

NEW DATA ON THE LOWER OXFORDIAN FROM THE SUBBETIC ZONE (BETIC RANGE, SE SPAIN)

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RESUMEN

Hasta el momento presente, el conocimiento que se tenía sobre la presencia de Oxfordiense inferior en la Zona Subbética (Cordillera Bética) era muy escaso. Sequeiros (1974) había demostrado la existencia de una amplia discontinuidad sedimentaria en la región central que comprende las zonas *Mariae*, *Cordatum* y *Vertebrale*. Los materiales más antiguos de edad Oxfordiense correspondían a la zona *Antecedens* (sensu Sequeiros, 1974).

El estudio de una sucesión de 1.15 m de espesor en la Sierra de Corque, cerca de Fortuna (Murcia, Sureste de España), muestreada nivel a nivel, ha permitido el reconocimiento de una asociación típica del Oxfordiense inferior, con *Peltomorphites*, *Peltoceratoides*, *Parawedekindia*, *Euaspidoceras babeanum*, *Creniceras*, *Neocampylites*, *Prososphinctes* y *Pseudogregoryceras*.

Los *Phylloceratina* son muy abundantes. La asociación registrada muestra grandes afinidades con la descrita por Sapunov (1976) en Bulgaria.

Palabras-clave: Jurásico, Oxfordiense inferior, ammonites, Béticas, Subbética, Bioestratigrafía, España.

ABSTRACT

Knowledge about the existence of Lower Oxfordian in the Subbetic Zone (Betic Range) has been, up to the moment, scarce. A wide stratigraphical gap comprising the *Mariae*, *Cordatum* and *Vertebrale* Zones was reported by Sequeiros (1974) throughout the central part of this area. The oldest known materials are those of the *Antecedens* Zone (sensu Sequeiros, 1974), well represented in the area.

A continuous succession 1.15 m thick has been sampled in detail in the Sierra de Corque, near the locality of Fortuna (Murcia, SE Spain), and has lead

to the recognition of a typically Lower Oxfordian association, with taxa such as Peltomorphytes, Peltoceratoides, Parawedekindia, Euaspidoceras babeanum, Creniceras, Neocampylites, Prososphinctes and Pseudogregoryceras. Phylloceratina are very abundant. The recorded association bears great affinities with that described by Sapunov (1976) in Bulgaria.

Key words: Jurassic, Lower Oxfordian, ammonites, Betic Range, Subbetic Zone, Biostratigraphy, Spain.

INTRODUCTION

To date, stratigraphical and paleontological data concerning the Lower Oxfordian in the Subbetic Zone (Southern Spain) are very scarce. Sequeiros (1974) in his doctoral thesis (University of Granada) records a wide stratigraphical gap corresponding to the Upper Callovian and Lower Oxfordian in the central area of the Subbetic Zone. This stratigraphical and paleontological lacune includes the *Mariae* (=Claromontanus Zone, sensu Meléndez, Sequeiros and Brochwicz-Lewinski, 1984) and *Vertebrale* (=Patturatensis Zone, sensu Meléndez, Sequeiros and Brochwicz-Lewinski, 1984) Zones.

The *Antecedens* Zone (sensu Sequeiros, 1974) is well represented and identified by ammonites, near Granada (Sequeiros, 1974; Sequeiros and Oloriz, 1979). The existence of older Oxfordian materials in the Subbetic was previously unknown except for an imprecise account of the Lower Oxfordian in the Murcia region by Seyfried (1978).

One international research group working in Spain on the Callovian/Oxfordian boundary has recently reported the presence of Lower Oxfordian in the Iberian Range (NE Spain) -see Meléndez (1984); Meléndez, Sequeiros and Brochwicz-Lewinski (1982 a, 1982 b); Sequeiros, Cariou and Meléndez (1984). The same conclusions were reached by Bulard (1972) and Mensink's research group (Mensink, 1966; Benke, 1981).

As a part of project R-33.21 of the CAICYT (Comisión Asesora de Investigación Científica y Técnica, Ministerio de Educación y Ciencia), directed by Prof. Dr. Asunción Linares (University of Granada), several stratigraphical profiles in the Subbetic Zone have been studied level by level by the present authors and the research group.

The Subbetic Middle and Upper Jurassic in the region of Murcia (SE Spain) is composed of typical red nodular limestones -ammonitico rosso facies- (cf. Seyfried, 1978; Mangold, 1979; Sandoval, 1983) frequently condensed and/or reduced. So far, the most clearly exposed and most complete Oxfordian stratigraphical sequences which we have been able to

study are those located geographically in Sierra de Lugar, Sierra de Crevillente and, specially, Sierra de Corque, near the village of Fortuna (5600 inhabitants).

The stratigraphical sequence of Corque

Several sequences belonging to the Callovian/Oxfordian boundary have been studied in Sierra de Corque. Given the foreseeable reduction of this kind of facies and in order to obtain the maximal biostratigraphical resolution we decided to distinguish levels which were as thin as possible. The best exposed section has been labelled CORQUE-5 and is described below (Fig. 1):

Level 4 (5-10 cm. thick): very ferruginous hard ground containing reworked and recrystallized ammonites: Partschiceras sp, very abundant Holcophylloceras mediterraneum (NEUM.), Reineckeinae, Macrocephalites compressus (QUENST.). The same assemblage has been well recognized in Lugar (5 Km to the South) where the Callovian is very rich. The regional data indicate that the fossil assemblage belongs to horizon VII (Patina), sensu Cariou (1980).

Level 5 (17 cm.): compact red nodular limestones containing reworked Mn nodules of stromatolitic origin, bioturbated and with poorly preserved reworked fossils. Hibolites is abundant.

Level 6 (20 cm.): red nodular limestones, also compact but with fewer Mn nodules. Ammonites are abundant. The fossil assemblage contains: belemnites (Hibolites and Atractites phragmocones), epifaunal bivalves (Mytiloidea) and reworked ammonites -large sized Euaspidoceras (E. aff. ferrugineum JEANNET and/or E. cf. hirsutum (BAYLE)), Reineckeinae, Pachyceras sp., Peltoceras sp., "Psudopeltoceras" sp., Phylloceras sp., Holcophylloceras mediterraneum (NEUM.), Sowerbyceras aff. loryi.

Level 7 (7-8 cm.): compact red nodular limestone without Mn nodules and with reworked ammonites: Euaspidoceras sp., Peltoceras sp., Rursiceras sp., Perisphinctidae indet., Phylloceras sp., Lytoceras sp. and abundant belemnites (Hibolites) and bivalves (Lima, Inoceramus, Mytiloidea,...).

The fossil assemblage obtained from levels 6 and 7 can be assigned without difficulty to the Upper Callovian. The biostratigraphical horizons have not been determined accurately, perhaps due to taphonomic processes. They may be attributed to the Atleta Zone and possibly to Lamberti too (given the presence of true Pachyceras).

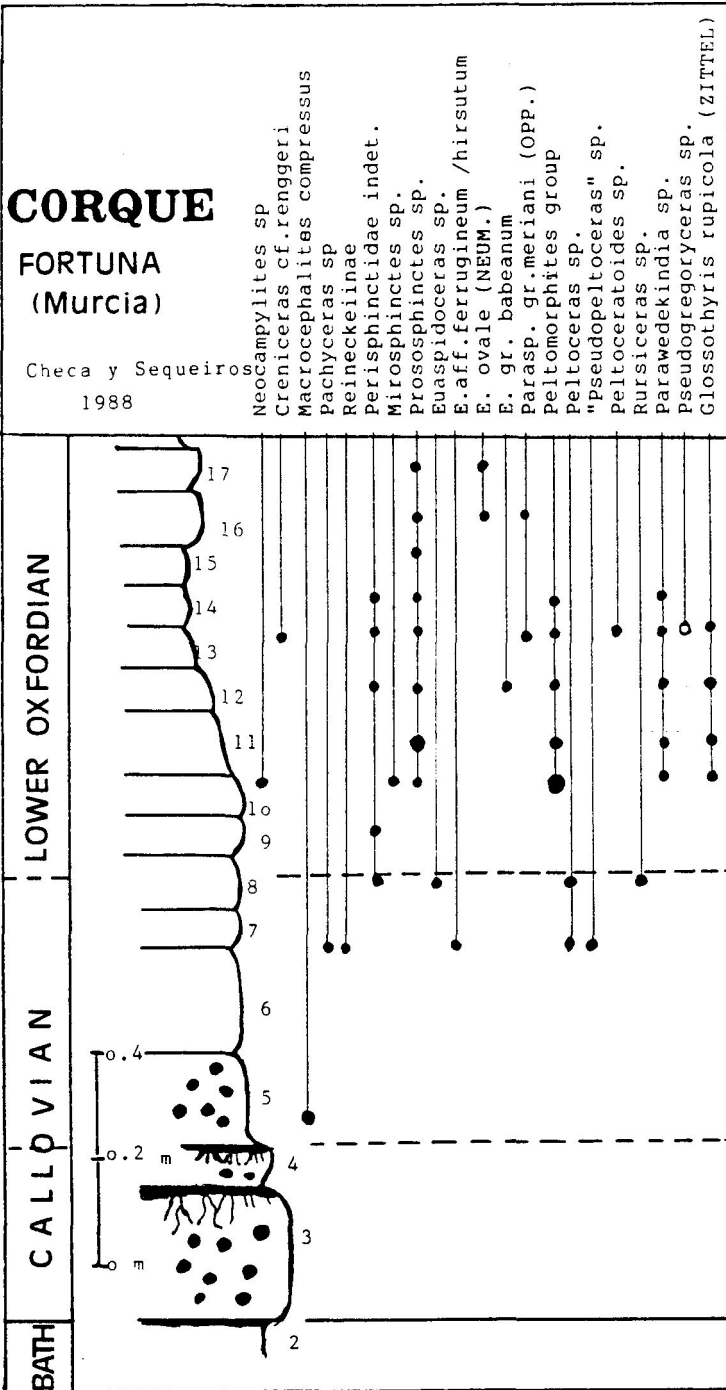


Fig. 1 - The stratigraphical succession of Callovian to lower Oxfordian at Corque, Fortuna (MURCIA, SE SPAIN).

Peltomorphites sp., Lytoceras sp., abundant Sowerbyceras tortisulcatum (D'ORB.), Parawedekindia sp. and Hibolites sp.

Level 14 (8 cm.): the same lithology and few fossil record: Sowerbyceras tortisulcatum (D'ORB.) and Prososphinctes sp. with sharp ribbing. Peltomorphites does not occur.

Level 15 (8 cm.): the same lithology and abundant fossil record: Phylloceras sp., Holcophylloceras mediterraneum (NEUM.), Calliphylloceras sp., small sized and abundant Sowerbyceras tortisulcatum (D'ORB.), Lytoceras sp., Paraspidoceras meriani (OPPEL), Euaspidoceras ovale (NEUM.) and Prososphinctes sp.

Level 16 (10 cm.): more compact red nodular limestone providing: Lytoceras sp., abundant Sowerbyceras tortisulcatum (D'ORB.), Holcophylloceras mediterraneum (NEUM.), Euaspidoceras gr. ovale (NEUM.) and sharply ribbed Prososphinctes.

The higher levels are not well exposed and the boundary with the Middle Oxfordian has not been reached in this stratigraphical section.

	MEDITERRANEAN ZONATION (subbetic zone)	SUBMEDITERRANEAN ZONATION (Iberian range)
UPPER OXFORD.	Planula	Planula
	Bimammatum	Bimammatum
MIDDLE OXFORD.	Bifurcatus	Bifurcatus
	Riazi	Transversarium
	Antecedens	Antecedens
	?????	Patturatensis
LOWER OXFORD.	Renggeri	Claromontanus
	Atleoides	(non identified)

Fig. 2 - Biostratigraphic framework proposed here for Lower Oxfordian, and equivalences supposed with Iberian range.

Data from: SEQUEIROS, 1974; SEQUEIROS Y OLORIZ, 1979; MELENDEZ, 1984; SEQUEIROS, MELENDEZ and BROCHWICZ-LEWINSKI, 1984.

BIOSTRATIGRAPHICAL INTERPRETATION

The lack of typical submediterranean ammonite fauna (Cardioceratidae) and the taphonomic phenomena -mainly reworking- make an accurate biostratigraphical interpretation difficult.

The fossil record reveals an assemblage belonging clearly to the Lower Oxfordian of the Mediterranean area, remarkably similar to that described by Sapunov (1.976) in Bulgaria. This author defined a lower zone (Peltomorphites athletoides Zone) and an upper one (Creniceras renggeri Zone) in the Lower Oxfordian, equivalent to the Submediterranean Mariae and Cordatum (=Claramontanus Zone, sensu Meléndez, 1.984) Zones.

The assemblage described by Sapunov (1.976) in Bulgaria has the same composition as that obtained in Sierra de Corque (SE Spain). The Lower Oxfordian is there characterized by the presence of certain genera which are also present in the region studied here. Fig. 1 shows the faunal occurrences in Corque and the equivalence with Bulgaria.

The lower zone (Peltomorphites athletoides Zone) can be well characterized in Corque by the presence of Neocampylites sp., Mirosphinctes sp., Prosoosphinctes sp., Otosphinctes sp., Euaspidoceras gr. babeianum (D'ORB.), Peltomorphites gr. subeugenii ARKELL and Parawedekindia sp., associated with abundant Sowerbyceras tortisulcatum (D'ORB.), Glossothyris rupicola (ZITTEL), Hibolites hastatus BLAINV. and bivalvs (Mytiloidea, Inoceramus,...).

The upper zone of the Lower Oxfordian in the Sierra de Corque section (Creniceras renggeri Zone, sensu Sapunov, 1.976) is marked at its base by the first occurrence of Creniceras gr. renggeri OPPEL in Sapunov (1.976) and Peltoceratoides. The Lower/Middle Oxfordian boundary has not yet been reached on the field at Corque.

The fossil assemblage collected from this upper zone is: Sowerbyceras tortisulcatum (D'ORB.), Phylloceras sp., Lytoceras sp., Lissoceras sp., Creniceras sp. aff. renggeri (OPPEL) in Sapunov (1.976), Perisphinctidae sp. (Otosphinctes?), Prosoosphinctes aff. bourseaui MELEND., Prosoosphinctes matheyi (DE LOR.) very sharply ribbed Prosoosphinctes, Euaspidoceras ovale (NEUM.), Paraspidoceras gr. meriani (OPPEL), Peltoceratoides sp., Parawedekindia sp., Pseudogregoryceras sp. (out of place), Hibolites gr. latesulcatus (D'ORB.) and Glossothyris rupicola (ZITTEL).

The occurrence of Peltomorphites and Peltoceratoides at the boundary between both Lower Oxfordian zones may be interpreted either as a paleogeographical phenomenon or as a taphonomic process (reworking). For the moment we have no conclusive explanation.

CONCLUSIONS

The study of Lower Oxfordian ammonite fauna in the Subbetic Zone (Betic Range) will provide us with better knowledge of the Oxfordian biostratigraphy in our region. The zonal scheme previously proposed (Sequeiros, 1.974; Sequeiros and Oloriz, 1.979) for the Middle and Upper Oxfordian is now completed with that for the Lower Oxfordian (Fig. 2).

The expected yield of other sections to be sampled at the area or Fortuna may solve many biostratigraphical problems concerning the Lower Oxfordian in Southern Spain and in the Mediterranean area s. str., "if we are fortunate" in Fortuna...

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