

*Eutaxocrinus capella* PROKOP & PETR, 1987, a synonym of *Eutaxocrinus patulus* W.E. SCHMIDT, 1941, (Crinoidea Flexibilia) and first report of this species from the Lower Devonian of the Asturian coast near Bañugues (Northern Spain)

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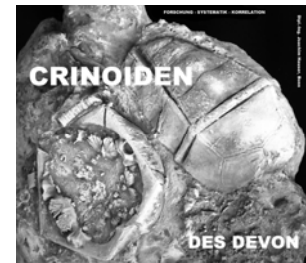
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with 8 textfig. and 8 pag.



## 1 Introduction (by Joachim HAUSER & Fernando Gómez LANDETA)

As is general in the Devonian period, the crinoidea flexibilia constitutes only a very minor fraction of the crinoidal community of the Devonian of North Spain. In fact they do not appear in the seminal work of BREIMER 1962. Some years ago one of the authors (Fernando Gómez LANDETA) found in a small black shale of the exposed outcrop 1 km. SE of the hamlet of Bañugues a more or less complete crown of the taxon *Eutaxocrinus*. The shale-builder are mainly crushed thamnoporida corals and debris of crinoid-stems. So it was a surprise to extract a crown in this layer. The occurrence of this taxon in Asturias is known since the paper of HAUSER & LANDETA, 2007: 62. But the described specimen from Asturias (*Eutaxocrinus asturianus*) was found in a layer of Middle Devonian age; this one from Léon (*Eutaxocrinus collantesi* HAUSER & LANDETA, 2007 :62) was found in the upper part of the La Vid groupe, Coladilla Member. So *Eutaxocrinus patulus* is the oldest known *Eutaxocrinus* in Spanish Devonian and the first report of this species in Asturias.

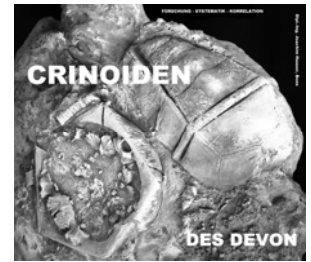
The geology of this interesting outcrop was described in detail by Fernando Gómez LANDETA in HAUSER & LANDETA, 2013:1.

Chronostratigraphy			Region			
			Asturias		Leon	
Upper Devonian	Famennian	Upper	Ermita		Ermita	
		Middle	?		?	
		Lower	Pineres		Fueyo Conglomerate Crémenes	
Frasnian		Nocedo		Valdoré		
Middle Devonian	Givetian	Candás		Portilla		
		Naranco		Hurgas		
	Eifelian	Moniello		Santa Lucía		
Lower Devonian	Emsian	Upper	Aguión	4	Esta	Coladilla
		Lower	La Ladróna	3		Valporquero
	Pragian	Bañugues		2		La Pedrosa
						Felmin
	Lochkovian	Upper	Nieva	1		Nieva
		Lower	Furada		San Pedro	
		Rañeces Group	La Vid Group	Abelgas		



↑ Textfigure 1: Chronostratigraphy of Spanish Devonian (Asturias und Léon) after GARCIA-ALCALDE, J.L., CARLS, P., ALONSO, M.U.P., LÓPEZ, J.S., SOTO, F., TRUOLS-MASSONI, M. & VALENZUELA-RIOS, J.I. (2002): S. 69, Fig. 6.2.; right figure shows *Eutaxocrinus patulus* W.E. SCHMIDT, 1941 from Bañugues

**Kurzfassung:** Zum ersten Mal wird das Taxon *Eutaxocrinus patulus* W.E. SCHMIDT, 1941 (Crinoidea, Flexibilia) aus dem mittleren Emsium (Top der La Ladrone Formation) von dem Küstenaufschluß SE von Bañugues (Asturien, Nordspanien) beschrieben. Die von PROKOP & PETR, 1987 charakterisierte Crinoide *Eutaxocrinus capella* aus der czechischen Republik aus dem Unteren Emsium (Zlichovian) ist ein Synonym von *Eutaxocrinus patulus*. Mit dieser Arbeit wird der Nachweis geführt, daß *Eutaxocrinus* im spanischen Devon eine stratigraphische Reichweite vom Mittleren Emsium bis Unteres Eifelium hat.



**Abstract:** The crinoid *Eutaxocrinus patulus* W.E. SCHMIDT, 1941 (Crinoidea, Flexibilia) is described at the first time from the Bañugues Formation, Emsian, Lower Devonian of the coast near the hamlet of Bañugues (Asturias, N Spain). This taxon is the oldest known Flexibilia from the Devonian of northern Spain. *Eutaxocrinus capella* from the Lower Devonian (Zlichovian) of the Czech Republic is a subjective synonym of *Eutaxocrinus patulus* W.E. SCHMIDT, 1941.

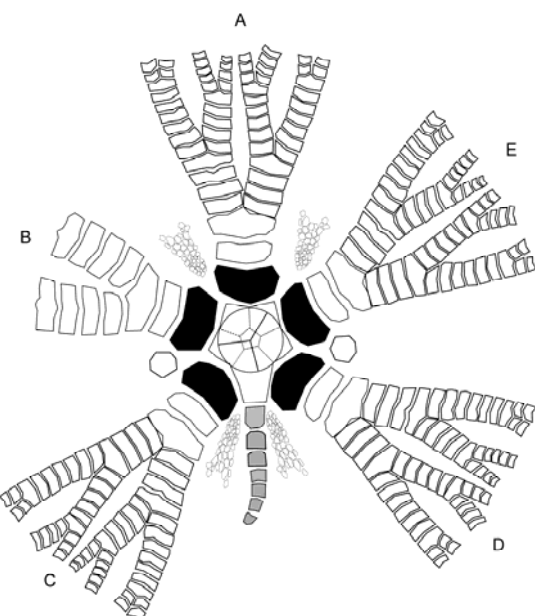
**Resumen:** Se describe la existencia del taxón *Eutaxocrinus patulus* SCHMIDT, 1941 (Crinoidea, Flexibilia), en la Formación La Ladrone (Emsiense medio-superior), del afloramiento de Bañugues, (Cabo Peñas, Asturias, España). Por otra parte, *Eutaxocrinus capella*, del Devónico inferior (Zlickoviense) de la República Checa, se considera como un sinónimo de *E. patulus* SCHMIDT, 1941.

**Schlüsselwörter:** Crinoidea, Flexibilia, Systematik, Bañugues, coast, Emsium, Asturien, Nord-Spanien.



**Keywords:** crinoidea, flexibilia, systematic, Bañugues, Emsian, Asturias, N Spain.

← Textfigure 2: South-east-view of the outcrop SE of the hamlet of Bañugues



## 2 Systematics

**Subclass** Flexibilia ZITTEL, 1895

**Order** Taxocrinida SPRINGER 1913

**Superfamily** Taxocrinacea ANGELIN, 1878

**Family** Taxocrinidae ANGELIN, 1878

**Genus** *Eutaxocrinus* SPRINGER, 1906

**Type** *Eutaxocrinus affinis* (MÜLLER, 1856)

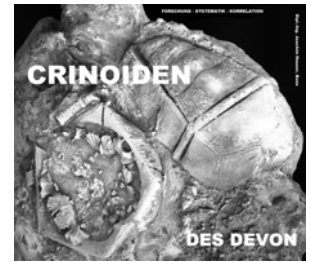
← Textfigure 3: plate diagram of *Eutaxocrinus* after SPRINGER, 1926: 357, Fig. 48 ; black = RR, grey = CD-interray-plates

**Stratigraphical range of the genus** Silur – Karbon

**Geographical range:** Eifel (Germany), North America, Sweden, Russia, Massif Armoricain Massif (France), Czech. Republic, Spain (Asturias & León)

*Eutaxocrinus patulus* W.E. SCHMIDT, 1941  
 Textfigures 4a-4d

*Eutaxocrinus patulus* W.E. SCHMIDT, 1941: 185-186, pl. 25, Fig. 1 (2).  
*Eutaxocrinus capella* PROKOP & PETR, 1987: 165-167, textfig. 1, pl. 1

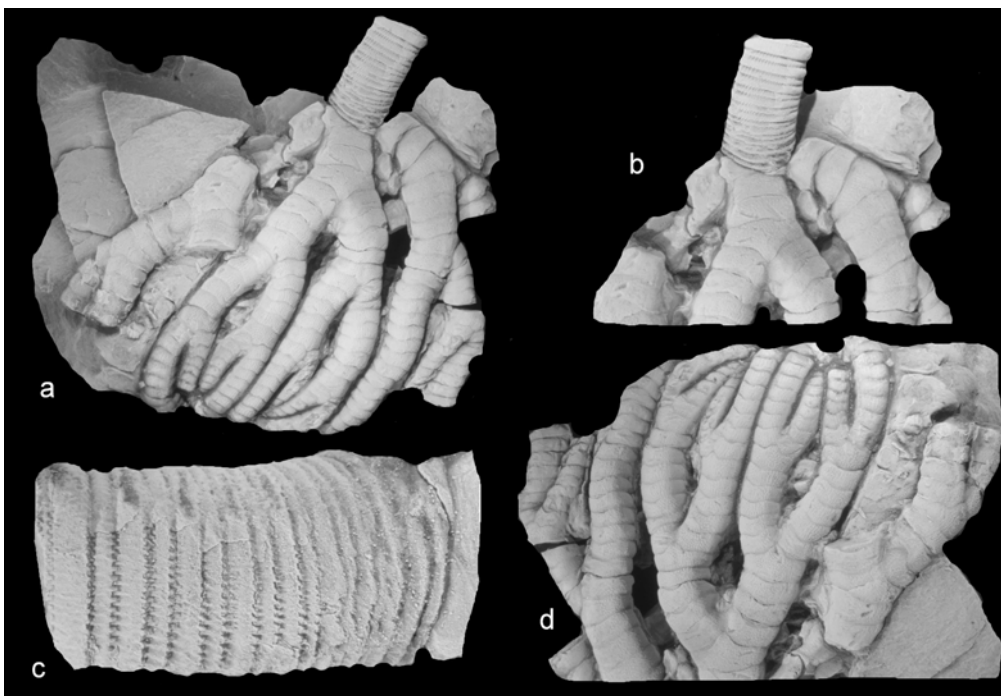


**Holotyps:**

The holotype of *Eutaxocrinus patulus* W.E. SCHMIDT, 1941 is stored in the collection of Hessisches Landesmuseum Darmstadt (Germany).

The holotype of *Eutaxocrinus capella* is stored in the collections of the Paleontological Department of National Museum in Prague (Reg.-No. L 23040).

The specimen described in this paper is stored in the collection of Fernando Gómez LANDETA, Oviedo.



**Stratum of the Bañugues-section:** The specimen was founded in close relation with a small biostrome of stromatoporoids, (1 m. of thickness), who is the first coral apparition in the Devonian of North Spain, SOTO, 1986. This bed pertaining to the outcrop of Ladróna Formation of Bañugues (Cabo Peñas, Asturias), is situated roughly 80-100 meters over its base and is age is middle Emsian (GARCÍA-ALCALDE, 1992).

← Textfigure 4a-4d:  
*Eutaxocrinus patulus*  
 W.E. SCHMIDT, 1941

from Bañugues; a: complete species ; b : show the lower part of the crown with the dorsal-cup; c : show the stem of the species (typical for the Eutaxocrinites); d : show the brachia

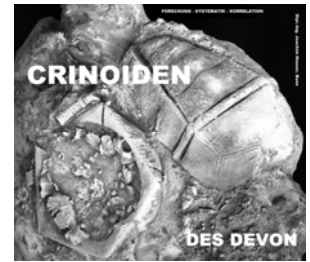
**Material:** The specimen of *Eutaxocrinus patulus* of the Czech. Republik was found in the Zlíčov Limestone of the „Kaplicka“ Coral Horizon, Zlíčovian = Lower Emsian. The holotype of *Eutaxocrinus patulus* was found in the MÜLLER-Bruch near the hamlet of Karstel / Oberlahnstein (Schliederbach)], “Oberkoblenz-Schichten”, Lower Devonian.

**Supplement crinoid fauna described from Bañugues-section:**

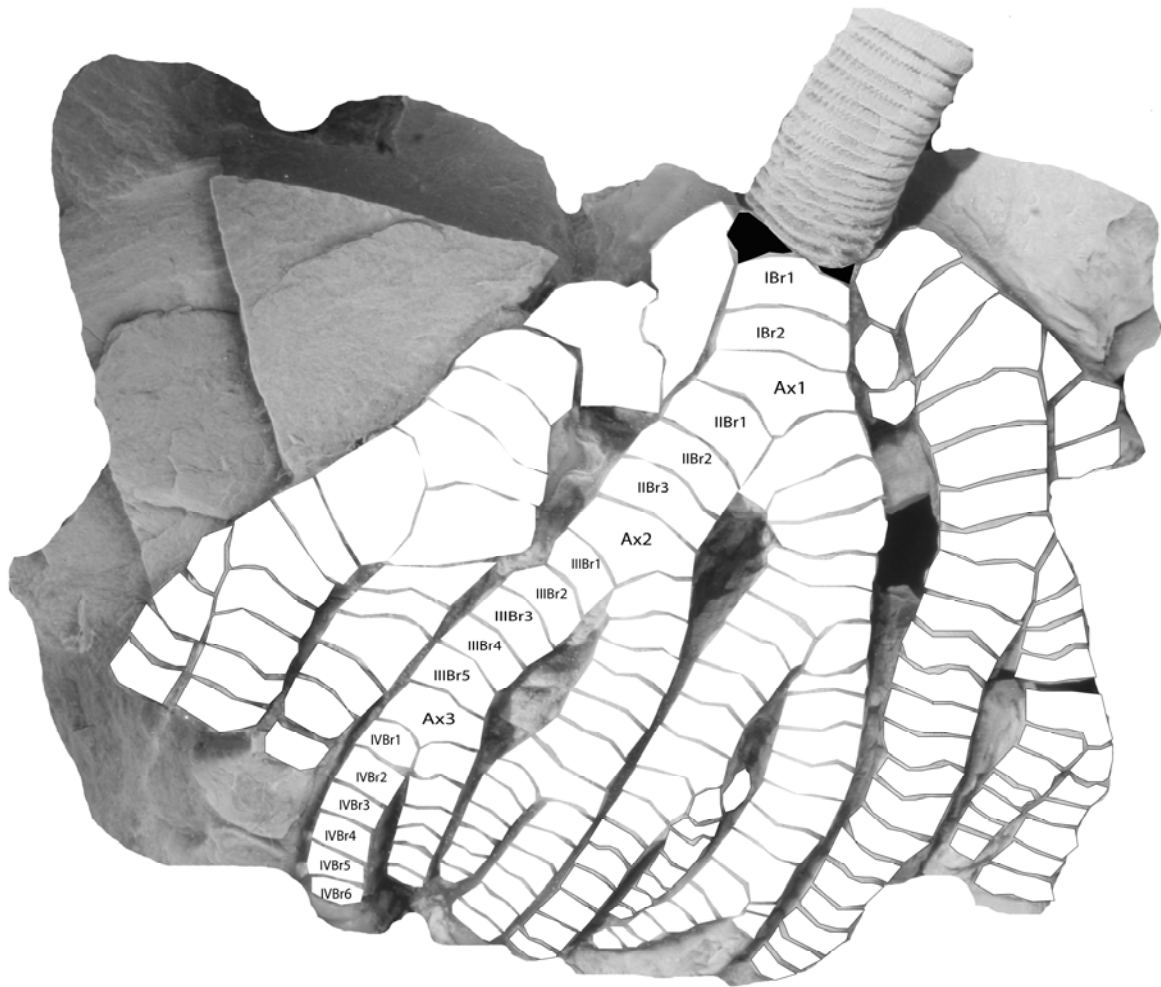
- Bactrocrinites rauffi* HAUSER, 2010
- Oehlerticrinus anguliferus* WHIDBORNE, 1897
- Zenckericrinus asturianus* HAUSER, 2009

**Diagnosis & Description** see also that of W.E. SCHMIDT, 1941:185-186

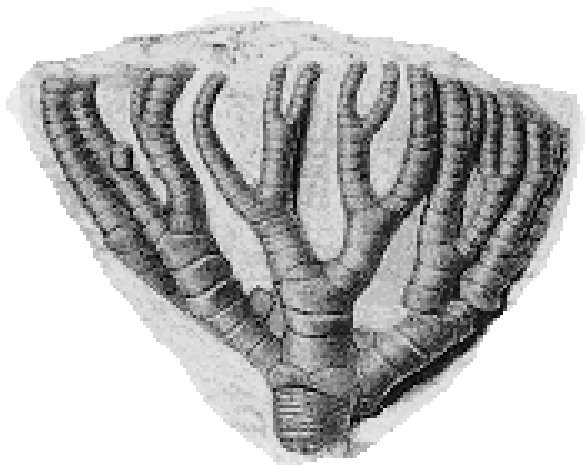
**Description:** A crown of *Eutaxocrinus* with three more or less complete brachia. The IBB are, so far as visible – very low; it could not be seen in the side-view. Only two small parts of the RR are preserved; Building of the Brachia: IBr<sub>1</sub> – IBr<sub>2</sub> – Ax<sub>1</sub> – IIBr<sub>1</sub> – IIBr<sub>2</sub> – IIBr<sub>3</sub> – Ax<sub>2</sub> – IIIBr<sub>1</sub> – IIIBr<sub>2</sub> – IIIBr<sub>3</sub> – IIIBr<sub>4</sub> – IIIBr<sub>5</sub> – Ax<sub>3</sub> – IVBr<sub>1</sub> till IVBr<sub>6</sub> (isotom branching); Calyce- and Brachia-surface decorated with very small, reticular tubercles. Only two small tiny IBrBr plates are recorded. The stem has a round-shaped section with the typical low fine inter-locked nodalia.



↓ **Textfigure 5:** Draw of *Eutaxocrinus patulus* W.E. SCHMIDT, 1941 (Crinoidea, Flexibilia) from the Bañugues-section, with the detail of the arm-structures



**Dimensions:** Hight (with the stem): 5 cm, wide<sub>(max.)</sub>: 4 cm

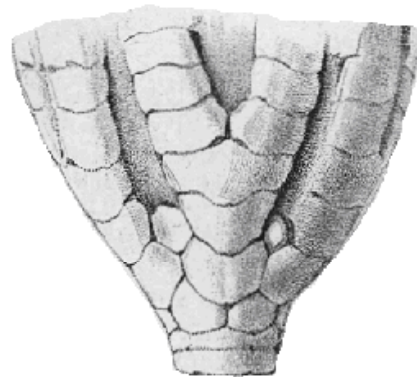
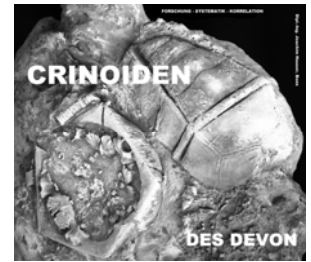


**Relations:** The brachia-structure of *Eutaxocrinus capella* from the Czech. Republik and the described specimen from Asturias is ident. with the taxon *Eutaxocrinus patulus* W.E. SCHMIDT, 1941. Further PROKOP & PETR do'nt recognized the work of SCHMIDT, 1941. He described in his monograph a lot of Eutaxocrinits from the Lower Devonian of the Koblenz area. But PROKOP & PETR compare their Specimen only with *Eutaxocrinus affinis* (MUELLER, 1856) a specimen from a Middle Devonian layer of the Eifel-Hills and not "Upper Emsian"; PROKOP&PETR, 1987:166.

← **Textfigure 5:** Holotype of *Eutaxocrinus patulus* W.E. SCHMIDT, 1941, after a draw of SCHMIDT, 1941: Taf. 25, Fig. 1. [MÜLLER-Bruch near the hamlet of Karstel / Oberlahnstein (Schliederbach)]; Dimensions: hight: 3 cm, wide: 4 cm.

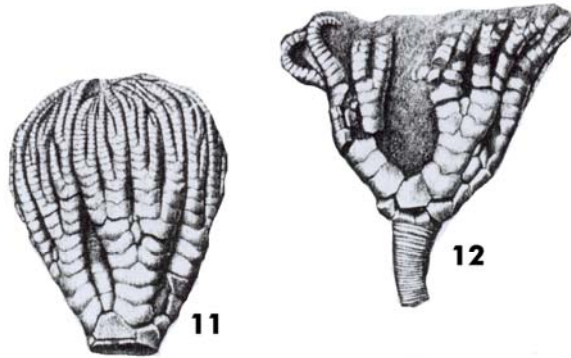
**Acknowledgements:** Without the kindness of my friend, Fernando Gómez LANDETA, Oviedo, this paper was not possible. He found the specimen, made the preparation, sent it to Germany, and gave a lot of helpful comments to the manuscript of this paper.

↓ **Textfigur 7:** Holotyp von *Eutaxocrinus affinis* (MUELLER, 1856), after a draw of MUELLER, 1856: Taf. 1, Fig. 1, from the „Eifeler Kalk bei Gerolstein“; (Dimensions: Hight = 2 cm, wide<sub>max.</sub> 1,8 cm).

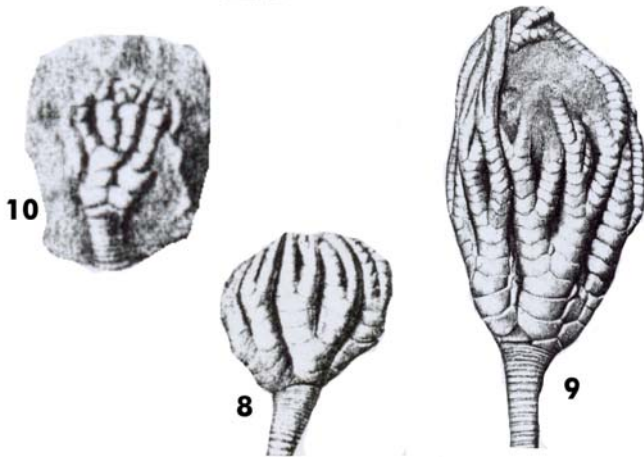


↓ **Textfigure 8:** Stratigraphical distribution of *Eutaxocrinus* (Figure 1-12 without Fig. 7 copies of the paper of SPRINGER, 1926); Explanation: 1 = *Eutaxocrinus oblongatus* (ANGELIN, 1878), Wenlockian, Silur, Gotland, Sweden; 2 = *Eutaxocrinus rhenanus* (ROEMER, 1844), Koblenzium, Germany; 3 = *Eutaxocrinus stürtzii* (FOLLMANN, 1891), Hunsrück-Schiefer, Bundenbach, Germany; 4 = *Eutaxocrinus juglandiformis* (SCHULTZE, 1866), ?Eifelian, Eifel, Gerolstein, Deutschland; 5 = *Eutaxocrinus whiteavesi* (SPRINGER, 1926), Hamilton, Thedford, Canada; 6 = *Eutaxocrinus affinis* (MÜELLER, 1856), ?Givetian, Eifel, Germany; 7 = *Eutaxocrinus asturianus* HAUSER & LANDETA, 2007, Moniello Formation, Givetian, Asturias, Spain; 8 = *Eutaxocrinus curtus* (WILLIAMS, 1882), Chemungian, Upper-Devonian New York; 9 = *Eutaxocrinus amplus* (SPRINGER, 1926), Chemungian, Upper-Devonian, New York; 10 = *Eutaxocrinus alpha* (WILLIAMS, 1882), Chemungian, Upper-Devonian, New York; 11 = *Eutaxocrinus fletcheri* (WORTHEN, 1882), Kinderhookian, Lower Carboniferous, LeGrand, Iowa; 12 = *Eutaxocrinus mantanensis* SPRINGER, 1926, Kinderhookian, Elder, Montana.

Karbon



Oberdevon



Mitteldevon

Givetium



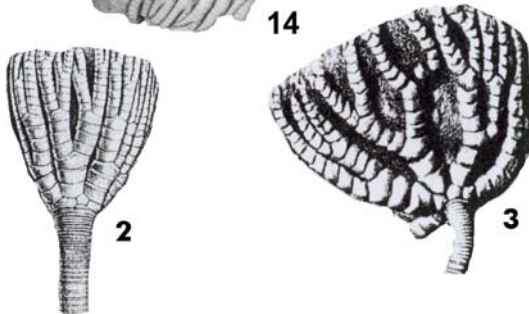
Eifelium



Emsium

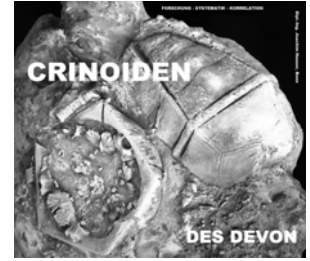
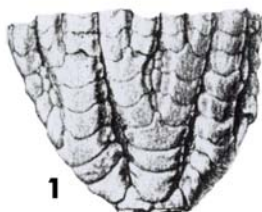
Unterdevon

Pragium



Lochkovium

Silur



**References:**

**ANGELIN, N.P.** (1878):  
 Iconographica crinoideorum in stratis Sueciae Siluricis fossilium. - 62 S., 29 Taf.; Holmia/Stockholm; (Samson & Wallin).

**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.

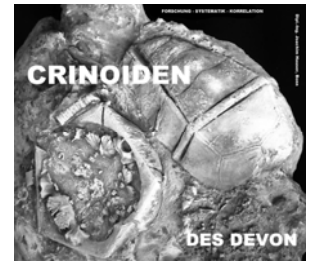
**BREIMER, A.** (1962): A monograph on Spanish paleozoic crinoidea. - Leidse Geol. Meded., 27: 189 S., 16 Taf., 40 Textfig., 3 Tab.; Leiden.

**FERNÁNDEZ, L. P. et al.** (1995): VII International Symposium on fossil Cnidaria and Porifera, Field Trip A: Devonian and Carboniferous reefal facies from Cantabrian Zone (NW Spain). - Fieldtrip-guide der Universität Oviedo, Department Geologie und Paläontologie, 76 S., 44 Textfig.; Oviedo.

**FOLLMANN, O.** (1891): Über die unterdevonischen Schichten bei Koblenz. - Programm des Königlichen Gymnasiums zu Coblenz, 53 S., 5 Textfig., 3 Tab.; Koblenz.

**GARCÍA-ALCALDE, J. L.** (1992): El Devónico de Santa María del Mar (Castrillón, Asturias, España). - *Revista Española de Paleontología*, **7**(1), 53-79.

**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. – S. 67-91, Fig. 6.1-615. - IN: *The Geology of Spain* (edit. GIBBSON, W. & MORENO, T.); Geolog. Soc. (Bath, UK).



**HAUSER, J. & LANDETA, F.G.** (2007): Neue Crinoiden aus dem Paläozoikum von Nordspanien mit einem Beitrag zu *Lepidocentrus* aus dem mittleren Emsium. - 78 S., 2 Taf., 4 Tab., 113 Textfig.; Eigenverlag, Bonn.

**HAUSER, J.** (2009): *Zenkericrinus asturianus* n.sp. (Crinoidea, Camerata) aus dem Grenzbereich Emsium/Eifelium des asturischen Küstenprofils (Nordspanien). - IN: *Paläozoische Crinoiden aus Asturien und León* (Nordspanien), S. 40-43, 4 text-figs.; Bonn.

**HAUSER, J.** (2010): *Bactrocrinites rauffi* n.sp. aus der La Ladróna Formation (Unteres Emsium) der asturischen Küste (Nordspanien). - IN: *Paläozoische Crinoiden aus Asturien und León* (Nordspanien), S. 28-31, 3 text-figs.; Bonn.

**MOORE, R.C. & LAUDON, L.R.** (1943): Evolution and classification of Paleozoic crinoids. - *Geol. Soc. America, Spec. Pap.*, **46**: 1-153, Fig. 1-18, Taf. 1-14; Boulder, Colorado.

**MUELLER, J.** (1856): Über neue Echinodermen aus dem Eifeler Kalk. - *Abh. Königl. Akad. Wiss., Monatsber.*, S. 243-268, Taf. 1-3; Berlin (als Separat erschienen 1857).

**PROKOP, R. & PETR, V.** (1987): *Eutaxocrinus capella* sp. n. (Crinoidea, Flexibilia) from the Bohemian Lower Devonian (Zlíchovian). - *Casopis pro mineralogii a geologii*, **32**(2): 165-167, Taf. 1, 1 textfig.; Prag.

**ROEMER, C.F.** (1844): Das Rheinische Übergangsgebirge. Eine palaeontologisch-geognostische Darstellung. - 96 S., 6 Taf.; Hannover (Hahn'sche).

**SCHMIDT, W.E.** (1935): Die Crinoideen des Rheinischen Devons. I. Teil: Die Crinoideen des Hunsrückschiefers. - *Abh. Preuß. Geol. L.-A.*, **163**: 149 S., 34 Taf., 29 Textfig.; Berlin (erschienen am 11.01.1935).

**SCHMIDT, W.E.** (1941): Die Crinoideen des Rheinischen Devons. II. Teil: A. Nachtrag zu: Die Crinoideen des Hunsrückschiefers bis zur *Cultrijugatus*-Zone (mit Ausschluß des Hunsrückschiefers. - *Abh. Reichstelle Bodenforsch., N.F.*, **182**: 253 S., 26 Taf., 62 Abb.; Berlin.

**SCHULTZE, L.** (1866): Monographie der Echinodermen des Eifler Kalkes. - *Denkschrift kaiserliche Akademie der Wissenschaften, mathematisch-naturwissenschaftliche Classe*, **26**: 113-230 (1-118), 19 Abb., 13 Taf.; Wien.

**SOTO, F.** (1986): Asociaciones coralinas del Devónico astur-leonés (Cordillera Cantábrica, NO de España). *Trabajos de Geología de la Universidad de Oviedo*, **16**: 25-35; Oviedo.

**SPRINGER, F.** (1906): Discovery of the disk of *Onychocrinus*, and further remarks on the Crinoidea Flexibilia. - *J. Geol.*, **14**(6): 467-523, Taf. 4-7; Chicago.

**SPRINGER, F.** (1913): Crinoidea. IN: *Text-book of Paleontology*, von **ZITTEL, K.A. v.**, (übersetzt & editiert von **C.R. EASTMANN**). - 2. Aufl., 1:173-243; Macmillan & Co. Ltd. (Hersg.), London.

**SPRINGER, F.** (1926): The Crinoidea Flexibilia. - *Smithsonian Inst. Publ.*, **2501**: 468, 51 Textfig., 76 Taf.; Washington.

**UBAGHS, G.** (1978): *Treatise on Invertebrate Paleontology, Part T Echinodermata 2.* - *Geol. Soc. America, Vol. 2*, T403-T812; Lawrence, Kansas.

**WILLIAMS, H.S.** (1882): New crinoids from the rocks of the Chemung period (Upper Devonian) of New York State. - *Proc. Acad. Nat. Sci., Philadelphia*, **1882**: 17-34, Taf. 1.

**WORTHEN, A.H.** (1882): Description of fifty-four new species of crinoids from Lower Carboniferous limestones and Coal Measures of Illinois and Iowa. - *Illinois State Museum Nat. Hist., Bull.*, **1**(1): 3-38.

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Bañugues (Northern Spain)

**ZITTEL, K.A. v.** (1895): Grundzüge der Palaeontologie (Palaeozoologie). - 1. Ausg.,  
971 S.; München (R. Oldenburg).

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