

LOS CONODONTOS FRASNIENSES Y EL LÍMITE FRASNIENSE/ FAMENIENSE EN TABUENCA (PROVINCIA DE ZARAGOZA), CADENAS IBÉRICAS (NE DE ESPAÑA)

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Resumen

Se figuran y describen por primera vez los conodontos de la Formación Bolloncillos, de la Sierra de Tabuena (provincia de Zaragoza). El hallazgo de varios elementos pectiniformes ha permitido identificar las siguientes especies: *Ancyrodella curvata*, *Ancyrognathus* cf. *ancyrognathoideus*, *Ancyrognathus* cf. *coeni*, *Ancyrognathus triangularis* y *Palmatolepis gigas*. Estos taxones, junto con los datos bioestratigráficos obtenidos a partir del estudio de los ostrácodos, ammonoideos y tentaculítidos, permiten asignar una edad Frasnense para la mayor parte de esta formación, desde posiblemente la zona de *Palmatolepis hassi* superior hasta la de *Palmatolepis linguiformis*, en la escala estándar de conodontos.

Por otro lado, en los niveles basales de la suprayacente Formación Hoya se ha encontrado el ammonoideo *Falcitornoceras falciculum*, especie índice de la zona del mismo nombre, característica del Fameniense inferior. En los niveles más altos de la Formación Bolloncillos y los más bajos de la Formación Hoya no se han encontrado fósiles, por lo que su edad es incierta. Teniendo en cuenta que las faunas más altas encontradas en la Formación Bolloncillos son frasnenses, mientras que las más bajas de la Formación Hoya son famenienses, el límite Frasnense/Fameniense en esta región debe localizarse en alguna capa indeterminada entre ambas formaciones, dentro de este pequeño intervalo sin fósiles.

Palabras clave: Bioestratigrafía, Conodontos, Frasnense/Fameniense, Cadenas Ibéricas, España.

Extended abstract

[*Frasnian conodonts and the Frasnian/Famennian boundary from Tabuena (Zaragoza province), Iberian Chains (NE Spain)*]. Upper Devonian rocks from the NE Iberian Chains are composed of 1300 m of mostly siliciclastic materials with up to 30 m of carbonatic rocks. These rocks span from Early Frasnian to Late Famennian and are subdivided into four lithologic units that from base up are Rodanas Formation, Bolloncillos Formation, Hoya Formation and Huechaseca Formation (Gozalo, 1994). Our work is focused on the Bolloncillos Formation. This unit consists of 200 m of sandstones and shales and contains a rich variety of fossils: ostracods, conodonts, homoctenids, ammonoids, trilobites and machaeridia. By means of ostracods, conodonts and homoctenids the Bolloncillos Formation is assigned to the Frasnian.

Conodonts from two sections (BM1 and CH) have allowed us to identify the following taxa: *Ancyrodella curvata*, *Ancyrognathus* cf. *ancyrognathoideus*, *Ancyrognathus* cf. *coeni*, *Ancyrognathus triangularis* and *Palmatolepis gigas*. They confirm a Frasnian age for the Bolloncillos Formation and permit a direct correlation between conodont and ostracod biozonations for this region. The Formation age is within an interval ranging from the late *Palmatolepis hassi* Zone to the *Palmatolepis linguiformis* Zone, in the standard conodont zonation, and from the *Bertillonella (Rabienella) cicatricosa* Zone to levels above *Bertillonella (Rabienella) serrata* Zone in the entomozoid zonation (sensu Gozalo, 1994).

The presence of three key species of *Ancyrognathus* permits also a correlation of our sections with the zonation established in the Montagne Noire (Klapper, 1988, 1990). The presence of *Ancyrognathus* cf. *ancyrognathoideus* in bed BM1/21 correlates this level with a part of MN Zone 6. *Ancyrognathus* cf. *coeni* from bed 27, indicates that this bed belongs to MN Zone 8 or higher (up to lower part of MN Zone 11). *Ancyrognathus triangularis* (BM1/31; CH/4) appears intercalated between samples with *Ancyrodella curvata* in both sections (BM1/31, 32 and CH/2, 6). In BM1 it occurs above *Ancyrognathus* cf. *coeni*. These two records

of *Ancyrognathus* species are separated by a normal fault that chops part of the succession at this point. This lack of materials in BM1 is corroborated by correlation with other sections in the region that are also biostratigraphically controlled (Gozalo, 1994). The last local occurrence of *Ancyrodella curvata* (BM1/32; CH/6) could represent the uppermost record of this species, and therefore, the specimens of *Ancyrognathus triangularis* from samples BM1/ 31 and CH/4 would belong to the upper range of this species (base of MN Zone 13). Definitive Famennian in these sections is demonstrated in bed BM1/34 and CH/9 by *Falcitornoceras falciculum* ssp. (Montesinos *et al.*, 1990). Consequently, the Frasnian/Famennian boundary lies between bed 32 and 34 at BM1 and between beds 6 and 9 at CH.

In summary, two sections in the Sierra de Tabuenca have yielded an incomplete but important conodont succession that, probably, spans from MN6 through MN13. The conodonts occur in shales and are accompanied by other fossil groups, mainly ostracods and ammonoids, that enable a direct comparison of conodont zonation with other global zonations.

Keywords: Biostratigraphy, Conodonts, Frasnian/Famennian, Iberian Chains, Spain.