

Prionocyclus germari (REUSS 1845) is the index fossil of the uppermost Turonian *P. germari* Zone (KAPLAN & KENNEDY 1996). In Poland, this zone was recognised in the Turonian succession near Opole (KACZOROWSKI 1997), and its present recognition shows its general applicability in the Cretaceous of extra-Carpathian, southern Poland (Fig. 2).

The specimen of *Prionocyclus germari* (REUSS 1845) was found in limestones, up to 3 meters below the level with a mass-occurrence of *Cremonceramus deformis erectus*

(MEEK) (= *C. rotundatus* sensu Tröger non Fiege – see WALASZCZYK & WOOD 1999, WALASZCZYK & COBBAN in press). Unfortunately more precise localisation was impossible.

The level with mass-occurrence of *Cremonceramus deformis erectus* marks the boundary ecoevent at the base of the Coniacian stage as it was positively voted during the Second International Symposium on Cretaceous Stage Boundaries, Brussels 1995 (KAUFFMAN & al. 1996; see also WALASZCZYK & WOOD 1999). The *erectus* Event is recognisable in the whole Euroamerican Paleobiogeographical Region (WOOD & al. 1984, WALASZCZYK & WOOD 1999, WALASZCZYK & COBBAN 1999).

Substage	Inoceramid zonation	Bioevents (selected)	Ammonite zonations
Lower Coniacian	<i>C. crassus inconstans</i> <i>C. walt. hannovrensis</i> <i>C. deformis erectus</i>	<i>erectus</i> I (=rotundatus) Event	<i>Forresteria petrocoriensis</i>
	<i>C. waltersdorsifensis</i>		?
Upper Turonian	<i>Mytiloides scupini</i>	<i>waltersdorsifensis</i> I E.	<i>Prionocyclus germari</i>
	<i>Inoceramus perplexus</i> (= <i>I. costellatus</i>)	<i>Micraster</i> E. <i>Hyphantoceras</i> E. <i>Allocrioceras</i> E.	<i>Subprionocyclus neptuni</i>
		<i>Allocrioceras</i> E. <i>Allocrioceras</i> E. <i>I. costellatus</i> E.	
Middle Turonian	<i>Inoceramus lamarcki</i>		<i>Collignoniceras</i>
	<i>Inoceramus apicalis</i>		<i>woollgari</i> (pars)

Fig. 2. Standard European stratigraphic zonation of the Middle and Upper Turonian and of the Lower Coniacian; inoceramid zonation after KAUFFMAN & al. (1996) and WALASZCZYK & WOOD (1999), and ammonite zonation after KAPLAN & KENNEDY (1996), modified

SYSTEMATIC DESCRIPTION

Prionocyclus germari (REUSS 1845) (Text-fig. 3a, b)

1845. *Prionocyclus Germari* REUSS, pp. 22, Pl. 7, Fig. 10 a-c.
1988. *Prionocyclus germari* (REUSS), U. KAPLAN pp.14-17, Pl. 3, Fig. 1-3; Pl. 6, Fig. 1. [and full synonymy herein]
1990. *Prionocyclus germari* (REUSS), W. A. COBBAN, PL. 7, Fig. 1-11.
1997. *Prionocyclus germari* (REUSS); F. WIESE, Pl. 7, fig. 4.
1998. *Prionocyclus* cf. *germari* (REUSS); T. KÜCHLER, Pl. 11, fig. 4.

MATERIAL: A single specimen IGP/A/34/01.

Type: REUSS's (1845, pl. 7, fig. 10) original specimen of *Ammonites germari*, which was stored in the Museum of Natural History, Budapest, was probably destroyed in 1953 (KAPLAN 1988).

DESCRIPTION: The specimen consists of a fragment of internal mould. This fragment contains one-fifths of a whorl. The whorl-section is higher than wide with flat lateral sides. The primary and secondary ribs are wide and flat, twelve being present on preserved fragment. They arise in pairs or singly from smooth, generally badly preserved, umbilical tubercles. The ribs are initially straight, and become prosiradiate at four-fifths of whorl height. On the venter the ribs are prosiradiate. Ventral keel with crenulations is well seen.

DISCUSSION: The specimen corresponds well to the type of REUSS species. Differing only in the absence of ventrolateral clavi. This absence is most probably due to incomplete preservation.

Prionocyclus germari differs from other species of *Prionocyclus* MEEK, 1876 and *Subprionocyclus* SHIMIZU, 1932 in the density and strength of ribs and tubercles. In

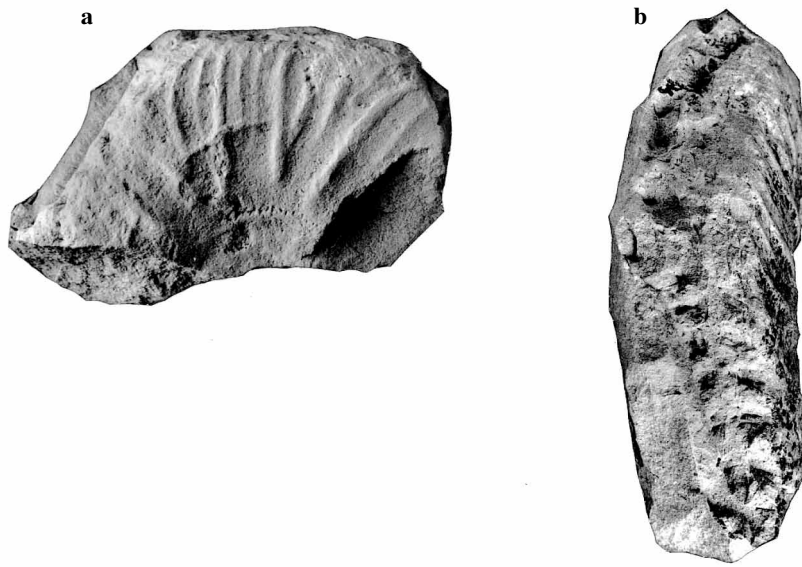


Fig. 3. *Prionocyclus germari* (REUSS, 1845); IGP/A/34/01; uppermost Turonian of Brzeźno, central Poland; $\times 1$

the genus *Subprionocyclus* both the ribs and tubercles are much sharper and higher.

OCCURENCE: Known from the uppermost Turonian of extra-Carpathian Poland (KACZOROWSKI 1997 and herein); Bohemia, Czech Republic (ČECH 1989); Münsterland Basin, Westphalia, Germany (KAPLAN & KENNEDY 1966, KAPLAN 1988); the Navarra, northern Spain (KÜCHLER 1988); and from the Wyoming, Western Interior, United States (COBBAN 1990).

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REFERENCES

- CIEŚLIŃSKI, S. & POŻARYSKI, W. 1970. Cretaceous. In: The stratigraphy of the Mesozoic in the margin of the Holy Cross Mts. *Prace Instytutu Geologicznego*, **56**, 185-229. Warszawa.
- COBBAN, W. 1990. Ammonites and Some Characteristic Bivalves from the Upper Cretaceous Frontier Formation, Natrona County, Wyoming. *United States Geological Survey Bulletin*, **1917**, B1-B13. Washington, D. C.
- ČECH, S. 1989. Upper Cretaceous *Didimotis* Events from Bohemia. In: WIEDMANN, J. (Ed.), Cretaceous of the Western Tethys. Proceedings 3rd International Cretaceous Symposium, Tübingen 1987, pp. 657-676. *E. Schweizerbart'sche Verlagsbuchhandlung*; Stuttgart.
- KACZOROWSKI, A. 1997. Ammonites of the Opole Cretaceous. *Unpublished M. Sc. thesis*; Faculty of Geology, University of Warsaw. [In Polish]
- KAPLAN, U. 1988. Die Ammoniten-Subfamilie Collignoniceratinae WRIGHT & WRIGHT 1951 aus dem Turon (Ober-Kreide) von Westfalen und Niedersachsen (NW-Deutschland). *Geologie und Paläontologie in Westfalen*, **12**, 5-45. Münster.
- KAPLAN, U. & KENNEDY, W. J. 1996. Upper Turonian and Coniacian ammonite stratigraphy of Westphalia, NW-Germany. *Acta Geologica Polonica*, **46** (3/4), 305-352. Warszawa.
- KAUFFMAN, E. G., KENNEDY, W. J. & WOOD, C. J. 1996. The Coniacian stage and substage boundaries. *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Sciences de la Terre*, **66** (Suppl.), 81-94. Brussels.
- KÜCHLER, T. 1998. Upper Cretaceous of the Barranca (Navarra, northern Spain); integrated litho-, bio- and event stratigraphy. Part I: Cenomanian trough Santonian. *Acta Geologica Polonica*, **48** (2), 157-236. Warszawa.
- MAZUREK, A. 1948. Cretaceous and Pleistocene on the southwestern part of Pińczów map 1:100 000 (Central Poland). *Biuletyn Państwowego Instytutu Geologicznego*, **42**, 9-12. Warszawa.

- REUSS, A. E. VON. 1845. Die Versteinerungen der böhmischen Kreideformation, 1-58. Stuttgart.
- SENKOWICZ, E. 1959. The Jurassic and Cretaceous between Jędrzejów and Nida river. *Biuletyn Instytutu Geologicznego*, **159**, 107-157. Warszawa.
- WALASZCZYK, I. 1992. Turonian trough Santonian deposits of the Central Polish Uplands; their facies development, inoceramid palaeontology and stratigraphy. *Acta Geologica Polonica*, **42** (1/2), 1-122. Warszawa.
- WALASZCZYK, I. & COBBAN, W. A. 1999. The Turonian – Coniacian boundary in the United States Western Interior. *Acta Geologica Polonica*, **48** (4), 495-507. Warszawa.
- & — (*in press*). Inoceramid faunas and biostratigraphy of the Upper Turonian-Lower Coniacian of the United States Western Interior. *Special Papers in Palaeontology*, **54**. London.
- WALASZCZYK, I. & WOOD, C.J. 1999. Inoceramids and biostratigraphy at the Turonian/Coniacian boundary; based on the Salzgitter-Salder Quarry, Lower Saxony, Germany, and the Słupia Nadbrzeżna section, Central Poland. *Acta Geologica Polonica*, **48** (4), 395-434. Warszawa.
- WIESE, F. 1997. Das Turon und Unter-Coniack im Nordkantabrischen Becken (Provinz Kantabrien, Nordspanien): Fazientwicklung, Bio-, Event- und Sequenzstratigraphie. *Berliner Geowissenschaftliche Abhandlungen*, **E24**, 1-131. Berlin.
- WOOD, C. J., ERNST, G. & RASEMAN, G. 1984. The Turonian-Coniacian stage boundary in Lower Saxony (Germany) and adjacent areas: the Salzgitter-Salder Quarry as a proposed international standard section. *Bulletin of the Geological Society of Denmark*, **33** (1-2), 225-238. Copenhagen.

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An occurrence of the uppermost Turonian ammonite zonal index, *Prionocyclus germari* (REUSS, 1845) at Brzeźno, south-western margin of the Holy Cross Mountains, Central Poland

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ABSTRACT:

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The uppermost Turonian ammonite zonal index, *Prionocyclus germari* (REUSS, 1845), is reported for the first time from the territory of Poland. The species was found near the locality Brzeźno, in the south-western margin of the Holy Cross Mountains, Central Poland, little below the Turonian/Coniacian boundary. Its presence shows the general applicability of the *P. germari* Zone in the extra-Carpathian Poland.

Kew words: *Prionocyclus germari* (REUSS, 1845), Upper Turonian, *P. germari* Zone, Central Poland.

INTRODUCTION

In the south-western margin of the Holy Cross Mountain (Text-fig. 1) the Turonian and Coniacian rocks are generally poorly exposed. The best exposures are represented by the Skotniki Quarry and some small points near the village of Brzeźno (Text-fig. 1). Both the Turonian and the Coniacian are composed of fossiliferous marl-limestone alternations, with relatively common ammonites (e.g. MAZUREK 1948, SENKOWICZ 1959, CIEŚLIŃSKI & POŻARYSKI 1970). No ammonite, however,

from the Turonian/Coniacian boundary interval was so far reported.

The specimen described herein was found during my field season in 1998, in the Mesozoic margin of the Holy Cross Mountains. The specimen comes from the temporary exposure in the carpark at the Jędrzejów-Kielce and Jędrzejów-Brzeźno (Text-fig. 1) cross-roads. Despite the poor preservation it may safely be determined as *Prionocyclus germari* (REUSS, 1845). It is housed in the Museum of the Geology Department of Warsaw University, Warsaw, under the registration number IGP/A/34/01.



Fig. 1 Location sketch-map of SW margin of the Holy Cross Mountain