

A FURTHER ONCOCERID NAUTILOID FROM THE UPPER SILURIAN OF SOUTHWEST SARDINIA

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With 2 figures and 1 table

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Abstract

For the first time, the Bohemian nautiloid subspecies *Oonoceras acinaces elongatum* (Barrande, 1866) (Nautiloidea, Oncocerida) is described and illustrated from the Upper Silurian (Přidolí) of southwest Sardinia.

Riassunto

Viene descritta e figurata per la prima volta nel Přidolí della Sardegna sud-occidentale la sottospecie boema *Oonoceras acinaces elongatum* (Barrande, 1866) (Nautiloidea, Oncocerida).

Introduction

Silurian nautiloid cephalopods of Sardinia have first been described and illustrated by Meneghini (1857) in «Paléontologie de l'Île de Sardaigne» as part of the La Marmora's book «Voyage en Sardaigne». About a century later, Serpagli and Gnoli (1977) revised the fossil collection of Meneghini supplemented by further collected material from SW Sardinia. A total of 38 species was described among which oncocerids were represented by *Oocerina abdita* (Barrande, 1877), *Oonoceras plebeium* (Barrande, 1866) and *Galtoceras? sardoum* Serpagli and Gnoli, 1977. Such oncocerids were reported from the Mediterranean region for the first time. Further papers on Silurian and early Devonian nautiloids of Sardinia were mostly published by members of the "Palaeozoic Team" of Modena e Reggio E. University and were dealing with the revision of the old collections (Gnoli and Serpagli, 1977), systematics (Gnoli, 1983; 1985; 1987; 1990; 1996; Gnoli and Kiselev, 1994), biostratigraphy (Gnoli and Serpagli, 1991), as well as on nautiloid palaeoecology (Gnoli *et al.*, 1980; Histon and Gnoli, 1994). Finally also some Ordovician nautiloids were described (Gnoli and Serventi, 2002; Gnoli and Pillola, 2002). Information on the "state of the art" on Palaeozoic

palaeontology and biostratigraphy of southern Sardinia can be found in the two volumes edited by Serpagli (1998; 1999) in connection with the Seventh European Conodont Symposium.

Systematics

We follow the systematics proposed by the Treatise on Invertebrate Paleontology, Part K, Mollusca 3 edited by R. C. Moore, with integrations by Dzik (1984) and Data Retrieval System Nautiloidea available on CD ROM compiled by Dr. T. Engeser (Freie Universität, Berlin). The studied material is part of the Paleontological Collection of the Dipartimento del Museo di Paleobiologia e dell'Orto Botanico (Università di Modena e Reggio E.), Col. No. IPUM 33100.

Subclass Nautiloidea Agassiz, 1847
Order Oncocerida Flower in Flower and Kummel, 1950
Family Oncoceratidae Hyatt, 1884
Genus *Oonoceras* Hyatt, 1884

Type species: By subsequent designation (Bassler, 1915) *Cyrtoceras acinaces* Barrande, 1866.

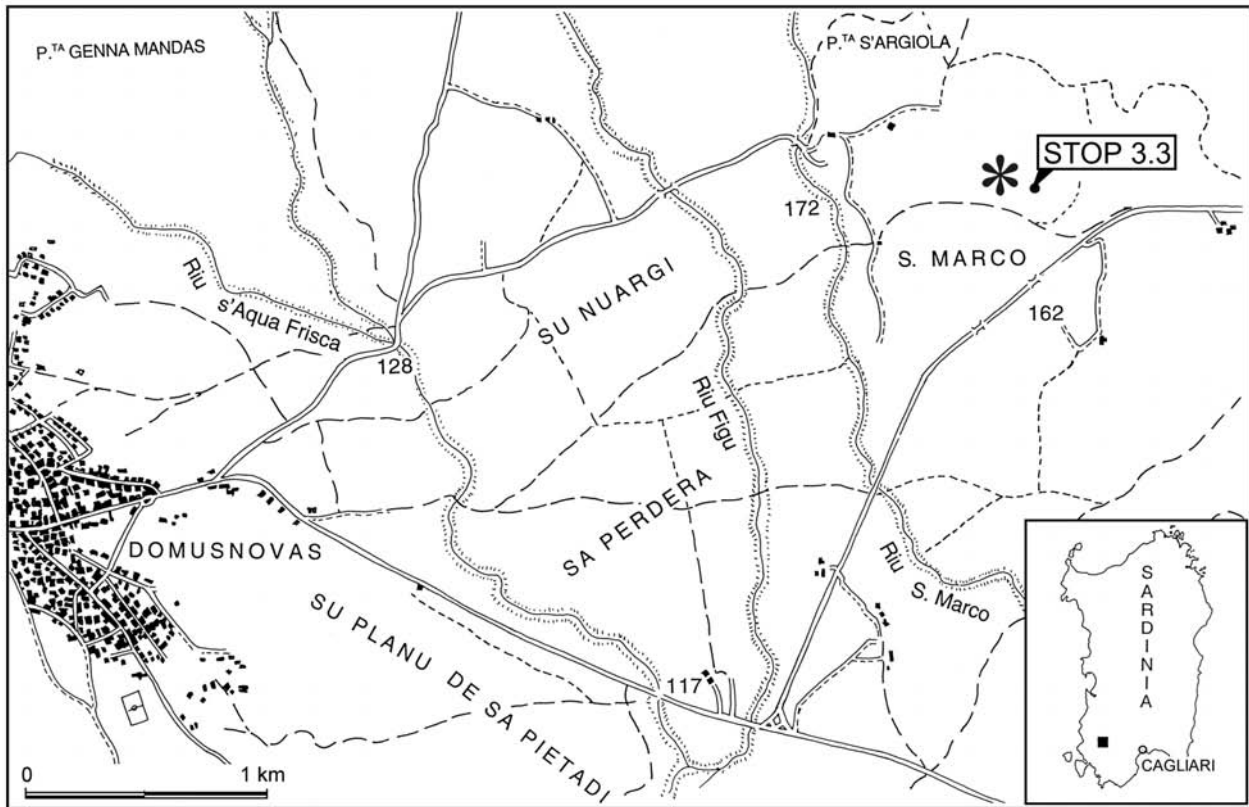


Fig. 1: Map showing the locality (marked with an asterisk*) from which the studied nautiloid was recovered (after Corradini et al., 1998).

Remarks: According to Dzik (1984, p. 55) "... the topotype population of *C. acinaces* recorded from Dlauha Hora includes also *Cyrtoceras sociale*, *C. plebeium*, *C. elongatum* and *C. hoernesii*."

We assume that the differences between these taxa such as different curvatures of the shell, cross-sections and some details like periphraets encircling the basal zone of the body chambers of Oncocerida (e.g. Barrande, 1877, pl. 508, figs. 8, 9, and 11) justify that *C. sociale*, *C. plebeium*, *C. elongatum* and *C. hoernesii* are actually subspecies of *acinaces* (see also <http://www.iczn.org/iczn/index.jsp>, Article 61.4). Manda (pers. com. 2005-05-05.) also agrees that the Barrande taxa mentioned above are not synonyms at a specific level except *C. acinaces* that could represent a gerontic stage of *C. sociale*. However, in order to verify definitely if the taxa mentioned above are valid at a species or subspecies level it is necessary to know the exact stratigraphic level of each taxon within the Bohemian sequence which seems, at the moment, almost impossible (see tab.1).

Oonoceras acinaces elongatum (Barrande, 1866)
(Text-figs. 2a-d)

- 1848 *Cyrtoceras elongatum* Barrande - Haidinger, p. 208 (*nomen nudum*).
- 1852 *Cyrtoceras elongatum* Barrande - Giebel, p. 209 (*nomen nudum*)
- 1866 *Cyrtoceras elongatum* Barrande, pl. 109, figs. 1-10; pl. 117, figs. 5-11; pl. 157, figs. 50-55; pl. 202, figs. 16-18; pl. 205, figs. 16-18; pl. ?208, figs. ?29-?30.
- 1874 *Cyrtoceras elongatum* Barrande, pp. 499-500.
- 1877 *Cyrtoceras elongatum* Barrande, pl. ?508, figs. ?9-?11.
- 1984 *Oonoceras acinaces* (Barrande, 1866) - Dzik, p. 55.

Description: The available material of this species consists of one incomplete fragment of the conch which is 75 mm long showing ten preserved chambers of the phragmocone and the lower part of the living chamber. It represents an exogastric cyrto-

Barrande species	Localities after Barrande	Horizons/ Age	According to Dr. P. Štorch (Czech Academy of Science, Prague) (pers. comm. 2004–3–25) the stratigraphic position of the locations mentioned by Barrande, 1866 reported as at present names could be as follows:
<i>C. acinaces</i>	Dlauha Hora, Butowitz	E, e2	Dlauha Hora (Kosov–Dlouhá hora u Berouna) – several test pits and small quarries, several stratigraphic levels ranging from middle to uppermost Ludlow (<i>S. fritschii linearis</i> – <i>M. formosus</i> graptolite biozones);
<i>C. elongatum</i>	Dvoretz, Vyskočilka, Lochkov, Kozoř, Hinter-Kopanina, Karlstein, Konieprus, Dlauha Hora	E	Butowitz (Butovice) – lowermost Ludlow (<i>N. nilssoni</i> – <i>L. progenitor</i> graptolite biozones), Kovářovic Mez nearby corresponds to the upper Ludlow; Karlstein (Karlštejn) – Přídolí and Lochkovian, possibly also uppermost Ludlow. Hinter-Kopanina (Zadni Kopanina) – several levels of Ludlow, Přídolí and lowermost Lochkovian (several scattered outcrops, test-pits and small quarries).
<i>C. hoernesi</i>	Dlauha Hora	E	Dlauha Hora (Kosov–Dlouhá hora u Berouna) – several test-pits and small quarries, several stratigraphic levels ranging from middle to uppermost Ludlow (<i>S. fritschii linearis</i> – <i>M. formosus</i> graptolite biozones).
<i>C. plebeium</i>	Dvoretz, Butowitz, Vyskočilka, Lochkov, Kozoř, Karlstein, Dlauha Hora	e1, e2	Dvoretz (Praha 4–Dvorce) – Unclear, probably ranging from Ludlow to upper Přídolí.
<i>C. sociale</i>	Dvoretz, Vyskočilka, Slivenetz, Lochkov, Kozoř, Konieprus, Dlauha Hora	E	Vyskočilka (Malá Chuchle – Vyskočilka), Middle Wenlock, several levels dated as Ludlow and Přídolí (several test pits and small quarries); Lochkov (probably <i>Orthoceras</i> quarry) – upper Ludlow and lower Přídolí; Kosoř (if it corresponds with Černá Rokle, it is probably Lochkovian in age). Konieprus (Koněprusy) – once again, this designates several places N and NE of Koněprusy and correspond to several levels within the Ludlow; Slivenetz (Slivenec) – unclear.

Tab. 1: Species, localities and ages after Barrande, 1874 compared with available data (Štorch, pers. comm., 2004–3–25).

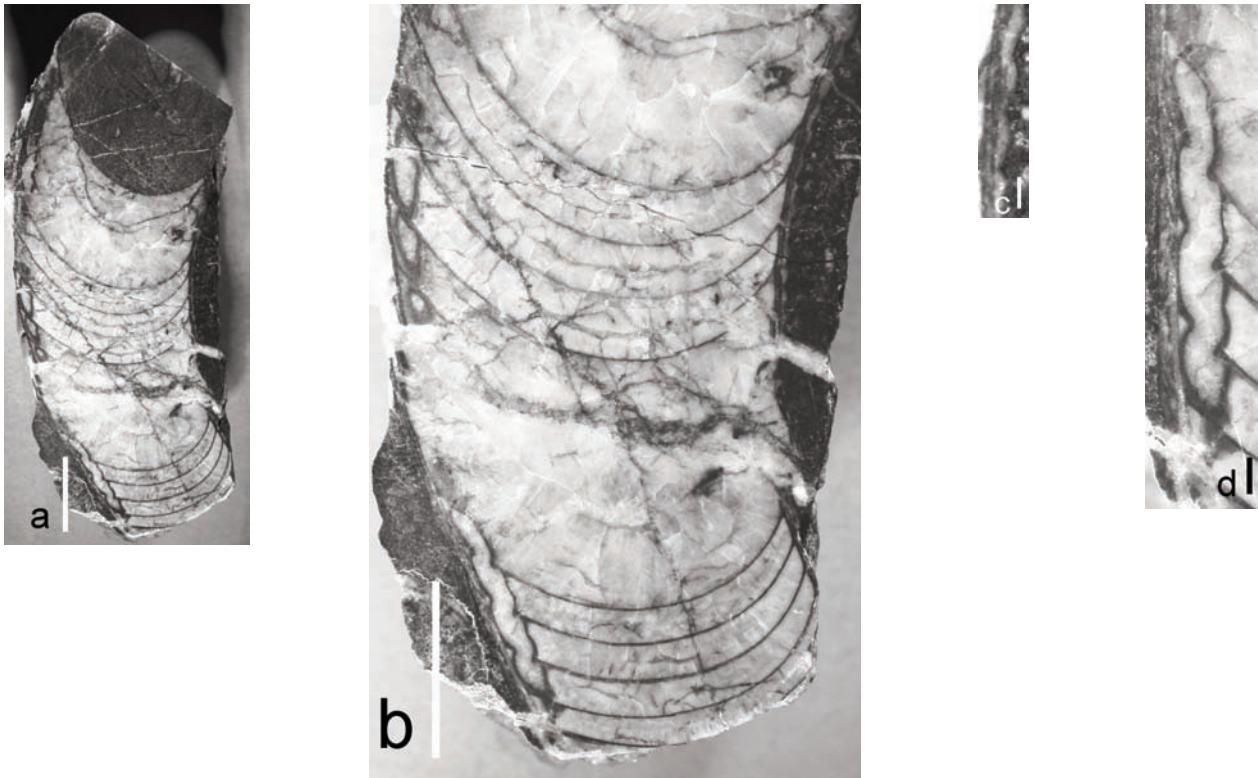


Fig. 2: *Oonoceras acinaces elongatum* (Barrande, 1866)

- a) General view of the polished longitudinal middle section of the studied specimen (Coll. No. IPUM 33100);
 b) Fig. a enlarged to show the inner features and the preserved chambers of the phragmocone;
 c) Enlarged polished longitudinal section showing the pattern of ornamentation in the ventral test of the shell;
 d) Detail of the siphuncle in contact to the ventral inner side of the shell showing the very short and recumbent cyrtochoanitic septal necks, the connecting rings slightly expanded inside the chambers and its sigmoidal pattern. Note that all the images do not show any kind of primary deposit either cameral or endosiphuncular. Scale bar in a) and b) = 1cm; in c) and d) = 1mm.

conic depressed, apparently smooth shell of sub-elliptical cross section. In parts of the ventral test striations in the form of sub-regular oblique, apparently imbricate rounded striae as shown in the enlarged longitudinal polished section of Fig. 2c, are visible. The dorso-ventral diameter near the base of the living chamber measures 26 mm, the lateral one 16 mm, resulting in a ratio of about 3:5. The curvature of the shell is variable due to ontogenesis, the radius of the ventral side of the mature phragmocone measures about 7 cm and that of the dorsal side 5 cm. The chambers are short, the depth measures about 1/4 of their diameter; the distance between the septa varies from 2.5 to 4 mm, corresponding to 1/10 of the dorso-ventral diameter. The siphuncle is very close to the ventral side of the shell. Its elements are cyrtochoanitic in shape resulting in a sigmoid pattern in longitudinal sec-

tion. The septal neck is very short and recumbent; cyrtochoanitic connecting rings are slightly expanded inside the chambers. Their maximum diameter is 1.5 the septal foramen which in turn is half the septal spacing or 1/12 of the corresponding dorso-ventral diameter of the shell. No primary deposits either cameral or endosiphuncular have been observed.

Remarks: The studied specimen was tectonically deformed and recrystallized during diagenesis. However, despite of that, enough diagnostic features are preserved for a correct identification.

A possible Přídolí age of the studied specimens is supported by the occurrence of the nautiloid species *Orthocycloceras? fluminese* in the same iso-

lated block (Meneghini, 1857) (Gnoli and Serpagli, 1991, tab. 1) which up to now is known from limestones of Přídolí age only.

The occurrence of *O. acinaces elongatum* (Barrande) in SW Sardinia allows emphasizing once more the intimate faunistic relationships between the Silurian of Sardinia and Bohemia stressed by fossil cephalopods.

Occurrence: Upper Silurian (Přídolí) of SW Sardinia, Upper Silurian (see tab. 1) of Central Bohemia.

Material studied: One specimen (IPUM 33100) from one isolated block (labelled as BK-ARG 24) composed of micritic limestone poor in fossils collected from the Argiola area near Domusnovas (SW Sardinia, fig. 1).

Acknowledgements

This search was funded by MIUR grants (Responsible Prof. E. Serpagli) and the PRIN 2004 Project "The end and the beginning: loss and recoveries from the end-Ordovician mass extinction in North Gondwana" (Responsible Prof. A. Ferretti, Modena and Reggio E. University). Dr. Š. Manda (Czech Geological Survey) Dr. P. Štorch (Czech Academy of Science) provided invaluable help on the stratigraphy of the Barrandian localities. The authors are deeply indebted to Prof. Serpagli (Modena and Reggio E. University) for useful suggestions and advise. K. Krainer (Innsbruck University) improved the English.

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