

Middle and upper Lochkovian (Lower Devonian) at Segre 5 section

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Locality - Along the national road N-260.

Lithostratigraphic unit - Lithosome A and lower part of Rueda Fm.

Age - Lochkovian (Lower Devonian).

What to see - Well-exposed lower and middle Lochkovian strata in a continuous sequence.

How to get there

The locality is accessible through the National N260 from La Seu d'Urgell to Puigcerdá. The section is west-east oriented (Fig. 1).

Historical outline

Recent road-work exposed the core of the "Lower Devonian Segre Anticline" and part of the eastern limb. Valenzuela-Ríos and Liao measured and sampled this section and presented preliminary results (Valenzuela-Ríos and Liao, 2016).

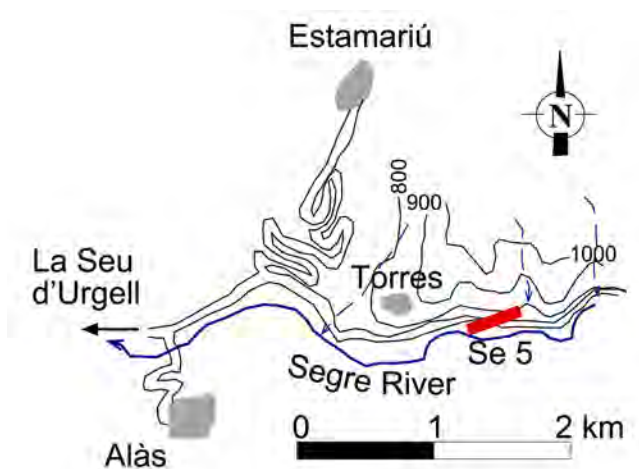


Figure 1. Location map of Segre 5 section (Se 5).

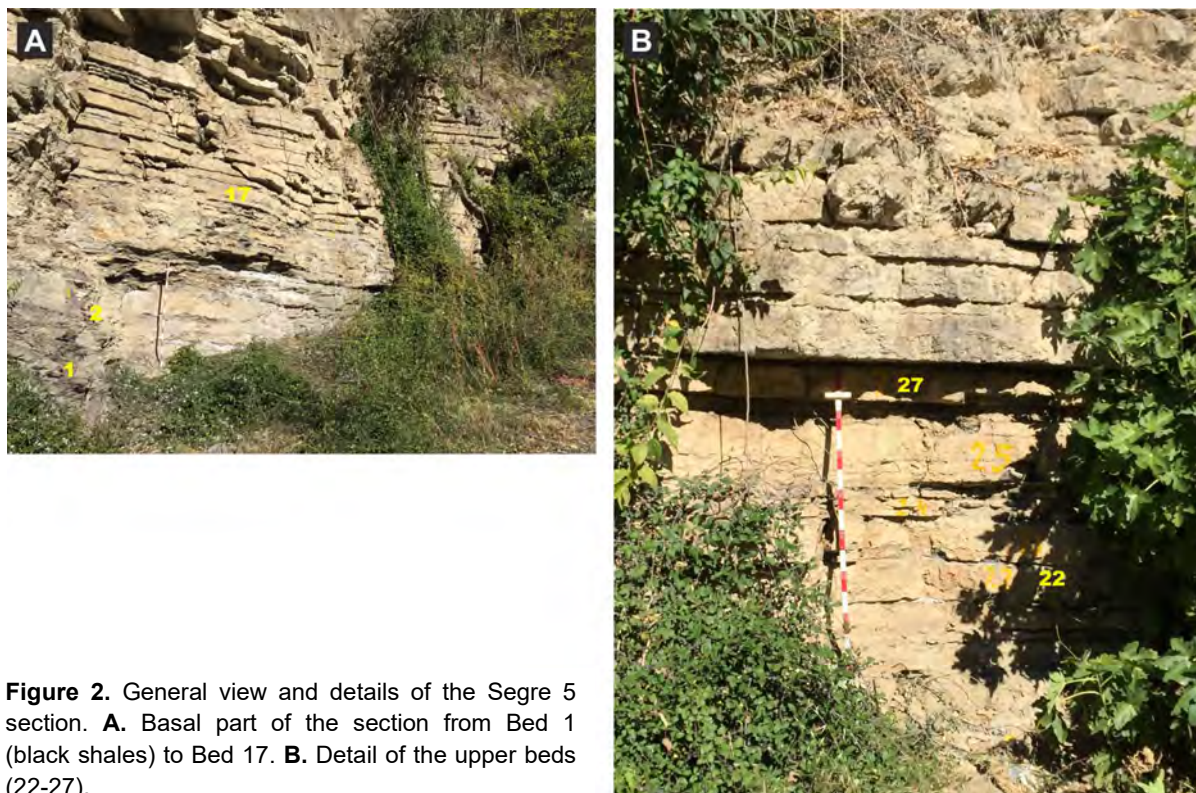


Figure 2. General view and details of the Segre 5 section. **A.** Basal part of the section from Bed 1 (black shales) to Bed 17. **B.** Detail of the upper beds (22-27).

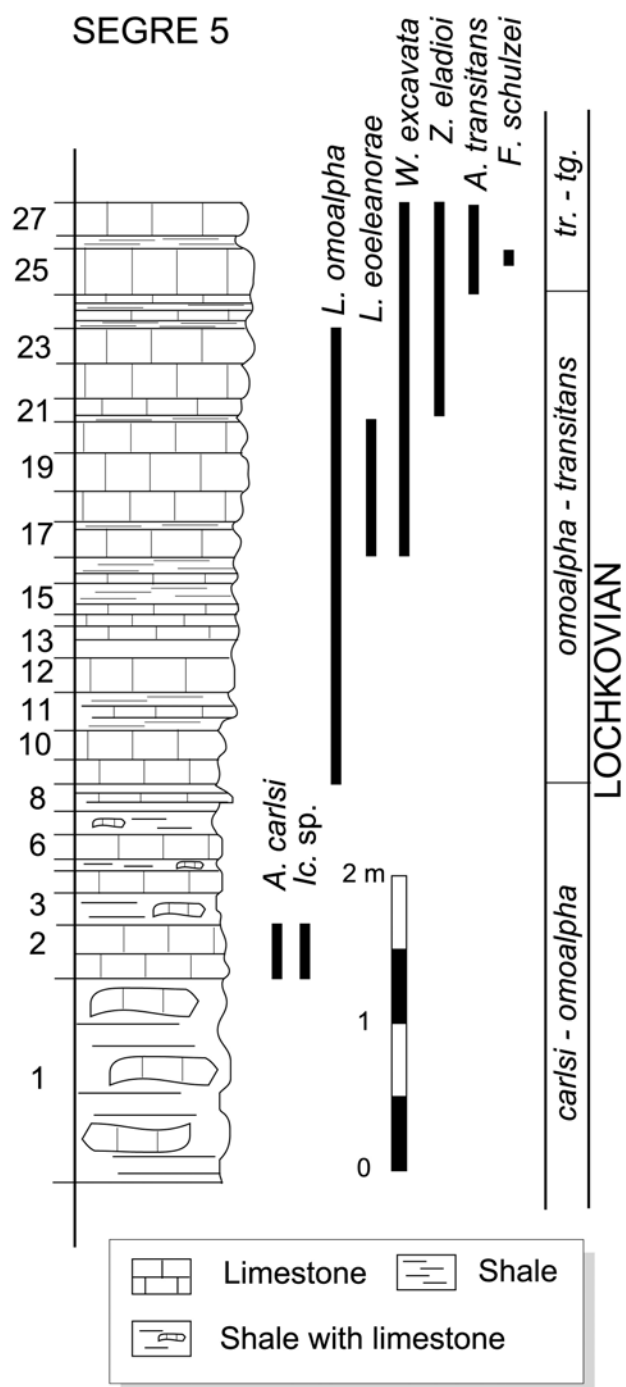


Figure 3. Stratigraphic column of the Se 5 section and conodont distribution.

eoeleanore confirms correlation with a level above the base of middle Lochkovian. *Flajsella schulzei* in Bed 25C supports intrazonal (*transitans-trigonius* Zone) correlation.

Additional remarks

The Segre 5 section ranges from the lower to the middle Lochkovian, extends downwards the conodont sequence recorded in the Segre area to the lower Lochkovian and supports correlation with contemporaneous sections.

Lithology and fossil content

The measured part of the section has a thickness of about 6 m of black and grey limestone, clay and calcareous clay. Black shales with thin beds and lenses of limestone dominate in the lower 3.5 m whereas thicker limestone beds with thin (1-3 cm) clay interbedded are abundant in the upper half (Fig. 2).

Orthoconic cephalopods, crinoids, ostracods and brachiopods are frequent.

Palaeoenvironment

The black shale and limestone were deposited in a calm shallow marine euxinic environment. The overlain sediments of the Rueda Fm. represent an augment in oxygen content and were deposited in a shallow water carbonate ramp.

Fossil content

31 conodont samples have been collected from the Segre 5 section from all the limestone levels. The preservation is mostly good. Conodont colour is black corresponding to a Color Alteration Index (CAI) of 5.

10 taxa belonging to six genera (*Icriodus*, *Ancyrodelloides*, *Lanea*, *Flajsella*, *Wurmiella* and *Zieglerodina*) have been identified (Figs. 3, 4).

Biostratigraphy

The basal bed yielded *A. carlsi* and fragmentary *Icriodus* sp. This association can be correlated with the "black limestone" interval in Gerri 1.1 section above the "*Scyphocrinites* Bed" and below the entry of *L. omoalpha* and belongs to the lower Lochkovian. The uppermost sampled bed (27) contains *A. transitans* below the entry of its descendant *A. trigonicus*, and thus, it belongs to the *A. transitans-A. trigonicus* middle Lochkovian Zone. In between, *L.*

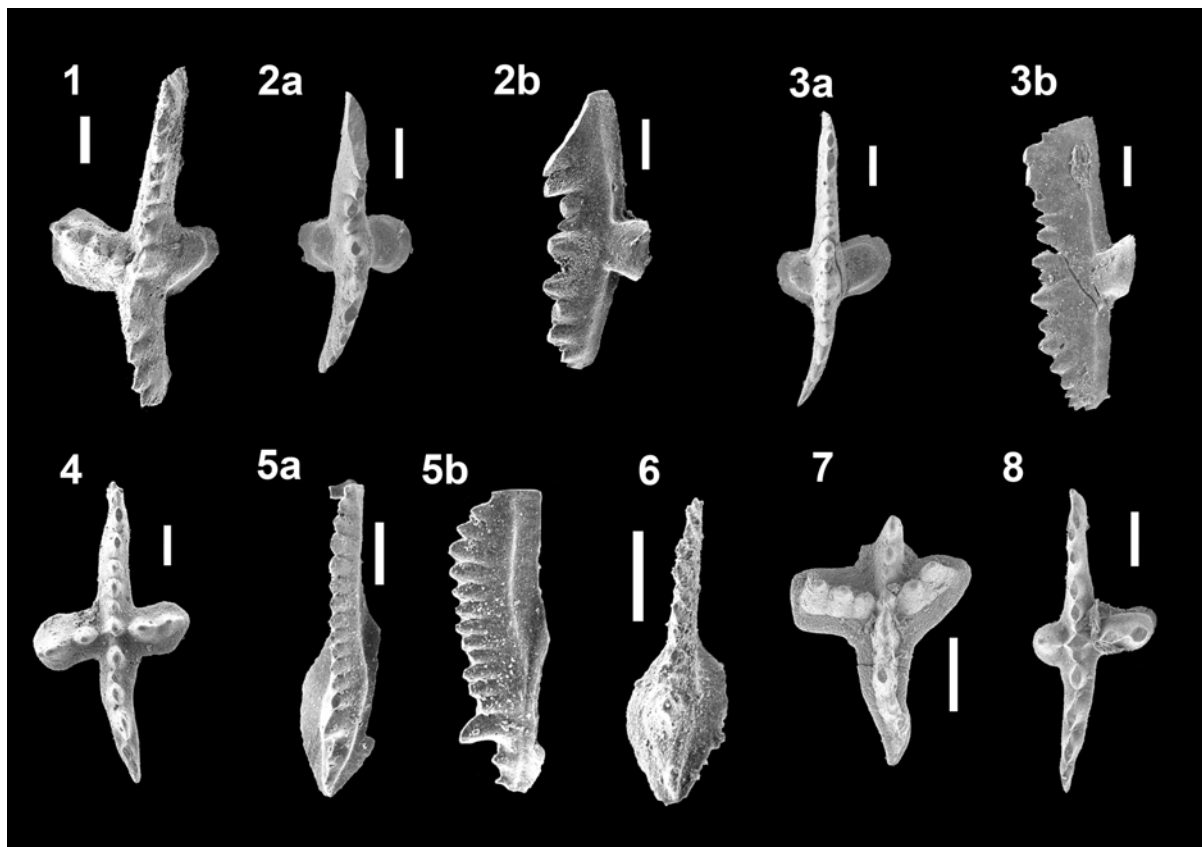


Figure 4. Conodonts from the Se 5 section. All scale bar 200 μm , except 5, 6 (500 μm).

1. *Ancyrodelloides carlsi* (Boersma), Pa element, upper view, sample Se 5/2. **2.** *Lanea omoalpha* Murphy & Valenzuela-Ríos, Pa element, 2a upper view, 2b lateral view, sample Se 5/9. **3.** *Lanea omoalpha* Murphy & Valenzuela-Ríos, Pa element, 3a upper view, 3b lateral view, sample Se 5/23. **4.** *Anc. transitans* (Bischoff & Sannemann), Pa element, upper view, sample Se 5/25c. **5.** *Flajsella schulzei* (Bardashev), Pa element, 5a upper view, 5b lateral view, sample Se 5/25c. **6.** *Flajsella schulzei* (Bardashev), Pa element, upper view. **7.** *Anc. transitans* (Bischoff & Sannemann), Pa element, upper view, sample Se 5/27. **8.** *Anc. transitans* (Bischoff & Sannemann), Pa element, upper view, sample Se 5/27.

Acknowledgements

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References

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