT finds the male terminalia of two specimens examined to be typical of the species, although there is some variation in external markings.

19. *Culex (Culex) duttoni* THEOBALD. — Dundo (Portugalia) (5), new locality record; Luso (165). GÂNDARA (1956) also found this species abundant at Luso. An explanation of its prevalence may lie in a practice of the local inhabitants which probably favours the breeding of *C. duttoni*. In seepage areas close to the river they dig holes about two feet in diameter and one foot deep which soon fill with water. They then use these pits to macerate manioca (cassava) roots for a period of eight or nine days until the rotted integument can be easily stripped or rubbed off. The present

collection of mosquitoes was made from vegetation on the riverbank in the vicinity of these soaking receptacles.

HOPKINS (1952) says in part that breeding places of *C. duttoni* are «borrow-pits, ditches, holes in swamps and rock-pools; the water more commonly muddy than clear and often foul from organic matter».

20. *Culex (Culex) theileri* THEOBALD. — Vila Pereira de Eça (1). New locality record.

21. *Culex (Culex) univittatus* THEOBALD. — Caxito (1). New locality record.

22. *Culex (Culex) pipiens pipiens* LINNAEUS. — Nova Lisboa (1). New locality record.

22a. *Culex (Culex) pipiens fatigans* WIEDEMANN. — Lobito (139), previously recorded from this site. New locality records: Moçâmedes (1); Cabinda (15). In the latter site a prolific breeding habitat was found in a sump at the corner of a street drain in the middle of the town.

23. *Culex (Culex) trifilatus* EDWARDS. — Nova Lisboa (4). New record for Angola.

24. *Culex (Culex) antennatus* (BECKER). — Presumptive new locality record based on one female from Caxito. Male terminalia are needed to confirm this.

25. *Culex (Culex) invidiosus* var. *vexillatus* EDWARDS. — Lobito (14). A new record of both the species and the variety for Angola, determined by Mr. MUSPRATT. The specimens were collected among greater numbers of *C. thalassius* and *C. pipiens fatigans* resting in outdoor sheds and semi-open latrines within Lobito. Saline breeding sites were abundant in this coastal city, the only relatively fresh-water habitats commonly available out-of-doors being pig wallows which teemed with culicine larvae (not collected).

26. *Culex (Culex) trifoliatus* EDWARDS. — Luso (8). New record for Angola.

27. *Culex (Culex) ornatothoracis* THEOBALD. — Cabinda (1). New record for Angola.

28. *Culex (Culex) guiarti* BLANCHARD. — Caxito (3). Presumptive first specific locality record in Angola, based on three females. Male terminalia are required to confirm this.

29. *Culex (Culex) ingrami* EDWARDS. — Caxito (4). New record for Angola.

Note. — GÂNDARA (1956) presents records of 63 taxa of culicine mosquitoes in Angola. The present very sketchy collection adds 10 to the presumed list. It is evident that the fauna is in need of extended research efforts.

C. — NATAL

MUSPRATT (1955) assembled records of culicine mosquitoes (exclusive of *Stegomyia* spp.) known from Natal and other Provinces of the Union of South Africa up to that time. MUSPRATT (1956a) did similar service for *Stegomyia* spp. The following tabulation will use these comprehensive papers liberally as standard references to include earlier citations such as those of EDWARDS (1941), who in turn quoted even earlier authors.

Two of MUSPRATT's subsequent papers (1956b, 1959) dealt in part with mosquitoes collected by the Arthropod-borne Virus Research Unit (ABVRU) which is the source of the present contribution. The frequency of the ABVRU designation in many of the following listings will indicate the degree of co-operation from Mr. MUSPRATT that has been enjoyed by this Unit. Mr. MUSPRATT's own further collections are included as well.

WORTH *et al.* (1961) discuss the commoner mosquito species from Ndumu in northern Natal in relation to virus types recovered from them from January, 1956, through April, 1960. The mosquitoes were collected almost entirely by hand-catching from vegetation. Additional Natal records obtained at Ndumu and elsewhere by ABVRU during this period are included below. When a species is listed simply as having been recorded by ABVRU at Ndumu, without further comment, the inference to be drawn is that it was not an uncommon form and that no novel observations concerning its bionomics were made. The less abundant or more remarkable species receive some sort of qualifying notice.

Apart from the following list being a complete faunal roster for the Province of Natal, it serves also as a check-list of species recorded to date from Ndumu, practically on the border of Mozambique and athwart the so-called tropical corridor traversing the narrow coastal plain of the African east coast. Tropical characteristics of the Natal fauna are revealed in its diversity of forms as well as the occurrence at the northern boundary of species not yet found elsewhere in the Province.

1. *Toxorhynchites brevialpis* THEOBALD. — MUSPRATT, 1955 and 1956b. ABVRU: two males from Ndumu, 1956, reared from larvae.
2. *Toxorhynchites lutescens* THEOBALD. — MUSPRATT, 1956b, based on ABVRU collections at Simbu Pan. ABVRU: one male from Ndumu, 1957.
3. *Harpagomyia taeniarostris* THEOBALD. — MUSPRATT, 1955 and 1959, the latter record based on ABVRU collections at Ndumu.

4. *Uranotaenia pallidocephala* THEOBALD. — MUSPRATT, 1959, based on ABVRU collection from Ndumu.
5. *Uranotaenia bilineata* var. *fraseri* EDWARDS. — MUSPRATT, 1955.
6. *Uranotaenia balfouri* THEOBALD. — The closest previous records are from S. W. Africa (MUSPRATT, 1955) and Mozambique (WORTH & DE MEILLON, 1960). ABVRU: one male from Ndumu in 1959 constitutes a new record from Natal. Collected from a ground hole in riverine forest.
7. *Uranotaenia chorleyi* EDWARDS. — MUSPRATT, 1955.
8. *Uranotaenia montana* INGRAM & DE MEILLON. — MUSPRATT, 1955.
9. *Uranotaenia candidipes* EDWARDS. — The closest previous records are from Transvaal Province, in the Union of South Africa (MUSPRATT, 1955), and from Mozambique (WORTH & DE MEILLON, 1960). ABVRU: one male from Ndumu in 1959 constitutes a new record for Natal. Collected from a ground hole in riverine forest.
10. *Uranotaenia mashonaensis* THEOBALD. — MUSPRATT, 1955. ABVRU: one male from Ndumu, 1956.
11. *Uranotaenia nigromaculata* EDWARDS. — MUSPRATT, 1955.
12. *Aedomyia africana* NEVEU-LEMAIRE. — MUSPRATT, 1959, based on ABVRU Ndumu collections. This species was obtained only at night in a light-trap or as it came to human bait on a platform 46 feet above ground level in a giant fig tree, *Ficus sycomorus* LINNAEUS. Although a dozen or so specimens were taken by these methods, it never appeared in conventional daytime hand-catches from vegetation.
13. *Aedomyia furfurea* (ENDERLEIN). — MUSPRATT, 1955.
14. *Theobaldia (Allotheobaldia) longiareolata* (MACQUART). — MUSPRATT, 1955.
15. *Ficalbia (Mimomyia) hispida* (THEOBALD). — MUSPRATT, 1959, based on Ndumu collections by ABVRU. An additional female from Ndumu, collected in 1959, plus two other specimens from Mozambique and the Congo Republic respectively, have provided Mr. MUSPRATT with a small series that seems to depart from typical *F. hispida* and may represent a new species or lesser taxon. Further collections are desirable.
16. *Ficalbia (Mimomyia) lacustris* EDWARDS. — MUSPRATT, 1955.
17. *Ficalbia (Mimomyia) mimomyiaformis* (NEWSTEAD). — MUSPRATT, 1956b. This species was taken in ABVRU collections at Ndumu most commonly from ground holes in a riverine forest, especially during the dry season.
18. *Ficalbia (Mimomyia) plumosa* (THEOBALD). — MUSPRATT, 1959, based on ABVRU collections at Ndumu.

19. *Ficalbia (Etorleptomyia) mediolineata* (THEOBALD). — MUSPRATT, 1956b. Ndumu, ABVRU collections, one female, 1956.
20. *Ficalbia (Ficalbia) circumtestacea* (THEOBALD). — The subgenus as well as the species has not previously been recorded from the Union of South Africa. EDWARDS (1941) cites only Sudan and Sierra Leone for the species' range. ABVRU: one female from Ndumu, 1959, varies in slight degree from the description in EDWARDS, p. 88 (*loc. cit.*). Collected from a ground hole in riverine forest.
21. *Mansonia (Coquillettidia) metallica* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu.
22. *Mansonia (Coquillettidia) maculipennis* (THEOBALD). — MUSPRATT, 1955. ABVRU: Mbazwane.
23. *Mansonia (Coquillettidia) cristata* (THEOBALD). — The closest previous record seems to be from northern Mozambique (WORTH & DE MEILLON, 1960). ABVRU: one female from Mbazwane in the coastal region of northern Natal is a new record for the Union of South Africa.
24. *Mansonia (Coquillettidia) fuscopennata* (THEOBALD). — MUSPRATT (1955) shows that alleged records from Natal require confirmation by the study of male terminalia. This species can therefore be placed on the present list only hypothetically.
25. *Mansonia (Coquillettidia) chrysosoma* (EDWARDS). — MUSPRATT, 1959, based on ABVRU collections from Ndumu.
26. *Mansonia (Coquillettidia) aurea* (EDWARDS). — MUSPRATT, 1955. ABVRU: Ndumu.
27. *Mansonia (Coquillettidia) wahlbergi* (EDWARDS). — MUSPRATT, 1955. ABVRU: Mbazwane and Ndumu.
28. *Mansonia (Coquillettidia) microannulata* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu, five specimens.
29. *Mansonia (Mansonioides) africana* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu.
30. *Mansonia (Mansonioides) uniformis* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu.
31. *Aedes (Mucidus) scatophagoides* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu, several specimens.
32. *Aedes (Mucidus) mucidus* (KARSCH). — MUSPRATT, 1955. ABVRU: Ndumu, several specimens.
33. *Aedes (Mucidus) lucianus* MUSPRATT. — MUSPRATT (1959), based on ABVRU collections in part.
34. *Aedes (Ochlerotatus) fryeri* (THEOBALD). — The closest previous record is from Mozambique (WORTH & DE MEILLON, 1960). ABVRU:

one female from Ndumu, 1959, is a new record for the Union of South Africa.

35. *Aedes (Ochlerotatus) caballus* (THEOBALD). — Recorded by EDWARDS (1941) and later by STEYN & SCHULZ (1955).

36. *Aedes (Finlaya) fulgens* (EDWARDS). — MUSPRATT, 1956b. ABVRU: Ndumu, several specimens.

37. *Aedes (Finlaya) barnardi* EDWARDS. — MUSPRATT, 1953.

38. *Aedes (Stegomyia) aegypti* (LINNAEUS). — MUSPRATT, 1956a. ABVRU: the form found at Ndumu is ssp. *formosus* (WALKER).

39. *Aedes (Stegomyia) subargenteus* EDWARDS. — MUSPRATT, 1956a. ABVRU: two specimens from Ndumu.

40. *Aedes (Stegomyia) woodi* EDWARDS. — The closest previous record is from Mozambique (WORTH & DE MEILLON, 1960). ABVRU: several specimens collected in 1959 at Kosi Bay on the north coast of Natal constitute a new record of the Union of South Africa.

41. *Aedes (Stegomyia) simpsoni* (THEOBALD). — MUSPRATT, 1956a. ABVRU: Ndumu.

42. *Aedes (Stegomyia) metallicus* (EDWARDS). — MUSPRATT, 1956a. ABVRU: Ndumu.

43. *Aedes (Stegomyia) dendrophilus* EDWARDS. — MUSPRATT, 1956a. ABVRU: Gwaliweni forest, on southeastern slopes of Lebombo Mountains about 45 miles from Ndumu.

44. *Aedes (Stegomyia) heischei* VAN SOMEREN. — MUSPRATT, 1956b, based on ABVRU collections at Simbu Pan, 30 miles from Ndumu.

45. *Aedes (Stegomyia) demeilloni* EDWARDS. — MUSPRATT, 1956a. ABVRU: Gwaliweni forest.

46. *Aedes (Stegomyia) calceatus* EDWARDS. — MUSPRATT, 1956a. ABVRU: Ndumu, several specimens.

47. *Aedes (Stegomyia) soleatus* EDWARDS. — MUSPRATT, 1956a. ABVRU: Ndumu, one female, 1959.

48. *Aedes (Stegomyia) poweri* (THEOBALD). — MUSPRATT, 1956a.

49. *Aedes (Stegomyia) unilineatus* (THEOBALD). — MUSPRATT, 1956a. ABVRU: Ndumu, one female, 1957.

50. *Aedes (Stegomyia) vittatus* (BIGOT). — MUSPRATT, 1956a.

51. *Aedes (Aedimorphus) marshalli* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu.

52. *Aedes (Aedimorphus) kennethi* MUSPRATT. — MUSPRATT, 1956b, based on ABVRU collections at Simbu Pan. ABVRU: Ndumu.

53. *Aedes (Aedimorphus) capensis* EDWARDS. — MUSPRATT (1955). ABVRU: four females and two males from Gwaliweni forest, 1957.

54. *Aedes (Aedimorphus) haworthi* EDWARDS. — MUSPRATT, 1955. ABVRU: Ndumu, one female, 1959.
55. *Aedes (Aedimorphus) argenteopunctatus* (THEOBALD). — MUSPRATT (1955) stated that the single record of this species from Natal required confirmation. This has been accomplished in several ABVRU collections at Ndumu and one at Kosi Bay in 1959.
56. *Aedes (Aedimorphus) mixtus* EDWARDS. — MUSPRATT, 1955.
57. *Aedes (Aedimorphus) bedfordi* EDWARDS. — MUSPRATT, 1955; also MUSPRATT, 1959, ABVRU collection, northern Natal.
58. *Aedes (Aedimorphus) filicis* INGRAM & DE MEILLON. — MUSPRATT, 1955. ABVRU: one male, 1957, Gwaliweni forest.
59. *Aedes (Aedimorphus) minutus* (THEOBALD). — MUSPRATT, 1956b, based on ABVRU collections at Simbu Pan. ABVRU: Ndumu.
60. *Aedes (Aedimorphus) albocephalus* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu.
61. *Aedes (Aedimorphus) eritreae* LEWIS. — MUSPRATT, 1955. ABVRU: one male, Ubombo.
62. *Aedes (Aedimorphus) lesoni* EDWARDS. — MUSPRATT, 1959, based on ABVRU collections at Ndumu.
63. *Aedes (Aedimorphus) lamborni* EDWARDS. — MUSPRATT, 1955.
64. *Aedes (Aedimorphus) quasiunivittatus* (THEOBALD). — MUSPRATT, 1955.
65. *Aedes (Aedimorphus) dentatus* (THEOBALD). — MUSPRATT, 1955, stated that the single previous Natal record required confirmation. This has been accomplished by examination of male terminalia of specimens in ABVRU collections from Ndumu.
66. *Aedes (Aedimorphus) pachyurus* EDWARDS. — Known previously only from Cape Province (MUSPRATT, 1955). ABVRU: one male from Gwaliweni forest in 1957 constitutes a new record for Natal.
67. *Aedes (Aedimorphus) cumminsi* ssp. *mediopunctatus* (THEOBALD). — MUSPRATT (1956b) stated that previous Natal records of the nominate form are probably referable to this subspecies. ABVRU: Ndumu.
68. *Aedes (Aedimorphus) bevisi* (EDWARDS). — MUSPRATT, 1955.
69. *Aedes (Aedimorphus) hirsutus* (THEOBALD). — MUSPRATT, 1955.
70. *Aedes (Aedimorphus) fowleri* (D'EMMEREZ DE CHARMOY). — The nearest previous records are from Transvaal (MUSPRATT, 1955) and Mozambique (WORTH & DE MEILLON, 1960). ABVRU: one female from Ndumu, 1956, constitutes an addition to the fauna of Natal.
71. *Aedes (Aedimorphus) durbanensis* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu.

72. *Aedes (Aedimorphus) ochraceus* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu, two specimens, 1956 and 1959.
73. *Aedes (Neomelaniconion) lineatopennis* (LUDLOW). — MUSPRATT, 1955. ABVRU: Ndumu.
74. *Aedes (Neomelaniconion) circumluteolus* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu.
75. *Aedes (Neomelaniconion) luteolateralis* (THEOBALD). — MUSPRATT, 1955.
76. *Aedes (Neomelaniconion) aurovenatus* WORTH. — WORTH, 1960. ABVRU: Ndumu, four females, 1959.
77. *Aedes (Diceromyia) furcifer* (EDWARDS). — MUSPRATT, 1955. ABVRU: Ndumu, several specimens.
78. *Aedes (Diceromyia) taylori* EDWARDS. — MUSPRATT, 1955. ABVRU: Ndumu, one male, 1957.
79. *Aedes (Diceromyia) fascipalpis* (EDWARDS). — MUSPRATT, 1959. based on Ndumu specimens in ABVRU collections.
80. *Aedes (Diceromyia) adersi* (EDWARDS). — MUSPRATT, 1955.
81. *Aedes (Pseudarmigeres) natalensis* EDWARDS. — MUSPRATT, 1955. ABVRU: Ndumu, Ubombo and Gwaliweni forest.
82. *Eretmapodites subsimplicipes* EDWARDS. — MUSPRATT, 1955. ABVRU: Ndumu.
83. *Eretmapodites silvestris* INGRAM & DE MEILLON. — MUSPRATT, 1955. ABVRU: Ndumu.
84. *Eretmapodites quinquevittatus* THEOBALD. — MUSPRATT, 1955. ABVRU: Ndumu.
85. *Culex (Lutzia) tigripes* GRANDPRÉ & CHARMOY. — MUSPRATT, 1955. ABVRU: Ndumu.
86. *Culex (Neoculex?) pulchrithorax* EDWARDS. — MUSPRATT, 1955.
87. *Culex (Neoculex) avianus* DE MEILLON. — MUSPRATT, 1955. ABVRU: Ndumu, 1959, one female.
88. *Culex (Neoculex) salisburyensis* THEOBALD. — MUSPRATT, 1955. ABVRU: Ndumu, several specimens reared from larvae found among flotsam at the edge of a side-channel of a woodland river. However the species was extremely rare in the hand catches of adult mosquitoes made in the vicinity and was not encountered elsewhere at Ndumu.
89. *Culex (Neoculex) rubinotus* THEOBALD. — MUSPRATT, 1955.
90. *Culex (Neoculex) rima* THEOBALD. — MUSPRATT, 1955.
91. *Culex (Neoculex) insignis* (CARTER). — MUSPRATT, 1955. ABVRU: Ndumu, sometimes abundantly collected from ground holes in a riverine forest.

92. *Culex (Neoculex) horridus* EDWARDS. — MUSPRATT, 1955. ABVRU: Ndumu, several specimens collected chiefly from ground holes in a riverine forest.
93. *Culex (Culiciomyia) nebulosus* THEOBALD and *C. (C.) nebulosus* var. *pseudocinereus* THEOBALD. — MUSPRATT, 1955. ABVRU: Ndumu, a few specimens of each form were obtained in hand-collections.
94. *Culex (Culiciomyia) cinerellus* EDWARDS. — MUSPRATT, 1955.
95. *Culex (Mochthogenes) inconspicuus* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu, several specimens reared from larvae obtained from a shaded woodland pool. The species did not appear in extensive hand-catches made in the vicinity.
96. *Culex (Mochthogenes) simpliciforceps* EDWARDS. — MUSPRATT, 1955.
97. *Culex (Culex) poicilipes* (THEOBALD). — MUSPRATT, 1955. ABVRU: Ndumu.
98. *Culex (Culex) bitaeniorhynchus* GILES. — MUSPRATT, 1959, based on a male specimen in ABVRU collection from Ndumu.
99. *Culex (Culex) ethiopicus* EDWARDS. — MUSPRATT, 1955. ABVRU: two specimens reared from larvae obtained in a small permanent pool in cultivated area at Ndumu, 1959. The species did not appear in extensive hand-catches made in the near-by vicinity.
100. *Culex (Culex) aurantapex* EDWARDS. — MUSPRATT, 1955. ABVRU: several specimens from Ndumu.
- 100a. *Culex (Culex) aurantapex* var. *jinjaensis* EDWARDS. — MUSPRATT, 1959, based on ABVRU collections from Ndumu and Mbazwane.
101. *Culex (Culex) annulioris* THEOBALD. — MUSPRATT, 1955. ABVRU: Ndumu.
102. *Culex (Culex) thalassius* THEOBALD. — MUSPRATT, 1955 and 1959. ABVRU: Ndumu and Kosi Bay.
103. *Culex (Culex) duttoni* THEOBALD. — MUSPRATT, 1955. ABVRU: Ndumu, one female, 1959.
104. *Culex (Culex) argenteopunctatus* ssp. *kingi* (THEOBALD). — MUSPRATT, 1955. ABVRU: one female from Kosi Bay, 1959.
105. *Culex (Culex) theileri* THEOBALD. — MUSPRATT, 1955. ABVRU: Ndumu, not abundant although this is not what one might infer from MUSPRATT, *loc. cit.*
106. *Culex (Culex) univittatus* THEOBALD. — MUSPRATT, 1955. ABVRU: Ndumu.

106a. *Culex (Culex) univittatus* var. *neavei* THEOBALD. — MUSPRATT, 1959, based in part on collections by ABVRU in Tongaland, northern Natal.

107. *Culex (Culex) simpsoni* THEOBALD. — MUSPRATT, 1955. ABVRU: Ndumu.

108. *Culex (Culex) pipiens pipiens* LINNAEUS. — MUSPRATT, 1955. ABVRU: Ndumu.

108a. *Culex (Culex) pipiens fatigans* WIEDEMANN. — MUSPRATT (1955) implies that this form occurs in Natal by saying that it «is found throughout southern Africa, except in the more arid parts». EDWARDS (1941) makes the same general comment, and in his distribution table on p. 483 lists *C. pipiens fatigans* in Natal by placing an «x» in the appropriate square. The species was not encountered in Natal by ABVRU, but collections were not made in cities or towns where *C. pipiens fatigans* might be more confidently expected.

109. *Culex (Culex) zombaensis* THEOBALD. — MUSPRATT, 1955. ABVRU: Ndumu. Virtually nothing has been recorded on the breeding habitats of this species. HOPKINS (1952) cites only one observed instance, a pool beside a river. It is therefore pertinent that at Ndumu the mosquitoes were frequently reared from larvae collected in stagnant shady pools. The water was usually foul owing to the number of fallen wild figs rotting below the surface.

110. *Culex (Culex) trifilatus* EDWARDS. — MUSPRATT, 1955.

111. *Culex (Culex) andersoni* ssp. *bwambanus* EDWARDS. — MUSPRATT, 1955.

112. *Culex (Culex) vansomereni* ssp. *draconis* INGRAM & DE MEILLON. — MUSPRATT, 1955.

113. *Culex (Culex) toroensis* EDWARDS & GIBBINS. — MUSPRATT, 1955.

114. *Culex (Culex) antennatus* (BECKER). — MUSPRATT, 1955. ABVRU: Ndumu.

115. *Culex (Culex) decens* THEOBALD. — MUSPRATT, 1955.

116. *Culex (Culex) trifoliatus* EDWARDS. — MUSPRATT, 1955. ABVRU: a large series of adults, kindly identified by Mr. MUSPRATT, was reared from larvae collected in a shaded pool filled by overflow of the Ingwavuma River at Ndumu. This agrees in type with one of the larval habitats cited by MUSPRATT, *loc. cit.* However the species appeared only rarely in hand-collections of adults made in the vicinity of the pool.

117. *Culex (Culex) perfuscus* EDWARDS. — MUSPRATT, 1959, based in part on ABVRU collections from Ndumu.

118. *Culex (Culex) guiarti* BLANCHARD. — MUSPRATT, 1956b, on basis of ABVRU collections at Simbu Pan. ABVRU: Ndumu.

Notes. — 1. The foregoing Ndumu records indicate that species reared from larvae inhabiting terrestrial water collections usually failed to appear in hand-collections. This generalization broke down only in the cases of *Culex (Lutzia) tigripes* and *Culex (Culex) zombaensis*. With these exceptions, the reverse was also true, the species available by hand-catching of adults almost never being represented as larvae in the habitats sampled. This obviously points to inadequacies in the scope of collecting methods for both states of these insects. In the case of tree-hole breeding species, however, there was a good correlation between species of larvae collected and adults appearing in hand-collections.

2. The total number of species recorded from Ndumu in the foregoing list is 75.

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SUMMARY

1. Culicine mosquitoes were collected in the Provinces of Natal, Mozambique and Angola during studies of arthropod-borne viruses in Southern Africa from 1955 to 1960.

2. New records of the occurrence of culicine species in various localities within the Provinces were established. Additions to previously published faunal lists included four species from Mozambique, ten from Angola and eight from Natal. The suspected presence of a few other species was confirmed.

3. The culicine fauna of Natal was summarized on the basis of published lists and the present collections. One hundred and eighteen species were treated in the summary. Of these, seventy-five species were encountered at Ndumu in northern Natal, near the Mozambique border.

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SUMÁRIO

1. De 1955 a 1960 realizaram-se colheitas de mosquitos culicíneos nas províncias de Natal, Moçambique e Angola em relação com inquéritos sobre vírus transmitidos por artrópodes.

2. Estabeleceram-se novos registos da ocorrência das espécies culicíneas nas localidades de prevalência de vírus existentes nas províncias. Às listas da fauna previamente publicadas foram adicionadas:

Quatro espécies para Moçambique.

Oito espécies para o Natal.

Dez espécies para Angola.

Confirmou-se a suspeita da presença de algumas outras espécies.

3. Reviu-se a fauna culicínea do Natal com base nas listas publicadas e nas colheitas presentes. Na revisão são analisadas cento e dezoito espécies. Destas, setenta e cinco espécies foram identificadas em Ndumu, no Natal do Norte, próximo da fronteira de Moçambique.

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Culicine Mosquitoes in Southern Africa

New locality records in the provinces of Natal (Union of South Africa), Mozambique (Portuguese East Africa) and Angola (Portuguese West Africa), with a list of the species now known from Natal.

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