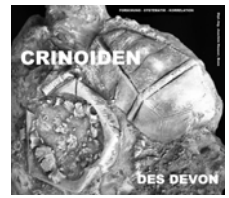


The stratigraphical distribution of *Vasocrinus* (Crinoidea, Inadunata) in the north-spanish Lower and Middle Devonian, and first note of *Verneuilicrinus* HAUSER, 2013 from the Santa Lucía Formation of the Esla Region of the Cantabrian Mountains (Northern Spain)

Dipl.-Ing. Joachim HAUSER, Von-Sandt-Street 95, Germany 53225 Bonn,
E-Mail: crinoiden-aus-dem-devon@arcor.de; Internet: www.devon-crinoiden.de

with 5 pages, 4 text-figures and 1 plate (published via Internet 14. May 2014)



1. Part: The stratigraphical distribution of *Vasocrinus* (Crinoidea, Inadunata) in the north-spanish Lower and Middle Devonian

Introduction

A review about all known taxa (comprehensive of findings up to 1962 in BREIMER, 1962:146-153) of the fossil crinoid *Vasocrinus* found in the Lower and Middle Devonian of northern Spain shown that most of the fossils are from the stratigraphical point of view more or less worthless. The aim of the first part of this paper is to give the species of this taxon in the past 50 years in the Devonian of northern Spain a “stratigraphical-face”.

Kurzfassung: Die historischen und neuen Funde von *Vasocrinus* aus dem Unter- und Mitteldevon des Kantabrischen Gebirges und der asturischen Küste werden einen kritischen Review unterzogen und soweit möglich exakten stratigraphischen Einheiten zugeordnet. *Vasocrinus* ist derzeit mit insgesamt 8 Arten aus dem nordspanischen Devon bekannt: *Vasocrinus breimeri*, *Vasocrinus conicus*, *Vasocrinus fernandolandeta*, *Vasocrinus* cf. *V. sculptus*, *Vasocrinus stellaris*, *Vasocrinus turbinatus*, *Vasocrinus valens* und *Vasocrinus sculptus*.

Abstract: All historical and new findings of the taxon *Vasocrinus* from the Lower and middle Devonian of the Devonian of northern Spain are discussed. As far as possible all species assigned to stratigraphical unites of the Asturias and the Cantabrian area. Following species are known of the Spanish Devonian: *Vasocrinus breimeri*, *Vasocrinus conicus*, *Vasocrinus fernandolandeta*, *Vasocrinus* cf. *V. sculptus*, *Vasocrinus stellaris*, *Vasocrinus turbinatus*, *Vasocrinus valens* und *Vasocrinus sculptus*.

Resumen: Se discute la distribución estratigráfica de las especies del género *Vasocrinus*, conocidas del Devónico inferior y medio de la zona cantábrica, (Norte de España), concluyéndose que las mismas tiene poca significación estratigráfica. Las especies comentadas pertenecientes al citado género *Vasocrinus*, son; *breimeri*, *conicus*, *fernandolandeta*, cf. *sculptus*, *stellaris*, *turbinatus*, *valens* y *sculptus*.

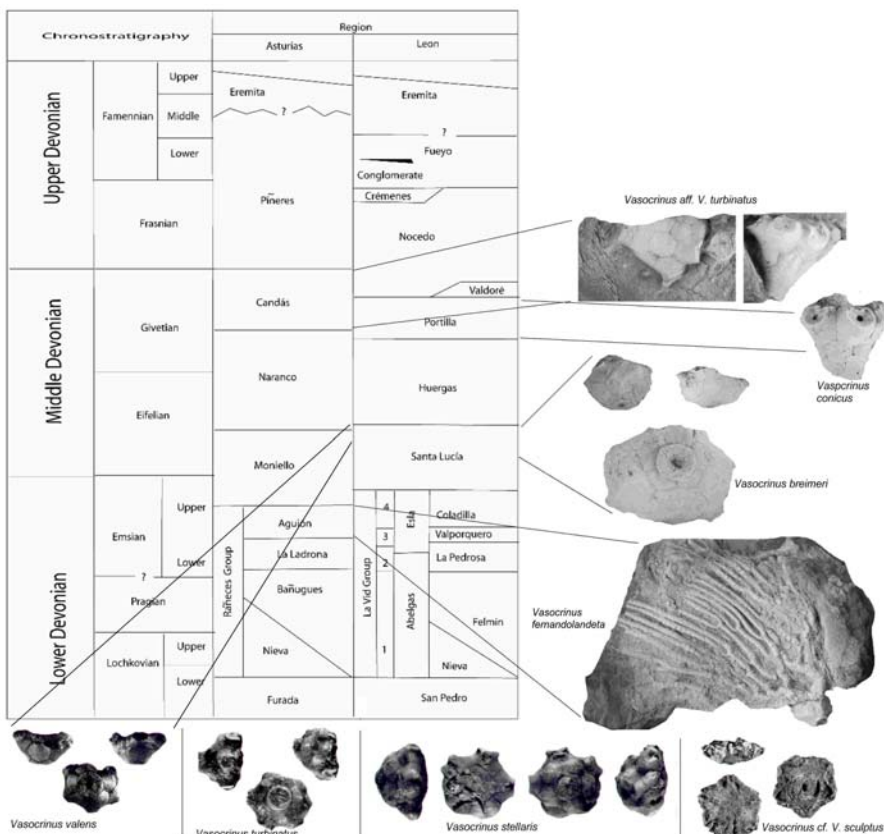
Schlüsselwörter: Crinoiden, *Vasocrinus*, Systematik, Inadunata, Kantabrisches Gebirge, Unterdevon, Mitteldevon, Nordspanien,

Key-Words: Crinoids, *Vasocrinus*, systematics, Inadunata, northern Spain, Lower / Middle Devonian

Stratigraphical evaluation of *Vasocrinus* in Lower and Middle Devonian strata of northern Spain (by)

The following chart show all species of *Vasocrinus* incl. the ones described by BREIMER, 1962. The range of this taxon reach from the Aguión Formation (Middle Upper Emsian, Lower Devonian) until to the Candás Formation (Givetian, Middle Devonian) in the outcrops of Asturias. Only the taxon *Vasocrinus valens* of “historical findings” stored in Rijksmuseum van

Geologie en Mineralogie at Leiden could be assigned to concrete outcrops in the Cantabrian Mountains: the specimen 97724 from the Santa Lucía Formation at El Millar and the specimen 97725-97726 from the Upper part of the La Vid Shale at Colle. The other calyces of *Vasocrinus turbinatus*, *Vasocrinus stellaris*, and *Vasocrinus* cf. *V. sculptus* are from unknown strata and/or from a locality “Orzonage”. The name is a general term of findings of local people and perhaps the Leiden-students which making field-practice. Because in this area only small pieces of Devonian strata are exposed and no other Devonian fossils are described from this locality. So it is more or less improbable that this outcrops yield only crinoid fossils of Devonian age.



← Text-Figure 1: Chronostratigraphy of the north-spanish Devonian (Asturias und León) after GARCIA-ALCALDE,



J.L., CARLS, P., ALONSO, M.U.P., LÓPEZ, J.S., SOTO, F., TRUOLS-MASSONI, M. & VALENZUELA-RIOS, J.I. (2002): p. 69, fig. 6.2.; right photos shown *Vasocrinus* found mainly by Fernando Gómez LANDETA with the stratigraphical position of the outcrops

Relations of the Spanish vasocrinites to the *Vasocrinus*-species of the Middle Devonian of the Rhenish-slate-Mountains

It is a strange fact, that all known species of the Rhenish-Slate-area only known from Middle Devonian strata. The Lower Devonian Hunsrück-shales and the Lower Devonian of the Koblenz-Area do not yield this taxon. So the Lower Devonian and lower part of the Middle Devonian species of *Vasocrinus* of the Devonian of northern Spain are more closed related to the taxons of the Eifel-Hills, especially *Vasocrinus conicus* and *Vasocrinus stallar* (see plate 1 and text-fig. 1).

2. Part: First note of *Verneuilicrinus* from the Santa Lucía Formation of the Esla Region of the Cantabrian Mountains (Northern Spain)

Kurzfassung: Erstmals wird ein Vertreter von *Verneuilicrinus* HAUSER, 2013 aus der Santa Lucía Formation (Unteres Eifelium, Mitteldevon) des Kantabrischen Gebirges beschrieben.

Abstract: At the first time a calyce of *Verneuilicrinus* HAUSER, 2013 is described from Santa Lucía Formation (Lower Eifelian) of the Esla Region of the Cantabrian Mountains.

Resumen: Se describe el nuevo taxón *Verneuilicrinus* HAUSER 2013, procedente de la Formación Santa Lucía, en la Región del Esla, (León, Norte de España).

Schlüsselwörter: Crinoiden, *Verneuilicrinus*, Systematik, Inadunata, Kantabrisches Gebirge, Nordspanien,

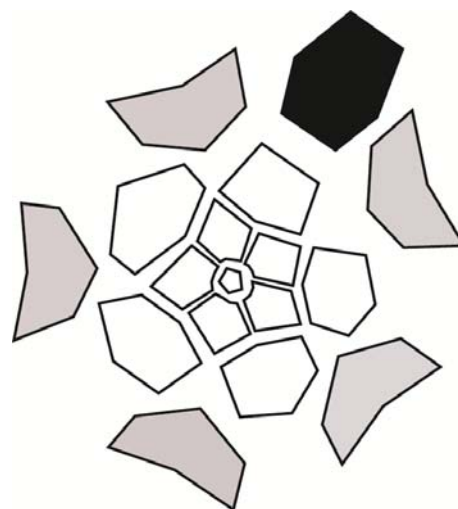
Key-Words: Crinoids, *Verneuilicrinus*, systematics, Inadunata, northern Spain, Santa Lucía Formation, Middle Devonian

Systematics

Classe Crinoidea J. S. MILLER, 1821
Subclasse Inadunata WACHSMUTH & SPRINGER, 1885
Order Disparida MOORE & LAUDON, 1943
Suborder Dendrocrinina BATHER, 1899
Superfamily Dendrocrinacea WACHSMUTH & SPRINGER, 1886
Family Dendrocrinidae WACHSMUTH & SPRINGER, 1886
Genus *Verneuilicrinus* HAUSER, 2013

Verneuilicrinus sp.

⇒ Text-figure 2: Plate diagram of *Verneuilicrinus* after HAUSER, 2013: 3, text-fig. 5;
black = anal X, grey = radialia



Stratigraphical range Lower Devonian (Upper Emsian) – Lower Middle Devonian

Described specimen: The specimen in text-fig. 3 would be stored in the Departamento de Paleontología de la Universidad de Oviedo (Asturias, España).

Locus typicus: Cordillera 300 SW of the hamlet of Villayandre, Esla area, Province León, Cantabrian Mountains, northern Spain (Coordinates x: 325.190; Y: 4.751.221).

Stratum typicum: Top of the Santa Lucía Formation, Lower Eifelian, Middle Devonian.

Material: Only the holotype +/- embedded in soft brown marl.



Description: A more or less complete but deformed calyce. The specimen show the typical remarks of *Verneuilicrinus* especially the radial facets U-/"horse-shoe"-shaped without channel. Cup low bowl-shaped, composed by convex basalia and radialia much wider than high. All plates of medium thickness included the small plates of the infrabasal. The basal-plates are clearly visible in side view. Only the CD-section is not visible; so the last evidence of affinity to the taxon *Verneuilicrinus* (main-remark: only a single prime-anal X) can not be given.

← Text-Figure 3: Calyce of the outcrop Cordillera 300 SW of the hamlet of Villayandre, Esla area



Relations:

The described specimen in text-figure is closed related to the type species *Verneuiliocrinus landetai* from the middle part of the Aguion formation of Asturias. But the concentric edges running from the middle of the radial-facets to the center of the basals are missing.



←Text-Figure 4: Holotyp of *Verneuiliocrinus landetai* HAUSER, 2013 after a photo of HAUSER, 2013: 4, text-fig. 7

Dimensions: Hight = 10 mm, diameter_{max.} = 16 mm

Supplement-fauna:

The supplement-fauna is composed mainly of brachiopods typical of Santa Lucia age (e.g. *Cimicinella* aff. *C. bordini* (VERNEUIL, 1850), *Uncinulus* sp. indet., *Uncinulus orbignyianus* (VERNEUIL, 1850), *Dicamara* sp. indet. *Athyris* sp. aff. *A. campomanesi* (VERNEUIL & ARCHIAC, 1845) *Hexarhystis ferrouensis* ALVAREZ, 1990, *Indentatrypa* sp.), corals and other crinoids like *Stammocrinus*, *Pyxidocrinus* and *Trybliocrinus* (stems).

Acknowledgements: My special thanks goes to Dr. WINFRIED KOENSLER, Bad Honnef, Germany. He had the kindness to read this paper correction. My friend, Fernando Gómez LANDETA, Oviedo had the kindness to give many helpful coments and made the spanish abstracts of this paper.

References:

- ÁLVAREZ, F. (1990): Devonian athyrid brachiopods from the Cantabrian Zone (NW Spain). - *Biostratigraphie du Paléozoïque*, 1: 1-311.
- BATHER, F.A. (1899): WACHSMUTH & SPRINGER's monograph on crinoids. - *Geol. Mag.*, **5**(4): (1898d) 1. notice, S. 276-283, 2. notice, S. 318-329; 3. notice, S. 419-428; 4. notice, S. 522-527; **6**: (1899a), 5. notice, S. 32-44, 6. notice, S. 117-127; London.
- BASSLER, R.S. (1938): *Pelmatozoa Palaeozoica (Generum et Genotyporum Index et Bibliographia)*. - *IN: Fossilium catalogus, I: Animalia*, QUENSTEDT, W. (edit.), **83**: 194 pags.; s'Gravenhage (Junk).
- BREIMER, A. (1962): A monograph on Spanish Palaeozoic crinoidea. - *Leidse Geol. Mededel.*, **27**: 189 pag., 16 pl., 39 fig.; Leiden.
- GARCIA-ALCALDE, J.L., CARLS, P., ALONSO, M.U.P., LÓPEZ, J.S., SOTO, F., TRUOLS-MASSONI, M. & VALENZUELA-RIOS, J.I. (2002): 6 Devonian. - p. 67-91, Fig. 6.1-615. - *IN: The Geology of Spain* (edit. GIBBSON, W. & MORENO, T.); Geolog. Soc. (Bath, UK).
- HAUSER, J. (2005): Revision von *Vasocrinus* (Crinoidea, Inadunata) aus dem Mitteldevon der Eifel (Rheinisches Schiefergebirge, Deutschland), dem Kantabrischen Gebirge (Spanien) und Nordamerika. - 14 pp., 1 pl., und 17 text-figs.; Bonn.
- HAUSER, J. (2013): *Verneuiliocrinus landetai* n.gen. et n.sp. (Crinoidea, Inadunata) from the Aguión Formation (Upper Emsian) of Xivares (Asturias, northern Spain). - 7 p., 18 text-figures; Bonn.
- MILLER, J.S. (1821): A natural history of the Crinoidea or lily-shaped animals, with observation on the genera *Astria*, *Euryale*, *Comatula*, and *Marsupites*. - 150 p., 50 pl.; Bristol (Bryan & Co.).
- MOORE R.C. & LAUDON, L.R. (1943): Evolution and classification of Paleozoic crinoids. - *Geol. Soc. America, Spec. Pap.*, **46**: 153 pp., 17 tex-tfig., 1 tab., 14 pl.; Baltimore.
- VERNEUIL, N. de (1850): Notes sur les fossils Dévoniens du district de Sabéro (León). - *Bull. Soc. Fr.*, **7**(2): 155-186, 3 pls.; Paris.
- VERNEUIL, N. de & ARCHIAC, A.de (1845) Note sur les fossils du terrain paléozoïque des Asturies. - *Bull. Soc. Géol. France* (2)2, S. 458-480, pl. 13-15; Paris.
- WACHSMUTH, C. & SPRINGER, F. (1885): Revision of the Palaeocrinoidea, discussion of the classification and relation of the brachiata crinoids, and conclusion of the generic description. - *Acad. Nat. Sci., Proc.*, **3**(1): 223-364 (1-162), pl.. 4-9; Philadelphia.



Plate 1 of the paper „HAUSER, 2005: Revision von *Vasocrinus* (Crinoidea, Inadunata) aus dem Mitteldevon der Eifel, dem Kantabrischen Gebirge (Spanien) und Nordamerika“

Description of plate 1:

Vasocrinus ahbachensis HAUSER, 2005
Tafel 1, Abb. 7a-7c; Textfig. 2a-2b

Vasocrinus conicus HAUSER, 2005
Tafel 1, Abb. 6 & 9a-9b und Textfig. 4

Vasocrinus elongatus (J. HAUSER, 1997)
Tafel 1, Abb. 11 & 12 und Textfig. 5

Vasocrinus hustleyiensis HAUSER, 1997
Tafel 1, Abb. 1a-1c und Textfig. 6

Vasocrinus rommersheimensis HAUSER, 2005
Tafel 1, Abb. 5a-5b & Textfig. 7

Vasocrinus stellaris (SCHULTZE, 1866)
Tafel 1, Abb. 2a-2b, 8a-8b und Textfig. 9a-9b & 10

Vasocrinus sulcosutura WANNER, 1942
Tafel 1, Abb. 3a-3c & 4, Textfig. 12a-12b & 13

Vasocrinus weinbergensis HAUSER, 2005
Tafel 1, Abb. 10 und Textfig. 16-17

(all species from various outcrops of the Middle Devonian of the Eifel-Hills)



Plate 1

