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Wenlock to Lochkovian strata in the Esera 3 section

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Locality - Along the right bank of the Esera river between the Cuera and San Chaime bridges.

Lithostratigraphic unit - Silurian units 2-4 and Lochkovian schists with nodules.

Age - Sheinwoodian (Wenlock; graptolite Zone 30; Silurian) to Lochkovian (Lower Devonian).

What to see - Part of the characteristic Silurian succession in the Sierra Negra area and the transition to the Lower Devonian.

How to get there

The locality is accessible from the regional road A-139 Benasque-Francia. In front of Aneto Camping, turn left and take the pathway to Valle de Estós to meet the Cuera Bridge. The section starts in the adjacent hill just north of the bridge and runs parallel to the Esera River towards the San Chaime Bridge.



Figure 1. **A.** View of limestone Bed 3, section Esera 3. Slightly metamorphic limestone. **B.** Lenticular limestone levels within calcschists of Bed 1.

Historical outline

Dalloni (1910) already recorded *Orthoceras bohemicum* and *O. pyrenaicum* from the basal part of this section. Subsequently, Waterlot (1961), Degardin & Waterlot (1974) and Degardin (1977, 1978) reported graptolites from the black schist and shale above. Valenzuela-Ríos (1994) measured and sampled the section for conodonts, but all the samples were sterile.

Lithology and fossil content

The section has a thickness of about 100 m and exposes a succession of black limestones with orthoceratids and crinoids ossicles, black schist and calcschist with graptolites, black limestone interbedded with calcschists; these limestones show a grey weathering surface and the calcschist an ochreous-yellowish surface. The section ends with limestone nodules and lenses within a schist-dominant matrix that are capped by 2 m of fetish limestone (Figs. 1-3). This section approximately corresponds to the “*Le Silurien du pont San Jaime*” section (Degardin, 1978).

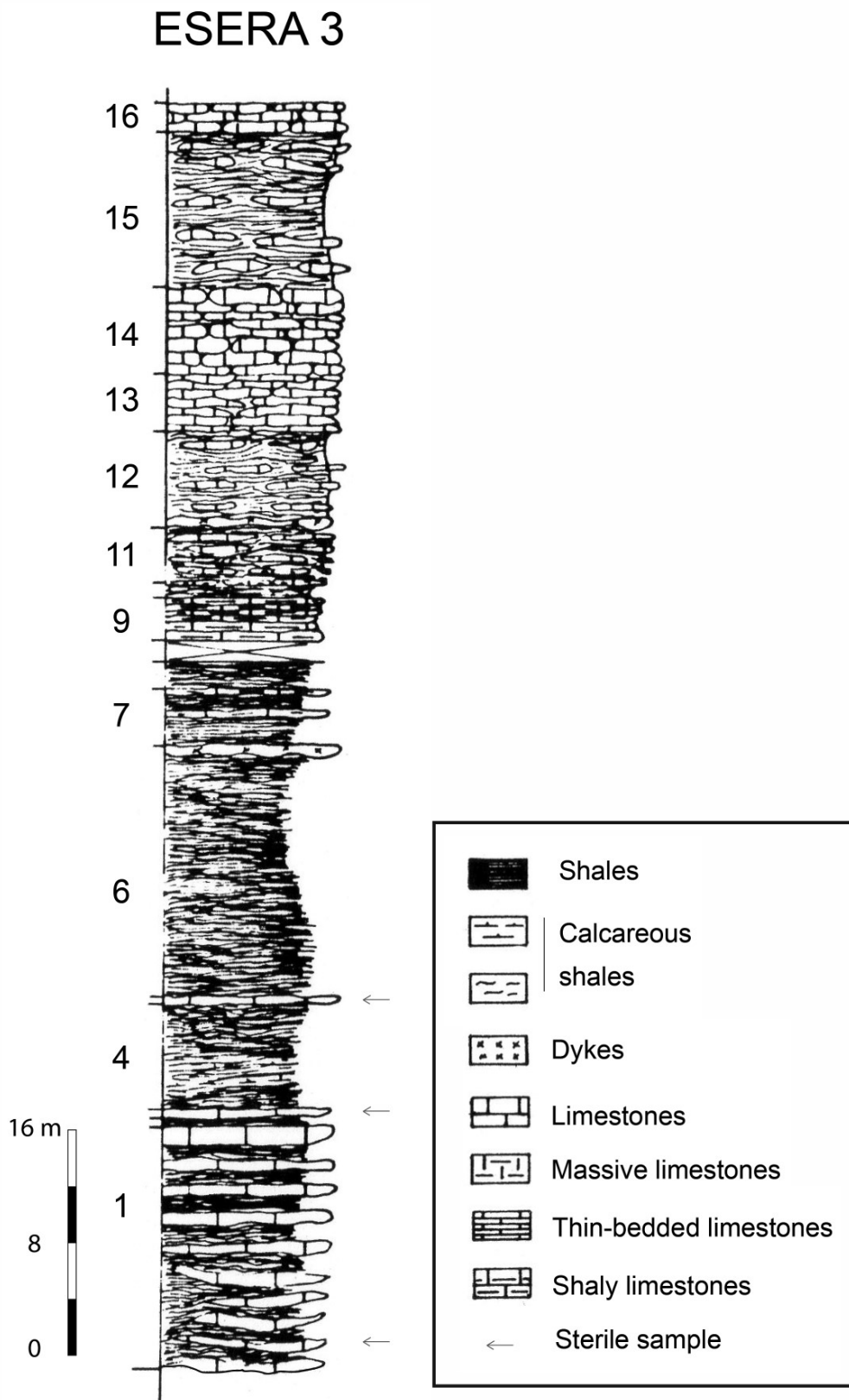


Figure 2. Stratigraphic column of the Esera 3 section with location of conodont samples.

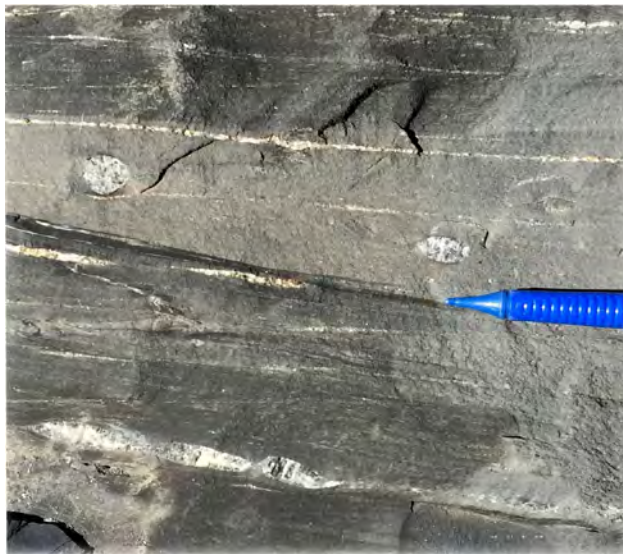


Figure 3. Laminated limestone with orthoceratids in Bed 1, section Esera 3.

Palaeoenvironment

According to García-López et al. (1996), the Silurian carbonate-siliciclastic sequences in the Pyrenees were deposited in a deep carbonate ramp with low sedimentation rate; the detritic input increases the thickness of the succession and dilutes the calcareous levels, which become more spaced.

Fossil content

Dalloni (1910) recorded from the lower black limestone *Orthoceras bohemicum* and *O. pyrenaicum*. Waterlot (1961), Arche (1971), Degardin & Waterlot (1974) and Degardin (1977, 1978) explored the graptolitic schist and calcschist. These authors reported *Monograptus mutuliferus mutuliferus*, *M. lamarmorae*, *M. flemingii flemingii*, *M. latus*, *M. uncinatus* var. *tariccoi*, *M. mutuliferus* var. *strigosus*.

Four conodont samples in the basal black orthoceratic limestone were sterile.

Biostratigraphy

Degardin (1977) correlates the graptolite association in the schist with the Zone 30 of Elles & Wood, in the upper Sheinwoodian, upper Wenlock.

References

- DALLONI, M.M. (1910): Etude géologique des Pyrénées de l'Aragon. - Annales F. Sc. Marseille, 19: 1-444.
- DEGARDIN, J.M. (1977): Contribution à l'étude géologique du Silurien de la région de Benasque (province de Huesca, Espagne). - Thèse 3^e Cycle, Lille, 355 p.
- DEGARDIN, J.M. (1978): Étude stratigraphique et paleontologique du Silurien de la région de Benasque (Pyrenees centrales espagnoles). - Annales de la Société géologique du Nord, Lille, XCVIII: 51-58.
- DEGARDIN, J.M. & WATERLOT, M. (1974): Découverte de Conodontes du Dévonien inférieur dans les schistes carburés de la vallée de Benasque (Province de Huesca, Espagne). - Comptes Rendus de l'Académie des Sciences de Paris, 278 (D): 705-707.
- GARCÍA-LÓPEZ, S., RODRÍGUEZ-CAÑERO, R, SANZ-LÓPEZ, J., SARMIENTO, G. & VALENZUELA-RÍOS, J.I. (1996): Conodontos y Episodios carbonatados en el Silúrico de la Cadena Hercínica Meridional y del Dominio Sahariano. - Revista Española de Paleontología, nº Extraordinario: 33-57.
- VALENZUELA-RÍOS, J.I. (1994): Conodontos del Lochkoviense y Praguense (Devónico Inferior) del Pirineo Central español. - Memorias del Museo Paleontológico de la Universidad de Zaragoza, 5: 1-178.
- WATERLOT, M. (1961): Contribution à l'étude de la série stratigraphique gothlandiense et antegothlandiense de la vallée du Rio Esera (Province de Huesca, Espagne). - Annales de la Société géologique du Nord, Lille, LXXXI: 73-78.