

FIRST RECORD OF TYPHINE GASTEROPODS FROM THE EOCENE OF SOUTHEASTERN NIGERIA¹

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ABSTRACT

Arua, I. 1981 First record of typhine gasteropods from the Eocene of southeastern Nigeria – Geol. Mijnbouw 60: 277-280.

Siphonochelus nigeriensis sp. nov., found in the Eocene Ameki Formation of southeastern Nigeria, is described and figured. With four smooth varices and tubes which are incorporated into it per whorl, and which are nearer to succeeding than to preceding varices, it is a typical *Siphonochelus*.

This is the first record of fossil typhine gasteropods from African strata and therefore seems to be of considerable interest, also from a palaeobiogeographical point of view.

INTRODUCTION

During a preliminary study of the stratigraphy and palaeontology of the upper beds of the Ameki Formation (Eocene) in southeastern Nigeria 32 specimens of Typhinae were recognised. These specimens, constituting the first record of fossil Typhinae from Africa, form the basis for this contribution. Typhinae are mostly small shelled gasteropods (5 mm to 25 mm in height) grouped together as a subfamily under the family Muricidae.

The distinguishing feature from all other Muricidae is the presence of tubes alternating with varices. These tubes extending from the shoulders of the whorls are cylindrical in shape with elongated or circular hollows. The number of tubes and varices per whorl are equal, varying from two to six but most have four per whorl. The last tube in each whorl opens to the interior of the shell. As soon as a new tube is formed the inner opening of the abandoned tube is sealed off with shelly material. The tube itself in most cases gradually disintegrates or breaks away until only a short stub remains.

The Typhinae on the whole are still poorly known. The oldest well developed typhine referred to *Siphonochelus* (*Laevityphis*) is known from the Lower Eocene of England and France. It is very likely that Typhinae evolved during the Palaeocene or perhaps Cretaceous. This earlier development is substantiated by species of *S.* (*Laevityphis*) in the Upper Eocene of Australia and Peru and by a number of subgenera such as *Rugotyphis* and *Indotyphis* which are widely distributed in Eocene sediments.

The morphology of the typhine shell has been well summarised by KEEN (1944, p. 50-72), VELLA (1961, p. 367-371) and GERTMAN (1969, p. 144-145). Generic and subgeneric units are based primarily upon the nature of the varices, the number of varices per whorl, the placement of the tubes whether behind the varix, in front of the varix or midway between the varices and the direction in which the tubes point, whether forward, outward or backward with respect to the aperture. Recent and Fossil Typhinae, although rare, are widely distributed so far known in three distinct provinces, namely the American, Australo-European and Javanese provinces. With this new find in the Nigerian Eocene a fourth (the West African province) could probably be established.

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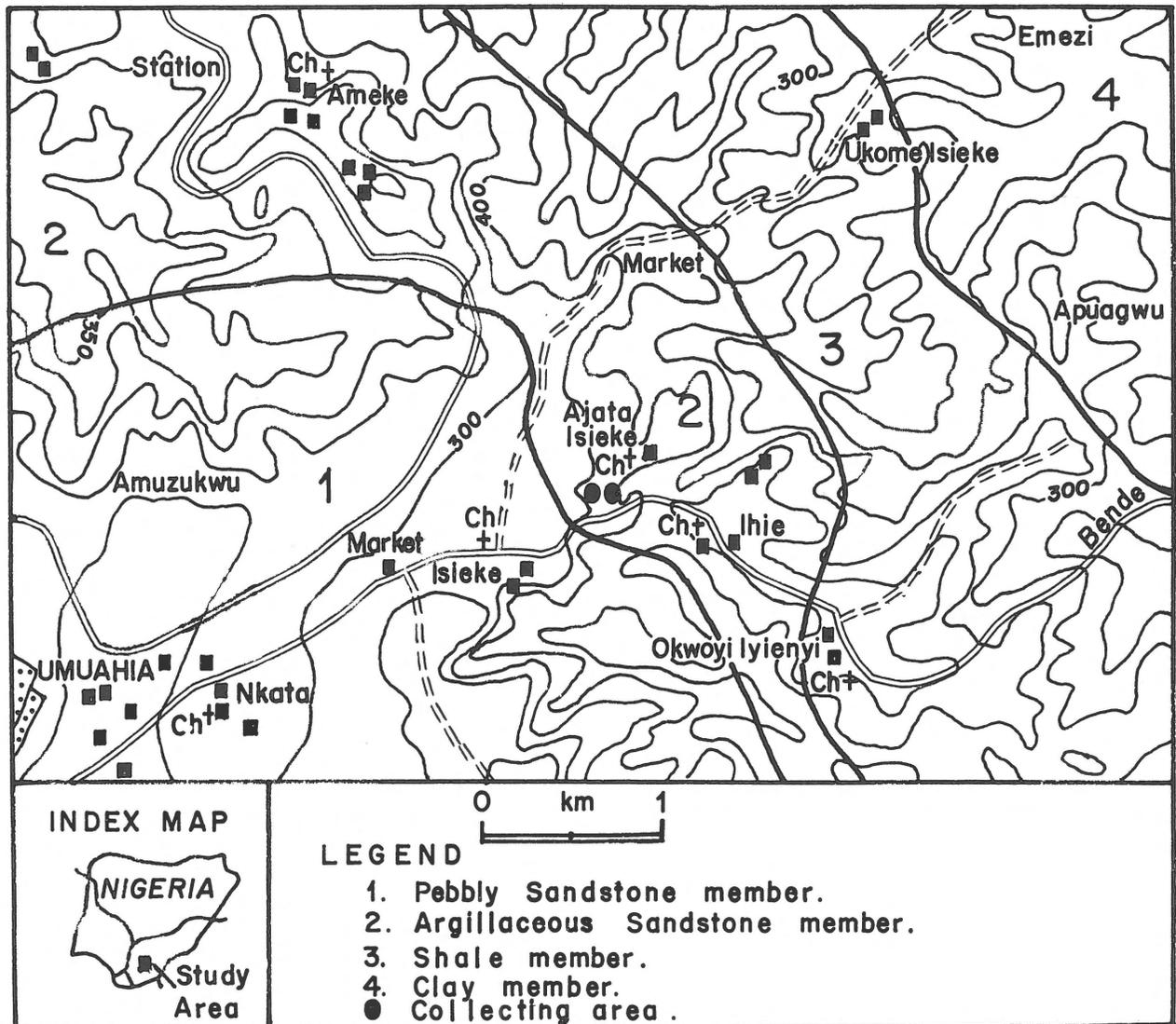


Fig. 1
Map of the type area of the Ameke Formation (Eocene) showing collecting area of *Siphonochelus nigeriensis* sp. nov.

AMEKI FORMATION

The typhine specimens were collected from a dark blue-grey, argillaceous, weak, consolidated, massive sandstone richly fossiliferous with molluscs, foraminifers and corals predominating, constituting the Argillaceous Sandstone Member of the Ameke Formation from its type area along the Umuahia - Bende road in the Imo State of Nigeria (Fig. 1). The member is highly micaceous and gypsum is present in the form of efflorescent needles. Chunks of amber, pockets of lignite and concretionary calcareous nodules are common within the member.

SYSTEMATIC DESCRIPTION

Phylum
Class
Subclass
Order
Super family
Family
Subfamily
Genus
Type Species:

MOLLUSCA
GASTROPODA
PROSOBRANCHIA
NEDGASTROPODA = Stenoglossa
MURICACEA
MURICIDAE
TYPHINAE
SIPHONOCHELUS Jousseume, 1880
Typhis avenatus (sic) Hinds, 1843
(= *T. arcuatus* Hinds), by original designation

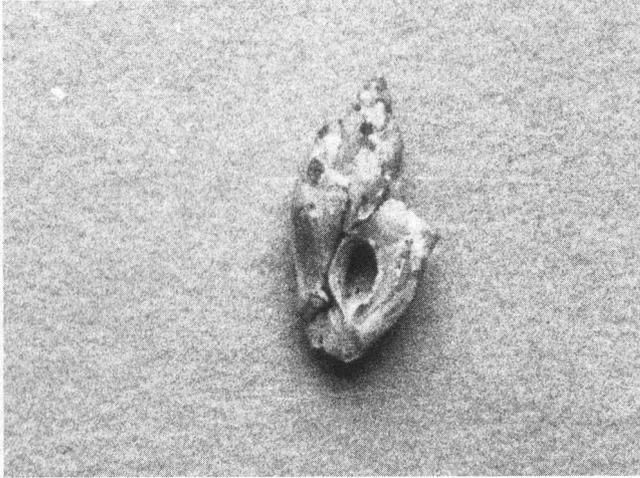


Fig. 2
Siphonochelus nigeriensis sp. nov., UNGP. No. 19, showing apertural view. x 4.

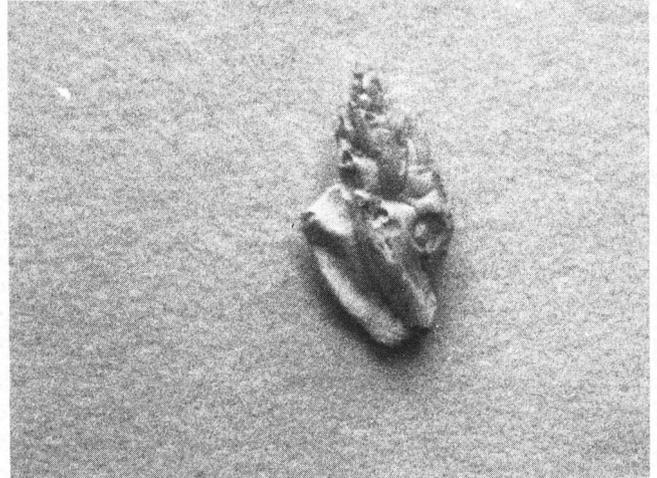


Fig. 3
Siphonochelus nigeriensis sp. nov., UNGP. No. 19, showing abapertural view. x 4.

Siphonochelus nigeriensis sp. nov. (Figs. 2 and 3)

Diagnosis – Shell with four varices and tubes per whorl. The tubes are formed within the varix, pointing abaxially and abaperturally, varix smooth, no spines, anterior canal open. Holotype. University of Nigeria, Palaeontology Lab. (UNGP) No. 19 Paratypes. UNGP Nos. 20-51.

Occurrence. – Amaki Formation, road-cut, 5 km east of Umuahia along the Umuahia-Bende main road, Imo State, Nigeria.

Description. – Shell small, elongate; protoconch smooth, rounded of one and one half whorls; five postnuclear whorls, of which the first has an angular shoulder, with four infolded notches on the back of the varix, in the following whorls the notches are replaced by tubes; tubes within the varices, nearer to succeeding than to preceding varices, all worn down to

stumps, pointing apically and abaxially, triangular-rounded in outline with elongate inner hollow, not free, connected to the preceding whorl through a partition, partition starts above the aperture joining the varix to the corresponding varix of the preceding whorl to form a strong buttress-like structure with a deep concavity behind it, four thickened varices per whorl, surface smooth except for a few growth lines, between the varices a deep recessed sinuous suture is revealed; aperture ovate, bordered by a thin raised rim, which extends downward on to the anterior canal, inner surface of aperture smoothly glazed, with four small tubercles on inner surface of outer lip immediately below the rim, anterior canal nearly vertical with a narrow opening gaping towards its anterior end; siphonal faciole bearing remnants of 3 former canals, distinct from the final canal and from one another, outer lip greatly expanded, angulated, widest above the aperture, strongly abaperturally bent, shoulder depressed, crossed by remnants of partitions (Fig. 4).

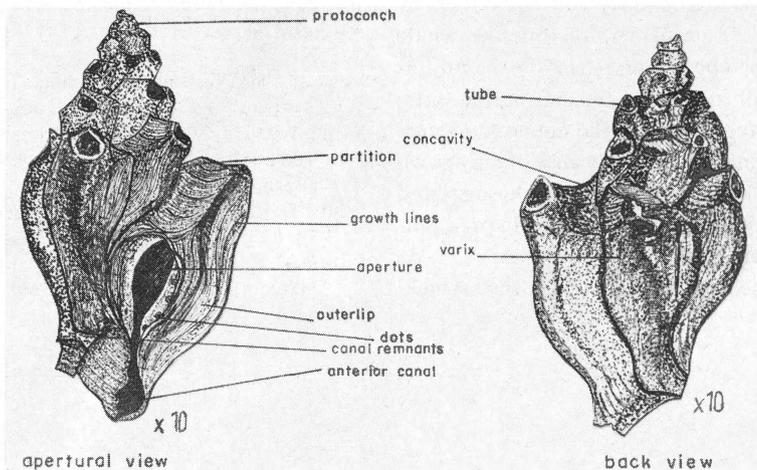


Fig. 4
Siphonochelus nigeriensis sp. nov., UNGP. No. 46, showing morphological features. x 10.

Dimensions —

sample	height (mm)	max. diam. (mm)	locality
UNGP no 19	9.5	5.6	No. 2
UNGP no 20	9.0	5.0	No. 2
UNGP no 21	7.9	4.9	No. 1
UNGP no. 22	6.2	4.0	No. 1

Name — The new species is named after Nigeria.

Discussion. — This new species, the first fossil *Siphonochelus* known from Africa, is represented by 25 adult and 7 juvenile specimens from two localities in the type area of the Eocene Ameki Formation. *S. nigeriensis* is readily distinguished from other species of *Siphonochelus* by the triangular-rounded outline of the tubes, the large partition above the aperture riding up upon the preceding whorl to form a strong buttress-like structure with a deep concavity behind it, the expanded angulated outer lip, the narrow, slit-like open almost straight anterior canal and the four pinhead-like dots on the inner surface of the smoothly glazed apertural opening. In the juvenile specimens the anterior canal is wide opened and the outer lip is narrow.

AGE AND PALAEOECOLOGICAL REMARKS

The rich Ameki fauna to which the new species belongs is contained in the upper member of the formation. NEWTON (1922) suggested that its age was Lutetian to Bartonian based on the molluscan fauna. EAMES, (1957) however, after revising the same molluscan fauna and describing additional species came to the conclusion that the Ameki fauna indicated Bartonian rather than Lutetian age, but he could only base his proposal on meagre evidence. Because of its faunal similarity to that of Claibornian of the Gulf Coast and Texas, BERGGREN (1960) favoured a Lutetian age for the Ameki fauna.

The sediments constituting this member were considered by WHITE (1926) as being of estuarine nature, but the whale *Pappacetus lugardi*, described by ANDREWS (1920), the foraminifers and the molluscs all indicate a typical marine environment. ADEGOKE (1969) reported that the abundant occurrence of *Turritella* in the fauna is notable because of the known restricted depth range (10-100 m) of the genus. He suggested that deposition of the Ameki sediments occurred in predominantly marine waters at considerable depth offshore.

The occurrence of typhine gastropods in the Eocene Ameki

Formation could give a clue to the palaeoecology of the sediments because living Typhinae are broadly tropical and shallow-marine inhabitants.

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