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Separatum

Vol. XXII

30.9.1963

No. 1-2

HYDROBIOLOGIA

ACTA HYDROBIOLOGICA HYDROGRAPHICA ET
PROTISTOLOGICA

New South African Records of Imperfectly Known Baetidae (Ephem.)

by

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(with 1 fig.)



UITGEVERIJ Dr W. JUNK — DEN HAAG — 1963

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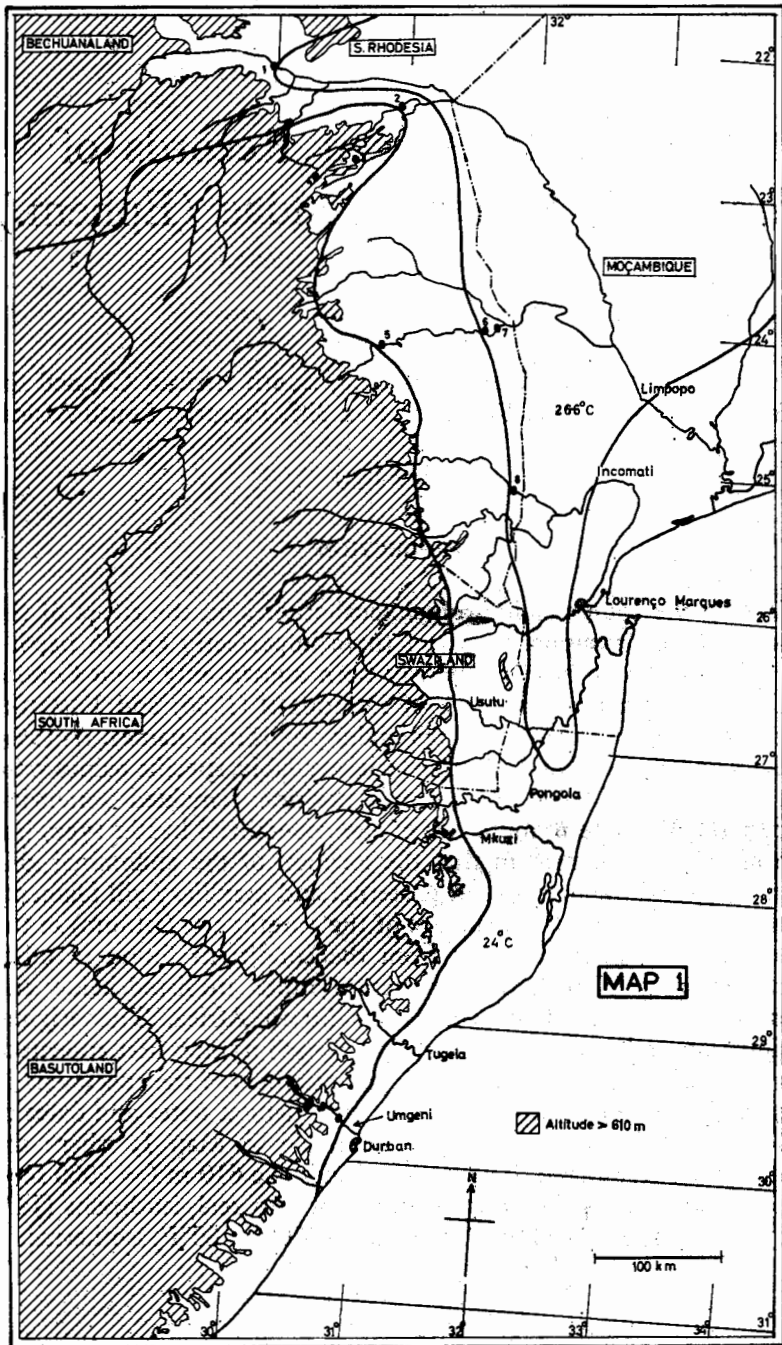
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INTRODUCTION

During the course of hydrobiological studies on the rivers of the Transvaal, the nymphal stages of three imperfectly known baetids were found. These have previously been known only from Central Africa, as a result of the work of DEMOULIN (1956) and KIMMINS (1955) who described the nymphs under provisional names. As these authors had no correlated adult material available, specific names were not assigned and even the generic position remained somewhat uncertain. All three nymphs are of the generalized baetid type, but two are rather aberrant in that the location of the abdominal gills (ventrally) and the presence of posternal and maxillary gill filaments in the one form, and the structure of the mouthparts (labium) in the other, depart rather radically from the conditions found in other baetid nymphs. New records of these nymphs are listed below and these constitute the first records for South Africa. The original designation under which a description of each nymph first appeared, has been maintained, and the catalogue numbers of the specimens in this Institute are also given, together with habitat notes and dates of collection. Reference should also be made to Map 1, where the localities are numbered. The map includes the 610 m (= 2000 feet) contour, and the approximate position of two real isotherms (January), namely the 24°C (= 75°F) and 26.6°C (= 80°F) isotherms.



NEW RECORDS

- (1) *Baetis* sp. A. DEMOULIN 1956 (p. 7—9, fig. 3)
GEN 249D, GEN 251 D. (Loc. 8 on map) Sabie River at Lower Sabie, Kruger National Park, Eastern Transvaal. 18.xi.59. Stones in current.
GEN 274C, GEN 335. (Loc. 8 on map) Sabie River at Lower Sabie, Kruger National Park, Eastern Transvaal. 24.xi.59. Stones in current.
GEN 732D (Loc. 1 on map) Limpopo River at Beit Bridge, Northern Transvaal. 8. iii.62. Stones in current.
GEN 734B (Loc. 2 on map) Mutale River at Long. 30° 53' E., Lat. 22° 29 S., north-eastern corner of Transvaal. 6.iii.62. Stones in current.

This nymph was named and described by DEMOULIN on the basis of two specimens from the Eastern Congo in the region of Lake Tanganyika (Koki River, „eau courante”). It is almost certain to belong to the genus *Centroptilum*, but confirmation of this will have to await the description of correlated imaginal material.

- (2) *Pseudocloeon* sp. A. KIMMINS 1955 (p. 866—868, fig. 3)
GEN 149H (Loc. 5 on map) Olifants River near Mica, Eastern Transvaal. 8.vii.59. Stones in current.
GEN 249C (Loc. 8 on map) Sabie River at Lower Sabie, Kruger National Park, Eastern Transvaal. 18.xi.59. Stones in current.
GEN 307B (Loc. 8 on map) Sabie River at Lower Sabie, Kruger National Park, Eastern Transvaal. 18.xi.59. Marginal vegetation.
GEN 471C (Loc. 7 on map) Olifants River ca. 5 km upstream from point of entry into Mocambique, Kruger National Park, Eastern Transvaal. 28.vi.60. Stones in current.
GEN 539A (Loc. 6 on map) Olifants River where crossed by road from Satara to Letaba Rest Camp, Kruger National Park, Eastern Transvaal. 28.vi.60. Stones in current.
GEN 681D (Loc. not shown on map) Deka River where crossed by road from Wankie to Livingstone, Southern Rhodesia. 19.vi.61. Stones in current.

The nymphs collected at the above localities are apparently identical to the ones described by KIMMINS, whose specimens came from Nyasaland (Tengadzi Stream). They are easily recognised by the peculiar development of the labial elements (palpi, glossae and paraglossae) which appears to be unique among nymphs of Baetidae.

Included in the above list of records, is one collection of nymphs from Southern Rhodesia. The locality is not shown on the map.

- (3) Baetidae nymph A, ? near *Centroptilum* KIMMINS 1955 (p. 871—873, figs. 6—7).

GEN 249B (Loc. 8 on map) Sabie River at Lower Sabie, Kruger National Park, Eastern Transvaal. 18.xi.59. Stones in current.

GEN 734C (Loc. 2 on map) Mutale River at long. 30° 53' E., Lat. 22° 29' S., north-east corner of Transvaal. 6.iii.62. Stones in current.

GEN 739E (Loc. 4 on map) Fairly large mountain stream, a tributary of the Levubu River, north-east Transvaal, at Long. 30° 15' E., Lat. 23° 03' S., where crossed by road from Louis Trichardt to Sibasa. 3.ii.62. Stones in current.

(No specimens retained) (Loc. 3 on map) Mutshindudi River ca 5.6 km NE of Sibasa, i.e. where crossed by road from Sibasa to Pafuri, north-east Transvaal. 5.iii.62. Stones in current.

As in the case of the previous species, these nymphs were first described by KIMMINS on specimens from Nyasaland (Tengadzi Stream and near Fort Johnston). The nymphs appear to be the most atypical of all immature Baetidae.

DISTRIBUTION IN SOUTHERN AFRICA

The three species listed above do not occur in the Southern and Western Cape Province (HARRISON & ELLSWORTH 1958, HARRISON & AGNEW, in press), nor do they occur in the Vaal Dam catchment area, i.e. the Transvaal highveld. OLIFF (1960), in his account of the Tugela River basin, Natal, lists none of the three, but this „*Centroptilum* sp. 1” is apparently *Baetis* sp. A. This he lists as occurring in zones 6 and 7 of the Tugela River, i.e. the „Rejuvenated River Zone” and the „Valley Sand Bed Zone” respectively, which lie immediately upstream of zone 8, the Estuarine Zone. Recently, Mr. H. J. SCOONBEE of this Institute has reported the occurrence of *Baetis* sp. A and Baetidae nymph A, ? near *Centroptilum* from the Umgeni River, just north of Durban, Natal. His records are not included in the list given above as full details will be published in his survey of the Umgeni River basin: his sampling stations where these two species have been found are shown unnumbered on the map.

All three species were originally recorded and described from Central Africa, and their occurrence in South Africa is obviously a southward extension of the distribution in to the Northern Transvaal and down the eastern low-lying strip or so-called „corridor”. On the map an attempt has been made to show a rough correlation between the pattern of distribution and temperature conditions as reflected by January isotherms. Altitudes higher than 610 m (= 2,000 feet) are shown shaded. In Natal, occurrence is limited to the coastal strip which becomes progressively narrower in a southerly direction.

The limit of distribution will accordingly be somewhere in the Eastern Cape or Southern Natal, close to the coastline. The reason that the January isotherms have been shown is that two of the species, *Baetis* sp. A and *Baetidae* nymph A ? near *Centroptilum* are seasonal and apparently disappear during the winter months when prevailing temperatures are much lower. This is probably achieved by means of diapause eggs. In this case it is then the summer temperature conditions which will be the limiting factor as regards distribution. POYNTON (1960) in his work on the zoogeography of the Amphibia of Southern Africa uses the July isotherms to define some of his regions but concedes that „the biological significance is obscure”.

GENERAL REMARKS

Nymphs of all three species are to be found clinging to stones where the current is swift. In Transvaal rivers, the density of nymphs appears to be always low and usually very low. A more detailed account of the chemistry and biology of the rivers where specimens were collected will be published at a later date.

SUMMARY

1. The occurrence in South Africa of three species of *Baetidae*, known only in the nymphal stages and previously described from Central Africa, is recorded.
2. Some aspects of the distribution of these forms are discussed.

ZUSAMMENFASSUNG

1. Das Vorkommen von drei Arten der Baetiden, die bisher nur aus Zentral-Afrika und da auch nur im Larvenzustand bekannt sind, wird beschrieben.
2. Einige Eigentümlichkeiten der Verbreitung der genannten Arten wird besprochen.

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