

National Commission for Stratigraphy Belgium

Home Lower Paleozoic Devonian Carboniferous Permian/Triassic/Jurassic Cretaceous Paleogene-Neogene Quaternary
News RegWal Alteration units

BRUYELLE Member (13/01/2016)

Cretaceous

[Commission members](#)
[Proposals and discussions](#)
[Lithostratigraphy](#)
[Chronostratigraphy](#)

BRUYELLE Member

1. **Name:** village in Antoing commune, south of Tournai, selected because of temporary outcrops during construction of TGV (High Speed Train), in Hennebert & Doremus (1997a, b).

2. **Code** carte géologique de Wallonie BRU

3. **Stratotype.** No formal stratotype defined. Nominal decimal geographical coordinates for Bruyelle 50,557 – 3,304; Lambert '72 coordinates 83275 – 138925.

Parastratotypes for the Flemish region:

Parastratotype 1: Borehole GeoDoc 110W0007 (ex 095W0152), Nieuwerkerke De Seule, drilled 1984 by VMW (De Watergroep) as their cored borehole K10 (cored in underlying Paleozoic section only). Lambert coordinates x = 40290, y = 157985, z (ground level) = 19,50 m; depth interval: 146 - 173 m. Stratotype selected because of representative geophysical well log (gamma-ray only).

Parastratotype 2: Borehole GeoDoc 095W0153, Nieuwerkerke-Noordhoek. Lambert coordinates x = 40880, y = 162250, z (ground level) 32 m; depth interval 192 – 218,20 m. Parastratotype selected because of presence of cored section over the corresponding depth interval (but no geophysical well logs).

4. **Description.** The Bruyelle Member corresponds to the traditional "Dièves moyennes" and "Dièves supérieures". In the type area it could be observed in temporary and partial outcrops along the TGV line, especially West of Bruyelle village and in the overburden of abandoned limestone quarries in the Rieu de Barges SW of Tournai (Hennebert & Doremus, 1997a, b). It consists, from top to bottom of:

- 5 - 10 m of whitish grey marl without silicifications;

- 2 – 10 m of greenish grey marl, with phosphatic granules of upwards decreasing frequency and with fine to coarse glauconite grains;

- max 1 m transgressive layer with varnish-green to brown (when phosphatised) pebbles are embedded in a greenish grey marl with coarse glauconite grains, locally very fossiliferous (rhynchonellids, terebratulids, oysters, ...) of "Faux Tourtia" facies. This diachronous unit marks the base of the Turonian transgression.

In the area transitional to the Mons basin (Péruwelz, Hennebert, 1999a, b) the succession becomes more complete, allowing a threefold subdivision and comparable to the traditional French subdivision, from top to bottom:

- chalky marl, white under dry conditions, with terebratulids, known as "Dièves supérieurs" or "Dièves bleues" in France;

- greenish grey clayey marls, with *Inoceramus labiatus*, known as "Dièves moyennes" or "Dièves vertes" in France;

- green to grey strongly clayey marls, known as "Dièves inférieures" or "Dièves multicolores" or "Assise de Saint-Aybert" in France, resting on a phosphatic pebble bed.

In the parastratotype area of the Flemish region observations are based on cores and geophysical well logs, allowing a less detailed but more consistent description. Cuttings (110W0007) consist of desintegrated bright green marly silt, becoming dark coloured and more cohesive with depth; dispersed clasts of reddish brown clay; coarse quartz grains and mollusc shell debris increase with depth. The reddish brown clay bears some resemblance to the underlying Paleozoic strata which consist of violaceous shales. Top of the Frasnian shales has become slightly weathered but shows no signs of paleosol development (Tourneur et al., 1988). Mesofossils are characterized by a high frequency of foraminifers for an overall low number of bioclasts in the 1 – 2,4 mm mesh range (Felder, 1990, 1994).

Cores (095W0153) display two subunits. The upper subunit consists of green silty marl, originally stratified but bioturbated, fossil-bearing (oyster shells, *Inoceramus*, sponge structures), displaying core desiccation cracks, interbedded with ca 25 cm thick layers in bright green indurated silty chalk with poorly preserved mollusk shells, sponge structures, fish remains. The lower subunit displays thin lenses of calcarenitic glauconite-bearing chalk, partly silicified, interbedded with green marl, quickly becoming predominant and also more coarse-grained and richer in glauconite. Towards the base, but dispersed in the sediment, reworked pebbles of Cretaceous origin.

Microfacies analysis from thin sections indicate an outer shelf depositional environment composed of bioclastic wackestone with foraminifers, calcispheres and molluscs (subunit 1 at 193.9 m) and bioclastic packstone with coarse glauconite grains and lithoclasts (subunit 2 at 216.1 and 217.6 m). Porosity values from image analysis attain 0,15% and 1.6% respectively (Lagrou et al., 2011).

The natural gamma-ray log delineates these two subunits. The upper subunit (underneath a gamma-ray peak at the base of the upper member) is still of chalky-marly nature with rising gamma-ray readings towards the base, indicative for increasing glauconite content. The lower subunit is characterized by overall very high gamma-ray reading, indicative for clayey greensand.

Therefore, the stratigraphic succession observed in boreholes in the Flemish region seems to confirm the subdivision in different units in the type area.

5. Underlying strata: as for the Vert Galand Formation.

Parastratotypes of the Flemish region: Upper Devonian shales, assigned to Bovesse Formation, in unconformable contact.

6. Overlying strata: conformably overlain by Merlin Member of Vert Galand Formation, when not truncated by Cenozoic erosion phases.

7. Area: as for the Vert Galand Formation.

8. Thickness. In the type area from 5 to over 20 m.

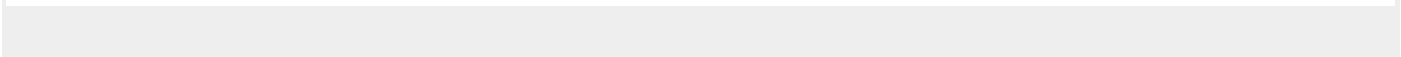
Parastrototype area of the Flemish region: 27 m in the parastratotype 1 110W0007, delineated by geophysical well logs; 26 m in parastratotype 2 95W0153. Laterally the Bruyelle Member rapidly reduces in thickness and wedges out (11 m in borehole 096E0074 at Wervik, 0 m in borehole 096E0076 a Rekkem), whereas the overlying Merlin Member appears to be more persistent.

9. Age. Lower to Middle Turonian (from Hennebert & Doremus, 1997a, b). Dièves inférieures of latest Cenomanian age (Robaszynski et al., 2001) but not present in Tournaisis or Flemish region.

10. Discussion.

As stated before, the Bruyelle Member corresponds to the 'Dièves moyens et supérieurs' of the informal stratigraphic subdivision. On DOV it appears as Nieuwkerke De Seule Member of the Vert Galand Formation.

The NCS equivalent to the Bruyelle Member is the Thivencelles Formation, as stated by Robaszynski et al. (2001). The Thivencelles Formation is of latest Cenomanian age and is rather the equivalent of the Dièves inférieures only; the remainder of the Bruyelle Member of Turonian age is equivalent of the overlying Thulin Marls Formation in the NCS 2001 scheme.



Powered by [Drupal](#)

