

A record of the bivalve *Guianadesma sinuosum* Morrison from the central Amazon basin (Bivalvia: Corbulidae)

Andreas LEISTIKOW

Abt. für Morphologie und Systematik der Tiere, Universität Bielefeld, Morgenbreede 45,
D-33615 Bielefeld

& Ronald JANSSEN

Forschungsinstitut und Naturmuseum Senckenberg, Senckenberganlage 25, D-60325 Frankfurt a. M.

The unusual fresh-water bivalve *Guianadesma sinuosum* Morrison, 1943, hitherto known only from Guayana and Surinam, is recorded for the first time from the central Amazon basin of Brazil.

Key words: Bivalvia, Corbulidae, *Guianadesma*, distribution, Amazon Basin, Brazil.

The bivalve *Guianadesma sinuosum* Morrison, 1943, is an enigmatic freshwater species known from the northern part of South America. It is found there byssally attached to rocks and gravel in rivers, sometimes under somewhat brackish conditions. The systematic position of the species has been discussed recently by Nuttall (1990). According to that author it belongs to the myoidean family Corbulidae.

A field study in the Amazon basin conducted by Ingo Curdt of the University of Bielefeld in August 1993 revealed the existence of some specimens in the Manaus region, Brazil. This implies a remarkable range extension for the species and poses some interesting questions which shall be addressed in the discussion below.

Five specimens were collected: three living specimens and two empty shells (leg. I. Curdt 4.8.1993). The empty shells with partially preserved soft parts were found washed ashore on a loamy bank of a small forest stream, the living specimens were attached to solid ground by byssal fixation. Unfortunately, the living specimens have not been preserved in alcohol so that the soft parts dried out. Some specimens were deposited in the collection of the Senckenberg Museum at Frankfurt am Main (SMF 311241-311243), other specimens remained in the collection of A. Leistikow. The locality is part of the rain forest reserve 'Reserva Ducke' about 25 km NE. of Manaus, Brazil, in the central Amazon basin.

Guianadesma Morrison, 1943

Guianadesma sinuosum Morrison, 1943

1943 *Guianadesma sinuosum* Morrison, Nautilus 57: 49, pl. 8 figs. 1-6.

1990 *Guianadesma sinuosum*, -- Nuttall, Bull. Brit. Mus. nat. hist. (Geol.) 45: 319, figs. 440-442 (here further synonymy and discussion).

The shells (figs. 1-2) measure about 19 to 23 mm in length and are 10-12 mm high.

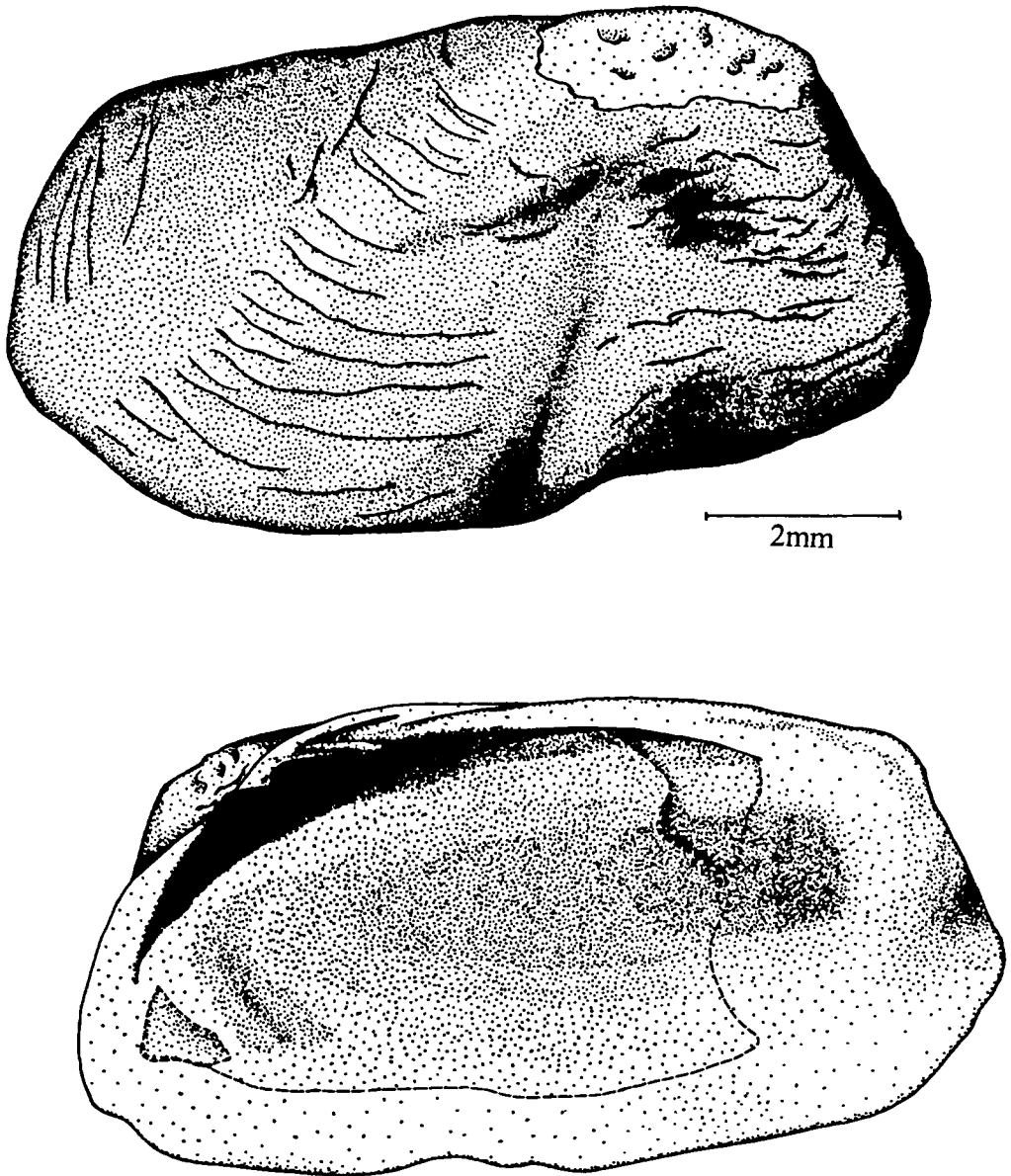
They are inequivalve with the right valve a bit larger than the left one and slightly asymmetrical. A transverse despression runs from the umbo to the ventral margin of the fairly rectangular shell, where it causes a concave inlet. The shell is divided by a rounded angulation going from the umbo to the postero-ventral margin into a flattened posterior region and the more convex anterior half of the shell. The periostracum is yellow-brown to olive-green in colour, thin and concentrically wrinkled at the anterior and posterior parts of the shell. Several weak radial lines are running from the umbo over the whole shell but are usually more visible on the posterior part. The interior of the shell is opaque white, with clearly visible muscle scars and a pallial line which shows a very shallow sinus. The hinge of both valves is edentulous and bears a narrow lanceolate resilium which is more deeply sunken in the right valve. For details see fig.2. The shells agree very well with the descriptions and figures given in the pertinent literature so that there is no doubt about the identification.

The systematic position of this unusual bivalve has been a matter of discussion until very recently and its nomenclature is not yet well established. According to Nuttall (1990) *Guianadesma sinuosum* is a member of the family Corbulidae where it is the only known recent member of the otherwise Tertiary fossil subfamily Pachydontinae. Representatives of that subfamily are well known from Late Oligocene to Pliocene deposits of the Amazon basin. It is the only species of the Myoida with a freshwater distribution. Morrison as well as Altena (1971) placed *Guianadesma* in the family Lyonsiidae. Altena also stated that the genus name is a junior synonym of *Anticorbula* Dall, 1898, which itself is a new name for the preoccupied *Himella* Adams, 1860, a genus introduced for the species *Himella fluviatilis* Adams, 1860, which was described as coming from the Marañon River in Peru.

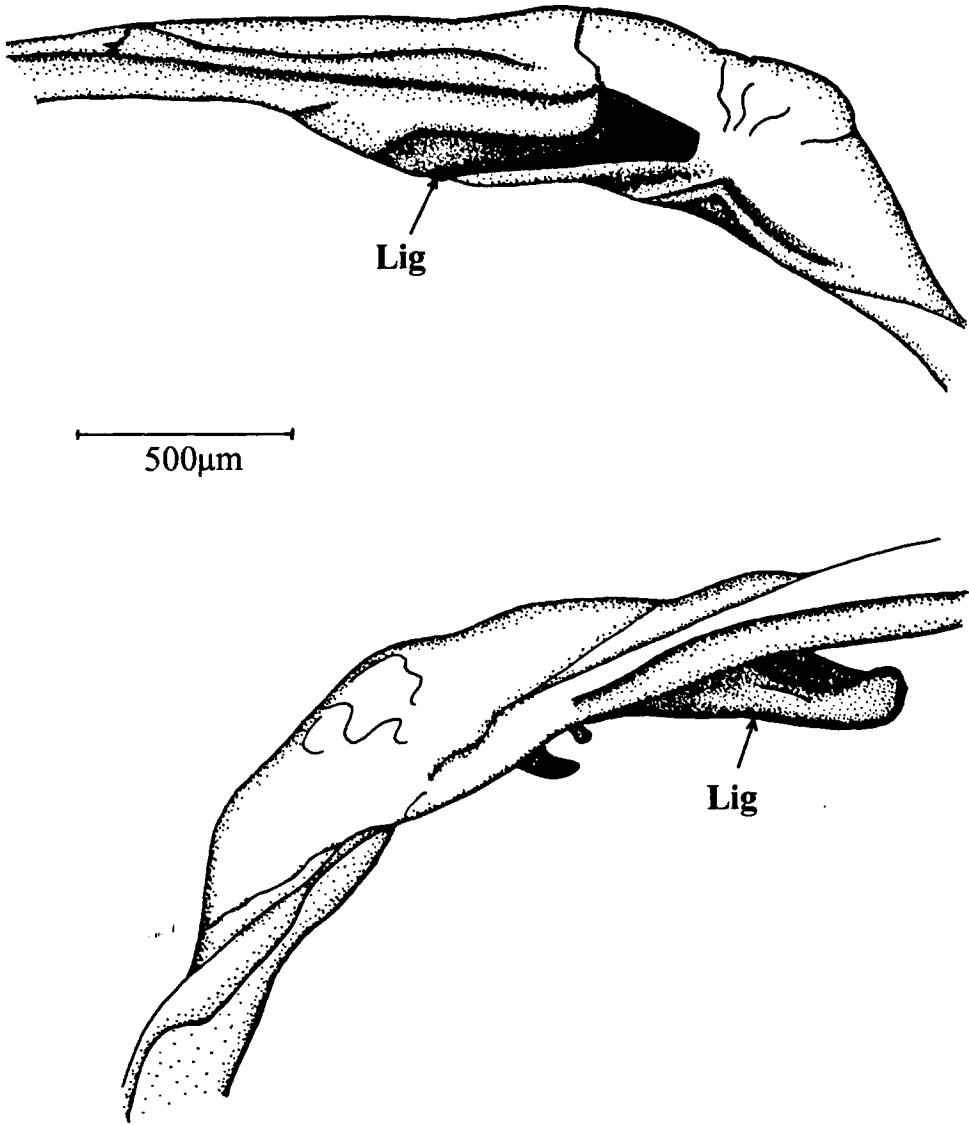
Nuttall (1990) discussed this species as well as previous records of *G. sinuosum* by Pilsbry (1944, as *Ostomya fluviatilis* Adams) and expressed his doubts about the locality of these findings (1990: 290). The new record, however, now makes it more probable that these previous records are not erroneous as has been argued by Nuttall, but that *Anticorbula fluviatilis* (Adams) could be indeed a senior synonym of *G. sinuosum*. But with no type material of Adams' taxon existing and with no better localized material from the Marañon River at hand it seems justified in the meantime to follow Nuttall in regarding this name as a nomen dubium and to use *G. sinuosum* as the valid name for the species in question.

Up to now *G. sinuosum* was not known as a member of recent faunas far outside the Guyanas. Morrison reported it from rocks midstream of Cuyuni River, British Guyana. Other localities were given by Altena (1971) who mentioned it from Marowijne River and Suriname River, both in Suriname. A fossil record by Palmer (1945, as *Ostomya mencheri* Palmer, 1945, from the Pliocene of Venezuela) was attributed to *G. sinuosum* by Nuttall (1990). As to the recent shells ascribed by Pilsbry to *Ostomya fluviatilis* and recorded by him from the Marañon River in Peru, see our remarks above.

Our new record is remarkable because it fills a great gap between the Marañon and Guayana populations. The now known distribution pattern can be explained in several ways. The first is the possibility that the species has a discontinuous distribution because recent populations are only relicts of a former continuous occurrence throughout a greater part of the Amazon basin and northern South America during late Tertiary or Pleistocene times. The genus itself is known since the Miocene (Nuttall, 1990: 319). The other possibility is that other populations are simply not known because of inadequate sampling of the regions in between the now known quite unrelated locations



Figs. 1. *Guianadesma sinuosum* Morrison. Reserva Ducke near Manaus, Brazil, right valve (SMF 311241a).



Figs. 2. *Guianadesma sinuosum* Morrison, Reserva Ducke near Manaus, Brazil, hinge of left valve (above, SMF 311243) and of right valve (below, SMF 311241a)

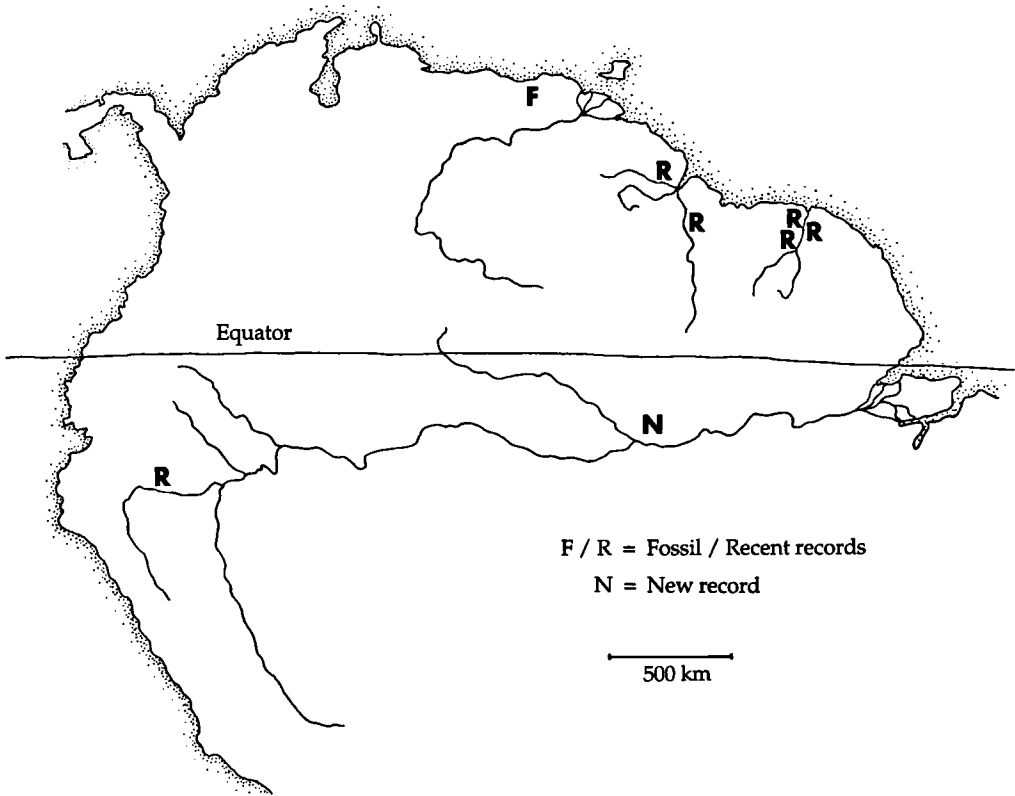


Fig. 3. Recent and fossil distribution of *Guianadesma sinuosum* Morrison.

or river systems. Last, but not least, another possible explanation of the observed patchy distribution could be that the species has been dispersed by birds, a well-known mode of dispersal for many freshwater molluscs. But since nothing is known about the reproductive biology and early ontogeny of the species, very little can be said about the probability of the latter assumption. The known recent and fossil records of *G. sinuosum* are shown in fig. 3.

This new record is sufficiently interesting to stimulate further research on the freshwater molluscan fauna of the Amazon region, which is more or less a 'white patch' in our knowledge of the faunas of this vast but highly endangered rain forest regions.

The authors are indebted to Mr. Ingo Curdt, Bielefeld, who collected the material and placed it at their disposal. Thanks are also due to Mr. Frank Wesselingh, Leiden, for his confirmation of the systematic placement of our shells and bibliographic advice.

REFERENCES

- ALTENA, C. O. VAN REGTEREN, 1971. The marine Mollusca of Suriname (Dutch Guiana). Holocene and Recent. Part II. Bivalvia and Scaphopoda. — *Zool. Verh. Leiden* 119: 1-100.
- MORRISON, P. J. E., 1943. A new type of fresh water clam from British Guiana. — *Nautilus* 57 : 46-52.
- NUTTALL, C. P., 1990. A review of the Tertiary non-marine Molluscan faunas of the Pebasian and other inland basins of northern South America. — *Bull. Brit. Mus. nat. Hist. (Geol.)* 45 : 165-371.
- PALMER, K. V. W., 1945. Fossil freshwater Mollusca from the State of Monagas, Venezuela. — *Bull. Amer. Paleont.* 31(118): 1-34.
- PILSBRY, H. A., 1944. Molluscan fossils from the Rio Pachitea and vicinity in Eastern Peru. — *Proc. Acad. nat. Sci. Philadelphia* 96: 137-153.