

National Commission for Stratigraphy Belgium

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5.18 Leffe Formation - LEF

Carboniferous

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Authors: de Dorlodot, 1895; Groessens, 1973; Paproth et al., 1983.

Description: Dominantly well-bedded, violet-grey to purplish blue limestones (wackestones to packstones), tending to become darker in the passage to the overlying Molinee Fm. Commonly cherty. Locally contains slumps and breccia layers. In the neighbourhood of some Waulsortian buildups (to the upper parts of which it forms the lateral equivalent), a "rhythmic Leffe" facies occurs in which (storm-related?) coarse-grained limestone beds, often graded (with packstone-grainstone bases) are intercalated in the normal fine-grained facies. The macrofauna is extremely poor. The contact with the overlying Molinee Formation is progressive.

Stratotype: The exposures in the park of Leffe Abbey and along the adjacent road to Spontin (DSA) were designated as the stratotype of the Leffe Facies by Paproth et al. (1983). This is not a good formal stratotype as the position and age of the base of the formation are not clear and the top of the formation is missing due to faulting. The Rocher du Bastion, at Dinant, displays a complete section of the formation (Conil et al., 1988; Conil et al., 1989), but parts of it are difficult of access. Two other sections are therefore designated as stratotype: (1) the Roche à Bayard, just south of Dinant, where the lower part of the formation and the contact with the underlying Bayard Fm are well-exposed (Groessens & Noël, 1975); and (2) the section in the side road leading to the village of Salet, in the Molinee valley about 4 km WSW of Yvoir, where the upper part of the formation and the contact with the overlying Molinee Fm (see description of that formation for definition of limit) are completely exposed (Hance et al., 1994).

Area: This formation is a proximal lateral equivalent of the upper part of the Waulsortian buildups and hence has the same distribution area (DSA).

Thickness: From a few metres to several tens of metres, with a tendency to increasing thickness with increasing proximity to Waulsortian buildups. In the Bastion section the thickness is about 55 m. In the Freyr syncline, the formation attains a thickness of nearly 70 m (Lees, 1997).

Age: Late Ivorian (*Scaliognathus anchoralis europensis* Conodont Zone) to early Moliniacian. Both base and top are diachronous. The lower and middle parts of the formation have yielded a poor (ecological) foraminiferal association with *Tetraxis* and *Eotextularia diversa*, assigned to the Cf3 Zone by Conil et al. (1977, 1991). The upper part contains grainstone layers with a more diversified association derived from shallower areas (Lees, 1997). This association is latest Ivorian and early Moliniacian, and predates the entry of *Eoparastaffella*. Corals are uncommon and do not allow biozonation. The Leffe Fm corresponds to the third-order sequence 4 of Hance et al. (2001).