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Research paper

Lectotype designation for *Alveolina boscii* and *Fabularia discolites* (Foraminifera) from the rediscovered part of the Defrance collection

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ABSTRACT

Five lots of Foraminifera, belonging to the Marin Defrance (1758–1850) collection, were discovered in the collection of the *Musée des Sciences* in Laval (Mayenne, France). The original material used by Defrance to describe *Alveolina boscii* (Defrance in Bronn, 1825) and *Fabularia discolites* Defrance in Bronn, 1825 was identified among them, allowing the designation of a lectotype and paralectotypes for those two species. The systematic description of *A. boscii* and *F. discolites* is reviewed. The presence of these specimens in the museum collections is still puzzling, since the complete Defrance's collection was thought to have been lost during World War II.

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1. Introduction

During the inventory of the palaeontological collections held in the *Musée des Sciences* in Laval (Mayenne, France), seventeen lots were found, all part of the collection of famous French naturalist Jacques-Louis Marin Defrance (1758–1850) (Tréguier *et al.*, 2017; Pacaud *et al.*, 2017). Five of these are constituted by Foraminifera, and include specimens of *Alveolina boscii* and *Fabularia discolites*. Bosc (1802) first described the species as “Alvéolite grain de fétuque (Fetusa seed)” and “Alvéolite grain de millet (Millet seed)”, Alvéolite being the name given by Lamarck (1801) to what he thought was a genus of coral. Defrance (1820) referred to Bosc “Alvéolites” to describe two new genera and two new species “Oryzaire-Bosc” and “Fabulaire discolithe”, Latinised by Bronn in 1825.

The original material used by Defrance to describe these two species was identified among the five lots cited herein, allowing the designation of a lectotype and paralectotype. The systematic description of *A. boscii* and *F. discolites* is reviewed.

2. History of the collection

2.1. Formation

The Defrance collection of malacological fossils was probably one of the largest in Europe during the late XVIIIth and the early

XIXth centuries (von Humbolt, 1825, p. 205). During field work, he collected in Grignon (now Thiverval-Grignon, Yvelines, France) around 500 species of fossil shells, the vast majority of which had not been described in any natural history book before (Lamarck, 1802, p. 305). Lamarck described and published a large number of these new species between 1803 and 1811. The *Muséum National d'Histoire Naturelle* in Paris commissioned the illustration of half of the specimens collected by Defrance in Grignon to enhance its vellum collection. During his career, Defrance described, among others, around 40 new Foraminifera taxa, including 7 new genera, such as *Fronicularia*, *Pyrgo* and *Textularia* to name the best known only, essentially in the “Dictionnaire des Sciences Naturelles” volumes, from 1816 to 1829.

2.2. Loss and partial rediscovery

After he passed away, Defrance's family bequeathed his collection to the *Musée d'Histoire Naturelle* in Caen (Calvados, France), where it was deposited in 1869 after some deplorable misfortune (Tréguier *et al.*, 2017). Unfortunately, this institution, along with all its collections, was destroyed on the 7th of July 1944, during an Allied bombing. Therefore, these collections were thought to be lost, once and for all.

Somehow, several specimens of the Defrance collection found their way to the *Musée des Sciences* in Laval (5 lots of Foraminifera, 3 of Brachiopoda, 7 of Gastropoda and 5 of Bivalvia). They have been identified by the presence of typical labels used by Defrance (Bigot, 1906), and also thanks to the inventories compiled by Bigot (1905, 1906, 1907) and Bigot and Matte (1903, 1904) in which are cited precisely which specimens were found in the *Musée des Sciences* in

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Laval, as well as a manuscript note from Maurice Cossmann found associated with specimens of *Bivalvia*. Until now, it is still unclear how they ended up in this museum, but Daniel Ehlert (1849–1920), who was curator at the time, might have played a part, as he acquired a lot of specimens with different taxa and/or periods.

3. Material and methods

Both *Alveolina* and *Fabularia* belong to the Larger Benthic Foraminifera (LBF). LBF, and especially the alveolinids, are studied through various oriented sections (mainly axial and equatorial). The standard procedure for studying alveolinids is detailed in Hottinger (1974, pp. 19 to 26).

Almost all the specimens of the Defrance collection are glued onto blue card which are kept in glass tubes; these are then glued onto beige card. Defrance made several axial sections for *A. boscii* and *F. discolites* from which it was possible to choose lectotypes. We assessed the historical and museum value of the material in the collection. We did not cut equatorial sections from free specimens.

In the past ten years, the routine use of X-ray microtomography (microCT) has allowed to study the complex inner architecture of LBF tests (Speijer et al. (2008), Briguglio and Benedetti (2012), Briguglio et al. (2013)). This safe and non-destructive method of analysis is useful to study museum collections without altering historical material.

For the rediscovered samples holding species which were not described by Defrance, we undertook our identifications based on the locality where they were collected. We tried to compare the shape of the specimens with known species described from the same localities. Without further investigations, our identifications remain indicative especially for *Alveolina* species.

Furthermore, the two main samples of *A. boscii* and *F. discolites* in the Defrance collection were found in Grignon, locality from which some additional material was recently collected, allowing to compare complete tests of the former with the latter.

The determination of Grignon as the type locality for *A. boscii* and for *F. discolites* allows also to fix the type level as Middle Lutetian for both species. Lower Lutetian is absent from Grignon and the poorly visible Upper Lutetian is too indurated to extract similar specimens to those collected by Defrance.

Measurements were made with a stereomicroscope (Leica MZ95) with an integrated camera (Leica DC 300), using the imaging software Leica IM50 at the University of Rennes 1. The specimens are stored in the collections of the Musée des Sciences in Laval (Mayenne, France).

3.1. *Alveolina* specimens

Three glass tubes containing *Alveolina* specimens.

Lot n°**ML-PAL-22432**: This lot contains eight complete specimens and five specimens cut longitudinally, registered as ML-PAL-22432-1 to ML-PAL-22432-13 (Plate 1, fig. 1–4) (Tréguier et al., 2017, p. 23, figs. 4A–E). They were identified as *Oryzaria bosci* (Def.) by Defrance and were collected from the Lutetian sands of Thiverval-Grignon (Yvelines), their type locality. The length of the axis of coiling is comprised between 2.97 mm and 4.46 mm, the equatorial diameter ranges from 0.95 mm to 1.31 mm, and the elongation index from 2.36 to 3.88. However, the last whorls are missing on all the specimens. A complete description of the morphological features is given in the lectotype designation paragraph. This glass tube is identified as containing the original material used by Defrance to describe *A. boscii* on the account of the label glued on it, which indicates « Types Dict. Sc. nat. t XVI. 1820 p. 104. coll. Defrance » referring to the original publication of Oryzaire-Bosc.



Fig. 1. Complete specimen of *Alveolina* ex gr. *subpyrenaica* Leymerie, 1846?, lot ML-PAL-22330, Vendémies (Aude, France), scale bar: 1 mm.

Lot n°**ML-PAL-22330**: This lot contains a single specimen, complete and identified as both *Oryzaire ovoïdes* (Def.) and *Oryzaria bosci* (Def.) (Fig. 1 in text) (Tréguier et al., 2017, p. 23, figs. 4F–H). It was collected in Vendémies (Aude, France), which gave its name to the Vendémies Formation from the Lower Ypresian (Ford et al., 2016). The length of the axis of coiling is 3.83 mm, the equatorial diameter is 1.89 mm, giving an elongation index of 2.03. This specimen is neither *A. ovoïdes* d'Orbigny, 1826 nor *A. boscii* as Defrance's identifications could have suggested. The origin of the specimen and its dimensions indicate that it possibly belongs to the group of *A. subpyrenaica* Leymerie, 1846 but based on a unique complete specimen the identification remains tentative.

Lot n°**ML-PAL-22350**: This lot contains seven complete specimens and three cut longitudinally (Tréguier et al., 2017, p. 23, figs. 4I–L) (Fig. 2 in text), collected from Chaumont-en-Vexin (Oise). The length of the axis of coiling ranges from 2.30 mm to 3.42 mm, the equatorial diameter from 0.95 mm to 1.44 mm and the elongation index from 1.97 to 2.56. The origin of the specimens and their dimensions indicate that they possibly belong to *Alveolina oblonga* d'Orbigny, 1826. These specimens have been compared with specimens collected and identified as *Alveolina oblonga* by Abrard from the same locality (Cuisian level) and housed in the Muséum National d'Histoire Naturelle in Paris (MNHN-GG-GG2004-76822). They are very similar in shape and share the same iron oxide redish coloration. The cut sections left by Defrance are covered with glue and difficult to interpret.

3.2. *Fabularia* specimens

Two glass tubes containing *Fabularia* specimens.

Lot n°**ML-PAL-24962**: This lot contains thirteen complete specimens and four specimens cut longitudinally, registered as



Fig. 2. Axial section of *Alveolina oblonga* d'Orbigny, 1826? from lot ML-PAL-22350-7, Chaumont-en-Vexin (Oise, France), scale bar: 1 mm.

ML-PAL-24962-1 to ML-PAL-24962-17 (Plate 1, fig. 5–8) (Tréguier et al., 2017, p. 25, figs. 6A–E). Seven of them are still glued to blue card. At the top of this card is written “Vélin 48 f.16 alvéolite grain de Millet Bosc. B des Sc. n°61 f.4”, which refers to both the vellum illustration and the original description by Bosc (1802). They are labelled under the vernacular name “Fabulaire discolithe (Def.)” and were collected from the Lutetian sands of Thiverval-Grignon (Yvelines), the type-locality of *F. discolites* but also of *F. ovata* its senior synonym. The length of these specimens ranges between 3.9 mm and 6.48 mm, with a width between 3.00 mm and 4.92 mm. All the specimens are identified as *F. discolites*. The identification is fairly easy because there is no other *Fabularia* species than *F. discolites* in the Paris Basin and the specimens are very characteristic.

Lot n°ML-PAL-29059: This lot contains eight complete specimens (Tréguier et al., 2017, p. 25, figs. 6F–I) (Fig. 3 in text), collected from the Lutetian of Hauteville-Bocage (Manche, France). The label by Defrance mentions: “*Fabularia discolithes* var.”. They are ranging from 5.7 mm to 8.6 mm in length, and from 4.1 mm to 5.9 mm in width. They have been identified as *F. compressa* d’Orbigny, 1850, which is regarded as a junior synonym of *F. discolites* by various authors (Nicolas (1945), Le Calvez (1947, 1970)). The larger dimensions correspond to the description given by d’Orbigny (1850) for specimens of *F. compressa* collected around Valognes (Manche, France).

According to Nicolas (1945, p. 538), Defrance considered specimens from Valognes to be a variety of *F. discolites* from Grignon which is in turn confirmed by the label.

4. Systematic description and lectotypes designation

Phylum FORAMINIFERA d’Orbigny, 1826
Class TUBOTHALAMEA Pawlowski, Holzman & Tyszka, 2013
Order MILIOLIDA Delage & Hérouard, 1896

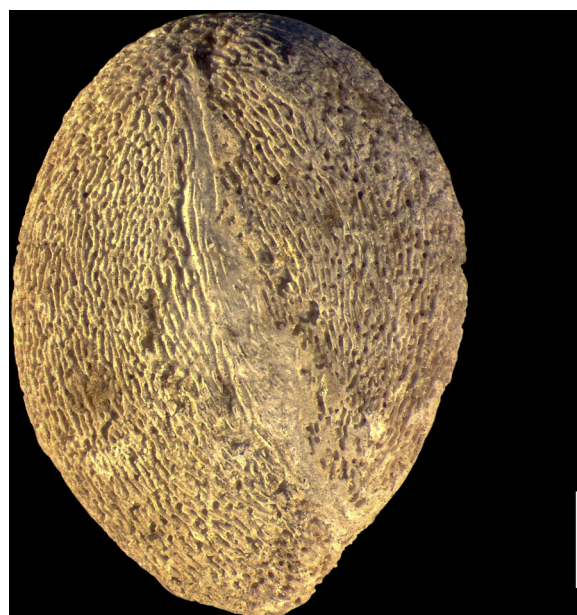


Fig. 3. Complete specimen of *Fabularia compressa* d’Orbigny, 1850?, lot ML-PAL-29059-3, Hauteville-Bocage (Manche, France), scale bar: 1 mm.

Suborder MILIOLINA Delage & Hérouard, 1896

Superfamily ALVEOLINOIDEA Ehrenberg, 1839

Family ALVEOLINIDAE Ehrenberg, 1839

Genus *Alveolina* d’Orbigny, 1826

Type species: *Oryzaria boscii* Defrance in Bronn, 1825 (subsequent designation, ICZN Opinion 1501 (1988))

Alveolina boscii (Defrance in Bronn, 1825)

1802 Alvéolite grain de fétuque Bosc. p. 99, pl. 5, fig. 3 A–C

1808 *Miliolites sabulosus* Montfort. Vol. 1, p. 175

1820 *Oryzaria*-Bosc Defrance. p. 104

1825 *Oryzaria boscii* Defrance in Bronn. p. 44

1826 *Alveolina Boscii* [sic] d’Orbigny. p. 306 n° 5, Modèles, n° 50, deuxième livraison

1960 *Alveolina boscii*. Hottinger, pp. 149–151, text. figs 78–80, pl. 10, figs 19–22

1978 *Fasciolites (Microfasciolites) boscii*. Gaemers p. 107 pl. 1, figs 19–24

The long nomenclatural story of the genus *Alveolina* and its type species has been exhaustively documented by Loeblich and Tappan when they submitted Case 2356 to the International Commission on Zoological Nomenclature (ICZN) in 1987.

Answering the Case, the ICZN in its Opinion 1501 in 1988, selected *O. boscii* as the type species for the genus *Alveolina*. The genera *Fasciolites* Parkinson, 1811, *Oryzaria* Defrance in Bronn, 1825, *Microfasciolites* Gaemers, 1978 and the binomen *Miliolites sabulosus* Montfort, 1808 were rejected.

The ICZN also invited its members to designate the figured specimen of “alvéolites grain de fétuque” [sic] by Bosc (1802, p. 99, pl. 5 fig. 3 A–C) as the lectotype of *O. boscii* but this part of the vote was withdrawn from the final decision.

Lectotype designation

A specimen from lot n°ML-PAL-22432 is supposedly illustrated on the vellum from the *Muséum National d’Histoire Naturelle* in Paris (vellum n° 48, fig. 17, a, b) (Fig. 4 in text), but the drawings are not

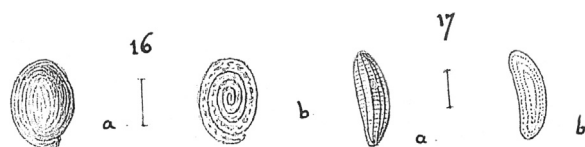


Fig. 4. Reproduction of p. 60 of Palmer (1977) which illustrates, among others, Lamarck's vellum, stored in the Musée National d'Histoire Naturelle in Paris, n°48, fig. 16 a–b (*Fabularia discolites*) and fig. 17 a–b (*Alveolina boscii*).

accurate enough to identify which specimen of this batch is actually illustrated.

Therefore specimen ML-PAL-22432-4 (Plate 1, fig. 2, axial section) is designated as lectotype, based on good preservation, and presence of diagnostic features of *A. boscii* on this specimen.

Description: Megalospheric form, 12 visible whorls, last whorls are missing, axial diameter: 4.28 mm; equatorial diameter: 1.31 mm; elongation index: 3.27; megalosphere diameter: 115 µm.

Specimen ML-PAL-22432-7 (Plate 1, fig. 3, axial section) is not as well preserved as the latter, but still good enough to bring further information concerning *A. boscii* (microspheric form). It is designated as paralectotype.

Description: Microspheric form, 12 visible whorls, last whorls are missing, axial diameter: 3.65 mm; equatorial diameter: 1.17 mm; elongation index: 3.12.

The others specimens showing axial section (ML-PAL-22432-10, ML-PAL-22432-11, ML-PAL-22432-12) are too damaged and/or incomplete to be designated as paralectotypes.

Pending further studies, the complete specimens [ML-PAL-22432-1, ML-PAL-22432-2, ML-PAL-22432-3 (Plate 1, fig. 4), ML-PAL-22432-5, ML-PAL-22432-6, ML-PAL-22432-8, ML-PAL-22432-9, ML-PAL-22432-13] are identified as belonging to the same species.

Diagnosis

Fusiform test, elongated along the coiling axis with pointed poles in adult stages, small size with very tight equatorial spiral and numerous, very small cavities in the shell, no supplementary passages in the basal layers (Hottinger, 1974). Bosc (1802) already compared his species to a “grain de fêtuque”, an elongated grass seed with pointed endings. Hottinger defined *A. boscii* as a “small sized *Alveolina* with an extremely fine structure” (1960, p. 150) and the whole of his description (1960, pp. 149–151) remains the most detailed. He mentioned that the forms from the Paris Basin are easily collected but their last whorls are often missing. He described well preserved specimens from Grignon with an axial diameter of 4.5–5.5 mm, an elongation index for the adult forms of 2.43.2 and 3.0–3.8 in the first 12 whorls. Hottinger (1999, p. 391) mentioned also an elongation index for *A. boscii* from the lower Middle Eocene of the Paris Basin “reaching 4 at most”. Hottinger added that the diameter of the megalosphere never exceeded 125 microns and that the morphology of microspheric and megalospheric forms are similar except for the tighter spire in the first whorls of the megalospheric forms.

Stratigraphy

Hottinger mentioned *A. boscii* in the Lower and Middle Lutetian (1960, p. 149). This is in agreement with the SBZ (Shallow Benthic Zones) 13 and part of SBZ 14 as in Papazzoni et al. (2017, p. 3).

Occurrence

A. boscii is found in all the Lutetian of the Paris Basin and it is abundant in Grignon, its type locality (Hottinger, 1960 and our own observations). Hottinger mentioned it in Cahurt (Sainte-Marie-de-Gosse, Bas-Adour, France), Biron (Bas-Adour, France) and in the basal layers of Colombes from the coast of Cantabria (San Vincente de la Barquera, Spain). Gaemers (1978) found *A. boscii* in the Tremp Basin (Tremp section, Puente de Montañana, Beniuere) South-Central Pyrenees (Spain). It is also found in the Belgian Basin. As noticed by Sztrákó et al. (2010, p. 28), there is a similarity of the *Alveolina* fauna from the Lower Lutetian of the Aquitanian Basin and the Paris-Belgian Basin which is characterised by the “odd pair” of elongated *Alveolina*: *A. boscii*–*A. stipes* (Hottinger, 1999). Drobne et al. (2011, Table 3, p. 729) mentioned also *A. boscii* in the Paleogene Adriatic Platform (Osp, Rakitovec) and in the East-Tethyan (Libya).

Remarks

Hottinger (1960) listed *A. boscii* in the fusiformis *Alveolina* category but did not include it in any of his new erected groups. Hottinger considered *A. boscii* as a late intermediary form between *Glomalveolina* and *Alveolina stricto sensu* (1960, pp. 149, 150).

Jámbor-Kness (1981) tentatively proposed the new non phylogenetic *Alveolina boscii* group to incorporate species not included in any group by Hottinger (1960) and Drobne (1977). This has not been followed by any other authors and it must not be mistaken with the *Alveolina boscii* group of Hottinger (1974). In his group, Hottinger separated specimens from the Aquitaine Basin, he included in *A. boscii* in 1960, which have a greater elongation index and “may represent a stratigraphic follower of *A. boscii*” (1974, p. 63). Drobne (1977, p. 53) described for the first time forms closely related to *Alveolina* (*Alveolina*) aff. *boscii* from the Cuisian (Late Ypresian) of Slavec (Slovenia). More recently Vecchio et al. (2007, p. 35) highlighted the marginal status of the Paris Basin compared with the Mediterranean Neotethys and the Aquitaine Basin; a low faunal diversity giving “few but exceptionally variable species”. In their observations *A. boscii* “represents a whole phyletic lineage ranging at least from the Ypresian to the Upper Lutetian” and specimens of “similar size and shape relationship” need to be reviewed “as soon as enough material” is collected for study.

Family FABULARIIDAE Ehrenberg, 1839

Genus *Fabularia* Defrance, 1820

Type species: *Fabularia discolites* Defrance in Bronn, 1825 (subsequent designation by monotypy, Defrance in Bronn, 1825, p. 43) = *Nummulites ovata* Roissy, 1805

Fabularia ovata (Roissy, 1805)

1802 Alvéolite grain de millet Bosc. p. 99 fig. 4 A–C

1802 Discolithes n° 9 Fortis. p. 109–110, pl. II fig. Z, 1, 2

1805 *Nummulites ovata* Roissy. p. 59

1820 Fabulaire discolithe Defrance. p. 103 (vernacular, not available)

1825 *Fabularia discolites* Defrance in Bronn. p. 43

1826 *Fabularia discolithes* [sic]. D'Orbigny. p. 307 n° 1, pl. 17 figs 14–17, Modèles, n° 100, quatrième livraison

1850 *Fabularia compressa* d'Orbigny. p. 409

1861 *Fabularia ovata* = *F. discolithes* [sic]. Parker and Jones. p. 162

1905 *Fabularia discolithes* [sic]. Schlumberger. pp. 129–131, text-figs 22–24, pl. 3 figs. 37–38

1970 *Fabularia discolithes* [sic]. Le Calvez. p. 56, pl. 46, fig. 9

Roissy (1805) gave a description of this species on the basis of Fortis drawings (1802) naming it *Nummulites ovata*. Defrance (1820) described Bosc's “alvéolite grain de millet” as *F. discolithe*,



Plate 1. (Scale bar: 1 mm) 1. Card with thirteen specimens of *Alveolina boscii* (Defrance in Bronn, 1825), lot ML-PAL22432, Thiverval-Grignon (Yveline, France), lectotype (n°4) and paralectotype (n°7). 2. Axial section of *Alveolina boscii* (Defrance in Bronn, 1825), ML-PAL-22432-4, Thiverval-Grignon (Yvelines, France), lectotype. 3. Axial section of *Alveolina boscii* (Defrance in Bronn, 1825), ML-PAL-22432-7, Thiverval-Grignon (Yvelines, France), paralectotype. 4. Complete specimen of *Alveolina boscii* (Defrance in Bronn, 1825), ML-PAL-22432-3, Thiverval-Grignon (Yvelines, France). 5. Card with seven out of seventeen specimens of *Fabularia discolites* Defrance in Bronn, 1825 from lot ML-PAL-24962, Thiverval-Grignon (Yveline, France), lectotype (n°1) and paralectotype (n°4). 6. Axial section of *Fabularia discolites* Defrance in Bronn, 1825, ML-PAL-24962-1, Thiverval-Grignon (Yveline, France), lectotype. 7. Axial section of *Fabularia discolites* Defrance in Bronn, 1825, ML-PAL-24962-4, 570 Thiverval-Grignon (Yveline, France), paralectotype. 8. Complete specimen of *Fabularia discolites* Defrance in Bronn, 1825, A. lateral view, B. aperture view, C. lateral view, ML-PAL-24962-16, Thiverval-Grignon (Yveline, France).

later Latinised as *F. discolites* in Bronn (1825), the unique species quoted under his new genus *Fabularia*. Parker and Jones (1861) were the first to conclude that *F. ovata* was a senior synonym of *F. discolites*. Unlike English-speaking authors, several French-speaking authors continued to use *F. discolithes* [sic], following d'Orbigny, instead of *F. ovata*. Nicolas (1945) compared topotypes of *F. discolites* from Grignon and specimens from the Schlumberger's collection from Valognes (Manche), the type locality of *F. compressa*, and concluded that the two species are synonyms.

Le Calvez (1947, p. 34) also considered the synonymy between *F. discolites* and *F. compressa* which she confirmed after studying the material left by d'Orbigny (1970, p. 56).

Lectotype designation

A specimen from lot n° ML-PAL-24962, glued onto a card, is supposed to be illustrated on a vellum from the *Muséum National*

d'*Histoire Naturelle* in Paris (vellum n° 48, fig. 16a–b) (Fig. 4 in text), but the drawings are not accurate enough to confirm which specimen of this batch is actually represented on it.

Specimen ML-PAL-24962-1 (Plate 1, fig. 6, axial section) is designated as lectotype, based on good preservation, and the presence of the diagnostic features of *F. discolites*. Axial diameter: 5.31 mm; equatorial diameter: 3.96 mm.

Specimen ML-PAL-24962-4 (Plate 1, fig. 7, axial section) is less well preserved than the previous, but still good enough to present additional information concerning *F. discolites*. It is designated as paralectotype. Axial diameter: 4.00 mm; equatorial diameter: 2.97 mm.

The others specimens showing axial section (ML-PAL-24962-3, ML-PAL-24962-5) are too damaged and/or incomplete to be designated as paralectotypes.

Pending further studies, the complete specimens [ML-PAL-24962-2, ML-PAL-24962-6, ML-PAL-24962-7, ML-PAL-24962-8, ML-PAL-24962-9, ML-PAL-24962-10, ML-PAL-24962-11, ML-PAL-24962-12, ML-PAL-24962-13, ML-PAL-24962-14, ML-PAL-24962-15, ML-PAL-24962-16 (Plate 1, fig. 8), ML-PAL-24962-17] are identified as belonging to the same species.

Diagnosis

Ovate test, flattened, quinqueloculine in early stage, bilocular in appearance due to the arrangement of the chambers in later stages, cribrate aperture (trematophore) often missing or incomplete in free specimens. Well preserved specimens are smooth. The others appear striated when they show the internal canalicular structure. Chambers have thick walls and are subdivided by subepidermal partitions, forming a series of chambers that are connected by pre- and post-septal passages.

Munier-Chalmas and Schlumberger (1883) were the first to describe micro- (B) and megalospheric (A) forms of very distinct sizes. Their analysis of the internal structure and the drawings they have left, are still valid. The recovered Defrance collection contains only microspherical forms which are much larger and more abundant than the megalospheric forms in all the deposits.

Stratigraphy

Le Calvez (1970) mentioned it in the Middle Lutetian (zone IVa) and in the Upper Lutetian outside the Paris Basin. It is mentioned in SBZ 13 pro parte in Drobne (2002), currently SBZ 13 and 14 pro parte as in Papazzoni et al. (2017, p. 3).

Occurrence

Le Calvez (1970) found it in about fifteen deposits in the Paris Basin. It is abundant in Grignon, the type locality of *F. ovata*. It is a very characteristic species of the Paris Basin. Its presence in Belgium and Aquitaine is not demonstrated. It is found in the eastern and western Channel area in the Upper Lutetian (Bignot and Neumann, 1991), demonstrating the extension of an equatorial belt of shallow, warm waters (Bignot and Pomerol, 2010).

Remarks

Another species is worth mentioning; Kaasschieter (1961) described *F. bella* from the sands of Lede in Belgium, which he regarded to be of Late Eocene age. The Lede Formation is now known to be Middle Lutetian (National Commission for

Stratigraphy Belgium). Therefore, the affinities between *F. ovata* (= *F. discolites*) and *F. bella*, two coeval species from two adjacent basins, should be studied again.

5. Conclusion

We herein designate a lectotype for *Alveolina boscii* (Defrance in Bronn, 1825), the type species of *Alveolina* d'Orbigny, 1826 and *Fabularia discolites* Defrance in Bronn, 1825, the type species of *Fabularia* Defrance, 1820. We herein also designate paralectotypes for those two species. The lectotypes and paralectotypes are housed in the micropalaeontological collections of the Musée des Sciences in Laval.

The discovery, in the collections of this institution, of some samples from the Defrance's collection corroborates the value of inventoring systematically museum and university collections, which has been undertaken for some years now, and should be carried on.

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