La Mena Formation in the Compte Section (Famennian, Upper Devonian, Spanish Pyrenees)

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Abstract

The Devonian sedimentary record in the Central Pyrenees is complex and widespread, and is divided into five main facies areas (North Pyrenean, Northern, Central, Western and Southern). The latter has been subdivided into four subfacies areas: Sierra Negra, Baliera, Renanué and Compte (Zwart, 1979; Valenzuela-Ríos & Liao, 2006). Diverse studies in different sections of the Compte Subfacies permit a compilation of the Devonian sequence (Boersma, 1973; Valenzuela-Ríos et al., 2005; Liao et al., 2008; Liao & Valenzuela-Ríos, 2013, Gouwy et al., 2013; Valenzuela-Ríos et al., 2017; Liao & Valenzuela-Ríos, 2017). Within this compilation, the various sections of the Compte area stand out (aforementioned reports). Lochkovian to lower Emsian and Givetian to lower Frasnian rocks have been accurately dated by conodonts. Recently our research group has started a thorough study of Upper Devonian strata in the Compte Section. There, the Upper Devonian consists of three main lithological units: Comabella Fm., La Mena Fm. and Barousse Fm. Silvério et al. (2021) have currently studied the Frasnian-Famennian transition, which falls within the upper part of the Comabella Fm. Herein, we continue these kind of studies further up in the stratigraphic column to include the La Mena Fm. and the lower part of the Barousse Fm. Our purpose is to date and characterize by means of conodonts the La Mena Fm. in the Compte Section.

In the Compte Subfacies, the La Mena Fm. chiefly consists of red nodular "griotte" limestone, is diachronic and is interpreted as deposited in a hemipelagic carbonate ramp environment. In the Compte Section, the La Mena Fm. measures 5.75 m and consists of red nodular, pseudonodular and well-bedded limestones, and red and grey nodular limestones with cephalopods. Our report focuses on a detailed study of the lower to middle Famennian conodont record from the uppermost part of the Comabella Fm, the La Mena Fm. and the lowermost part of Barousse Fm. 50 samples, in a bed-by-bed sampling, have been taken. The studied upper part of the Comabella Fm. consists of 4.53 m thick grey, dark and brecciated limestones. It comprises three conodont zones: *termini*, *glabra prima* and *glabra pectinata*, identified by their respective index conodont taxa. At the lowermost part of the La Mena Fm., the base of the *rhomboidea* Zone is recorded; higher strata document

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the *gracilis gracilis* Zone. In the upper part of La Mena Fm., the *marginifera marginifera* Zone is recognized by the conodont association *Palmatolepis marginifera marginifera*, *Pa. quadrantinodosa quadrantinodosa* and *Pa. quadrantinodosa inflexoidea*. The lower part of the Barousse Fm. consists of pink and grey nodular limestone, is 1.45 m thick and yields conodonts of the *marginifera marginifera* Zone.

Boersma (1973) situated the base of La Mena Fm. in the Compte section around the upper Frasnian *gigas* Zone (F13). However, Sanz-López (1995) reinterpreted these data and assigned the base of this formation to the Upper *triangularis* Zone (*minuta minuta* Zone). Our results differ from these interpretations, and the detailed conodont succession confirmed the position of La Mena Fm. in the Compte section between the *rhomboidea* and *marginifera marginifera* zones.

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