

Note on a new rhyncholite from the Maastrichtian of Limburg, The Netherlands

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Abstract

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Recently discovered rhyncholites (Cephalopod mandibles) from the Upper Maastrichtian of the province of Limburg make it possible to describe a new species: *Rhyncholites marcellae*.

Introduction

Rhyncholites are calcareous arrow-shaped parts in upper jaws of Cephalopods. The upper and lower jaws perform scissor-like movements. For this purpose the anterior part of the upper jaw is furnished with a calcareous extremity: the rhyncholite, and the lower jaw is provided with an internal denticulated calcareous element: the conchorhynch. Usually only the rhyncholite is found fossilized. It will be necessary for the time being to treat these isolated mandibles as parataxon. Rare findings of rhyncholites *in situ* in the conch of Cephalopods indicate that they belong to Nautiloids and some groups of Ammonoids (cf. Van der Tuuk 1980, 1982).

Rhyncholites from the Upper Maastrichtian of Limburg (The Netherlands) and adjoining areas were described by Van Binckhorst (1861) and Holzapfel (1888) and were reviewed by Van der Tuuk (1980). Additional material recently collected yielded a second, new species.

Systematic description

Class: Cephalopoda Cuvier, 1798

Order and family: uncertain

Genus *Rhyncholites* Biguet, 1819

(Type species: *Rhyncholites hirundo* Biguet, 1819)
Rhyncholites marcellae n. sp.

Derivation of the name

The species is named after Mrs. Marcella van der Tuuk van den Burg.

Material

Locus typicus: quarry Nekami at 't Rooth, municipality of Margraten, province of Limburg, The Netherlands.

Stratum typicum: Emael Chalk Member of the Maastricht Formation (Upper Maastrichtian).

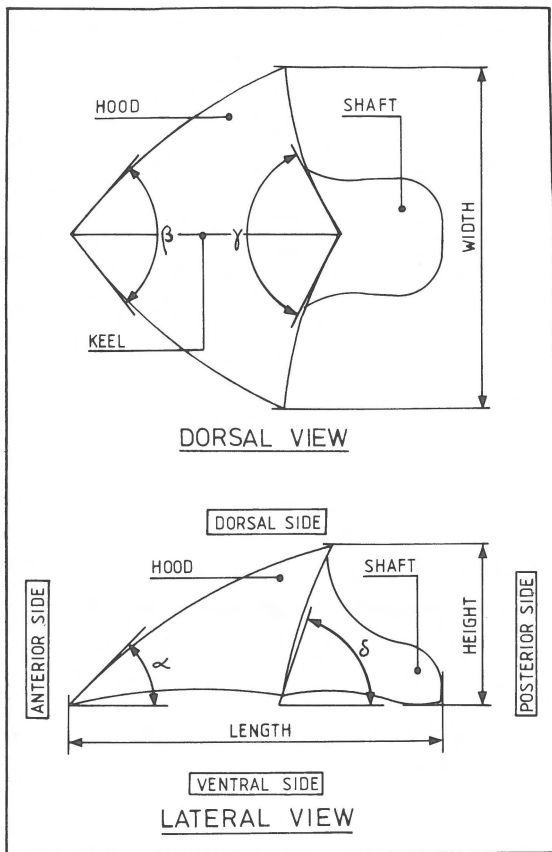


Fig. 1. Morphological features.

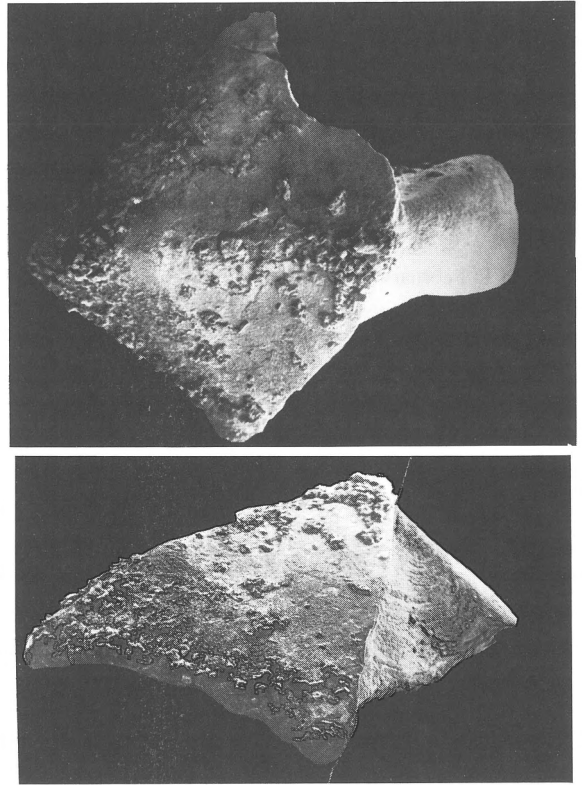
Two nearly complete specimens. The specimen figured in plate I, Figure 1a and 1b is designated as holotype.

The material was donated by the author to the National Museum of Geology and Mineralogy, Leiden, The Netherlands, RGM 365955 (holotype) and RGM 365956 (paratype)

Diagnosis

A rather small arrow-shaped rhyncholite, with a very broad, rhomboid hood and a small shaft. General appearance in ventral view is slender.

Plate 1.



1. *Rhyncholites marcellae* n.sp., RGM 365955 (holotype) 13,3X Emael Chalk, Upper Maastrichtian, quarry Nekami at 't Rooth, municipality of Margraten, province of Limburg, The Netherlands

a. dorsal view – b. lateral view

Description

For general morphological features see Figure 1 and *Teichert & Spinosa (1971)*.

The holotype has a convex, rhomboid hood, which is anteriorly as well as posteriorly pointed. The posterior hood margins extend slightly over the shaft. The width of the hood is greater than its length. A broadly rounded median keel on the dorsal side of the hood gives the specimen a convex longitudinal outline in lateral view. The small shaft is only half as long as the hood (seen in dorsal view) and is transversely rounded on the dorsal side. The sides of the shaft are parallel. The length of the shaft is about the same as the width. The ventral surface is slightly concave. The ventral margins of the shaft and the hood are sharp.

Dimensions

	length (mm)	height (mm)	width (mm)	α (degrees)	β (degrees)	γ (degrees)	δ (degrees)
holotype RGM 365955	6.3	2.7	5.2	40	110	115	70
paratype RGM 365956	6.9	2.9	5.0	35	115	100	70

Growth marks appear parallel to these ventral margins on the complete surface of the rhyncholite.

In the paratype, the posterior part of the shaft is broken off.

Discussion

The broad rhomboid hood with keel, convexely rounded shaft and ventral concavity place the two specimens in the genus *Rhyncholites* Biguet, 1819. The specimens closely resemble *Rhyncholites minimus* Van Binckhorst, 1861, also from the Upper Maastrichtian of Limburg. But, if the specimens of *Rhyncholites marcellae* are compared with small specimens of *Rhyncholites minimus* the difference of the shaft length is striking. The shaft is half as long as the hood in *R. marcellae* and approximately of the same length as the hood in *R. minimus*. Hence it follows that the relative length of the hood, which occupies about 1/2 of the length of the complete specimen in *R. minimus* and about 2/3 of the length of the complete specimen in *R. marcellae*, makes the latter species look much more slender than *R. minimus*, seen in lateral view, while the relative height of the hood in both species is about the same. The relative width of the hood and the angle β between the anterior hood margins is much greater in *R. marcellae*.

Larger specimens of *R. minimus* show even more differences, because the angle β between the anterior hood margins and the relative width of the hood is smaller than that of more juvenile specimens.

Comparisons of other species of *Rhyncholites* with *Rhyncholites marcellae*:

Rhyncholites rectus Till, 1907 from the Upper Juras-

sic of northern Germany is much more slender and the ventral surface is more complex.

Rhyncholites hoffmanni Till, 1907 from the Upper Jurassic of northern Germany is much more slender and has a longer shaft.

Rhyncholites portlandicus Till, 1908 from the Upper Jurassic of northern Germany has a more acute angle β and a longer shaft.

Rhyncholites giganteus d'Orbigny, 1825 from the Upper Jurassic of France has a more acute angle β and a longer shaft.

Rhyncholites lapparenti Geysant, 1976 from the Oxfordian of Tunisia has a more acute angle β .

Rhyncholites bohemicus Till, 1906 from the Cenomanian of northern Germany differs by its delta-shaped hood and by the presence of a prominent ridge on the anterior part of the ventral surface.

Rhyncholites simplex Fritsch, 1872 from the Cenomanian of northern Germany has a relatively lower hood and a larger shaft.

Rhyncholites aethioparion Ward & Cooper, 1972 from the Eocene of Great Britain has a much longer shaft.

Rhyncholites shinfieldensis Ward & Cooper, 1972 from the Eocene of Great Britain has a longer shaft.

Rhyncholites voitestii Suraru, 1963 from the Eocene of Romania has a much larger shaft and a more acute angle β .

Rhyncholites allioni Bellardi, 1873 from the Mioocene of northwestern Italy has a larger shaft and a lower hood.

The angle, enclosed by the cutting edge of the oral surface of the Limburg Cephalopod lower mandible *Conchorhynchus limburgicus* Van der Tuuk, 1982 is 120° and matches the angle β formed by the anterior hood margins of *Rhyncholites mar-*

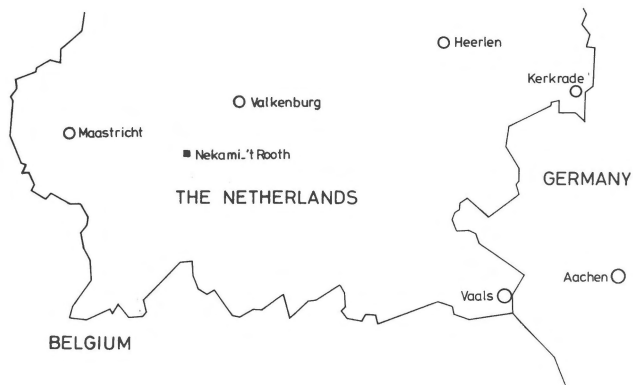
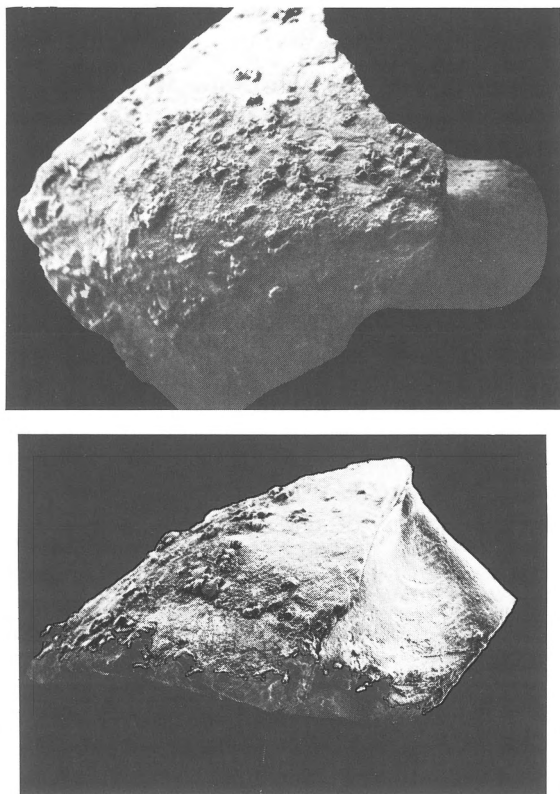


Fig. 2. Locality diagram.

cellae (110° and 115°) in order to perform a cutting movement with each other. This is in contrast with the other Limburg rhyncholite: *Rhyncholites mini-*

mus Van Binckhorst, 1861, which has a much smaller angle β between the anterior hood margins (the average is 82°). It is quite possible, that *Rhyncholites marcellae* and *Conchorhynchus limburgicus* may have functioned in the same group of Cephalopods.

Plate 2.



2. *Rhyncholites marcellae* n. sp., RGM 365956 (paratype) 6,2X Emael Chalk, Upper Maastrichtian, quarry Nekami at 't Rooth, municipality of Margraten, province of Limburg, The Netherlands
a. dorsal view – b. lateral view

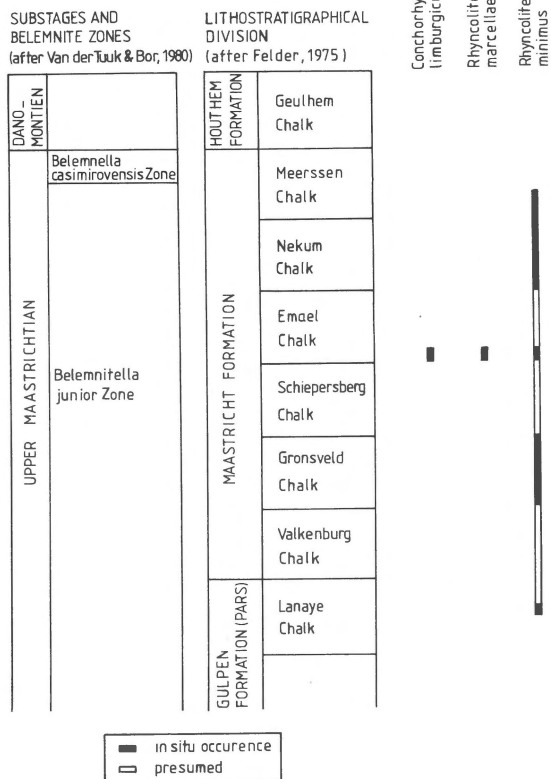


Fig. 3. Stratigraphic position.

The relationship between *Conchorhynchus limburgicus* and Limburg ammonoids was discussed by Van der Tuuk (1982).

Geographical and stratigraphical distribution (Figures 2 and 3)

The two specimens were collected from a layer of fossil grit at the base of the Emael Chalk Member of the Maastricht Formation (lithostratigraphical division Felder, 1975). Van der Tuuk & Bor (1980) place the Emael Chalk Member in the *Belemnitella junior* Zone, which is supposed to be indicative for a Late Maastrichtian age.

The two rhyncholites present were found in the quarry Nekami at 't Rooth, province of Limburg, The Netherlands. *Rhyncholites marcellae* is not yet known from other localities.

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The photographs were prepared with an electron scanning microscope.