TAXONOMIC NOTES ON THE BADENIAN CORALS
FROM LĂPUGIU DE SUS (FĂGET BASIN, ROMANIA)

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Abstract. The Paleontology-Stratigraphy Museum of the “Babeş-Bolyai” University hosts a rich collection of molluscs, corals, foraminifer and bryozoans from Lăpugiu de Sus. The present study focuses on the description and systematic presentation of the originally undefined material existing in the museum coral collection (Şuraru collection with more than 107 samples). The fauna are relatively well-preserved, thus the significant morphological elements for the species identification could be easily identified.

A number of 24 coral species assigned to 9 families with 18 genera have been identified. Quantitatively, genus Plesiastraea dominates (29 samples), while genus Porites is well-represented at species level (four species).

Key words: Coelenterata, Scleractinia, Badenian, Lăpugiu de Sus, Romania

INTRODUCTION

After they being mentioned at Lăpugiu 150 years ago, the Badenian corals were subsequently rarely studied in Romania. Lăpugiu de Sus is situated south from Mureş river, in the Făget Depression. This small Neogene basin represented one of the eastward extensions of the Pannonian Basin, and it is famous in Europe for its diverse Badenian fauna (molluscs, corals, bryozoans, foraminifer etc.) from Lăpugiu and Coştei. Numerous new species have been described by M. Hoernes (1856, 1870), R. Hoernes & Auinger (1879-1891), Boettger (1901-1907) Neugeboren (1847-1856). Age estimations were given by Petrescu et al. (1990), based on foraminifer, molluscs, and calcareous nannoplankton assemblages.

Corals have been only sporadically mentioned in several geological studies (Hauer & Stache 1863, Niţulescu 1930), or on the Badenian fauna, in general (Halavats 1876, Papp 1976).

The first paper exclusively focusing on corals was published by Neugeboren (1877), who described 28 species from Lăpugiu de Sus, but none was illustrated.

Koch (1900) synthesised the available information on the Badenian fauna identified by various authors from several occurrences in Transylvania. At that time, 37 species of corals had been recorded, mainly belonging to Plesiastraea, Solenastrea and Trochocyathus genera.

MATERIAL AND METHODS

The material has been collected by M. Şuraru and N. Şuraru (Şuraru collection) some decades ago, during their field campaigns in Lăpugiu area. The undefined material was donated to the Museum of Paleontology-Stratigraphy of the Babeş-Bolyai University in Cluj-Napoca, where it was inventoried and deposited.

The collection includes 107 fragments of colonies of solitary corals. The samples are relatively well-preserved, thus the significant morphological diagnostic elements (shape of colonies and calices, number and display of the septa, type of columella, the characteristic features of the coenosteum, etc.) are easy to identify.

SYSTEMATIC PALEONTOLOGY

The coral material has been classified according to the schemes of Wells (1956) and Baron-Szabo (2006).

Phylum COELENTERATA

Class ANTHozoA EHRENBERG, 1834
Order Scleractinia BOURNE, 1900
Suborder Astrocoeniina VAUGHAN & WELLS, 1943
Family Acroporidae VERRILL, 1902
Genus Astreopora BLAINVILLE 1830

Astreopora sp.

Pl.1, fig.1

Material: one colony fragment (Inv. MPSUBB 23371).

Description: plocoid corallites with large coenosteum. Inside the calices, 16-18 septa are visible. The septa tend to gather towards the centre of the calice but the columella cannot be individualised.

Family Pocilloporidae GRAY, 1842
Genus Stylophora SCHWEIGGER 1819

Stylophora subreticulata REUSS, 1871

Pl.1, fig.2

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1954 *Stylophora subrepticulata* REUSS – Kopek, p.28, pl. X, figs. 1-6, 8
1960 *Stylophora subrepticulata* REUSS - Kojumdgieva, p. 14, pl. 1, figs. 3a, b
1972 *Stylophora subrepticulata* REUSS – Hegedüs & Jankovich, pl. II, figs. 2-3

**Material:** one fragment of branch (dendroid colony) (Inv. MPSUBB 23372).

**Description:** The branch (height 1,7 cm/ diameter 1,3 cm) have circular shape in transversal section. Corallites distributed around the branch, slightly uprising, with circular calices. The coenostem surface is finely-grained ornamented.

The exterior surface of the wall is ornamented with fine ribs. Six septa belonging to a single cycle are gathered inside the calices, around a very thin, styliform collumela.

**Remarks:** it resembles *Stylophora* cf. sokkohenensis GERTH, described and illustrated by Schuster (2002a, p.16, pl. 2, figs 7-8).

Suborder Faviina VAUGHAN & WELLS, 1943
Family Faviidae GREGORY, 1900

Genus *Favia* OKEN, 1815

**Favia gotschevi** KOJUMGIEVA, 1960

Pl.1, Fig. 3

1960 *Favia gotschevi* n. sp.- Kojumdgieva, p. 15, pl. II, fig. 1-2

**Material:** one fragment of colony (Inv. MPSUBB 23373).

**Description:** plocoid corallites, with more or less circular calices. The calices is deepened, and the wall rises about 1.5-2 mm over the coenosmte surface. Numerous septa (22-24) are individualised belonging to 4 cycles. The first two cycles of septa reach the collumela that is of spongy parietal type, or it may be absent. The third cycle is shorter; it represents 2/3 of S1. The septa belonging to the fourth cycle represent 1/3 of S1. The synapticiculotheca shows well-pronounced ribs, interrupted by exothecal dissepiments. Both endothecal and exothecal dissepiments are present.

**Remarks:** the species is very similar to *Favia* sp. described by Schuster (2002b, p. 63, pl.2, figs.7, 8). These forms show the same number of septa and number of cycles, and their display is common, as well as the spongy collumela.

*Favia gotschevi* has been identified at Lăpugiu by Papp (1976).

Genus *Favites* LINK, 1807

**Favites neglecta** (MICHELOTTI in D’ACHIARDI, 1868)

Pl.1, figs. 4, 5

1960 *Favites neugeboreni* REUSS- Kojumdgieva, p. 15, pl. I, fig. 4, 5
2002b *Favites neglecta* ((MICHELOTTI in D’ACHIARDI)-Schuster, p. 63, Pl. 3, figs. 1-4
2002d *Favites neglecta* ((MICHELOTTI in D’ACHIARDI)-Schuster, p. 140, Pl. 4, figs. 1-3

**Material:** seven fragments of colonies (Inv. MPSUBB 23374).

**Description:** massive colonies, ceroid and polygonal corallites. The calices, with diameters of 5-10 mm, are less individualised due to a very thin theca.

There are between 20-28 septa, which are free, and belong to four cycles. They are thin, porous and covered by granulations. S1 and S2 reach the collumella. The distal margins of the septa are heterodont.

The collumella is spongy and poorly-developed – it may even be missing from some calices.

**Remarks:** Species *F. neglecta* (= Prionastrea Neugeboreni) has been noticed at Lăpugiu by Neugeboren (1877, p. 50). It has been also identified in Bahna basin (Macovei 1909, p. 77).

The Papp collection, currently hosted by the Museum of Paleontology-Stratigraphy of the Babeș-Bolyai University Cluj-Napoca includes a fragment of *Favites* sp. (1976, p. 102, pl. XVII, fig. 6) that can be probably assigned also to species *Favites neglecta*.

**Favites oligocenica** CHEVALIER, 1955

Pl.1, fig. 6

2002c *Favites oligocenica* LINK, - Schuster, p. 95, pl. 5, figs. 5-8

**Material:** one colony (Inv. MPSUBB 23375).

**Description:** ceroid corallites, pentagonal or hexagonal. The calices show common walls and the calices is pronouncedly deepened. Inside the calices, 25 to 32 septa are present, belonging to three cycles. The first two cycles touch the porous, poorly-developed collumella. S1 and S2 have almost the same length and thinness, and they show paliform lobes. S3 are shorter, they represent 2/3 of S1. In some calices, the fourth cycle of very short and thin septa was also noticed. Laterally, the septa are fine grained. Numerous endothecal and exothecal dissepiments are present. The wall is of septothecal type.
Genus *Plesiastrea* EDWARDS & HAIIME 1848

*Plesiastrea conoidea* REUSS, 1871

Pl.1, figs. 7, 8

1909 *Heliastraea conoidea* REUSS, - Macovei, p. 132, pl. VIII; fig. 5
1954 *Oribcella conoidea* (REUSS)- Kopec, p. 11, pl. II, figs. 3, 7, 8, 9, pl. III, figs. 1, 2
1960 *Heliastraea conoidea* REUSS- Kojumdjigieva, p. 17, pl. IV, figs. 2-3
1968 *Heliastraea conoidea* REUSS- Hinculov, p.75, pl. I, figs. 3-4

Material: 15 fragments of colonies (Inv. MPSUBB 23376)

Description: Plocoid corallites. The calices are small (1-2 mm); the distances in-between are < 1 mm, or they even share common walls. The wall is ornamented with more pronounced ribs than in the case of *P. reussiana* REUSS. The calices are almost circular, and slightly deepened. Inside the calices there are 24 septa belonging to three cycles. S1 and S2 touch the columella, while S3 represents ½ of S1. The septothecal shows laterally ornamented ribs with fine spines ornamentation. The columella is styliform type.

The endothecal dissepiments are scarce and thin, while the exothecal ones are numerous, building up a vesicular coenosteum.

Remarks: species *P. conoidea* (=*Heliastraea conoidea*) was mentioned at Lăpugiu by Neugeboren (1877, p. 48). Genus *Plesiastrea* is defined according to Wells (1956).

*Plesiastrea reussiana* (MILNE-EDWARDS & HAIIME, 1850)

Pl.2, fig. 1

1909 *Heliastraea reussiana* (EDWARDS & HAIIME) – Macovei, p. 131, pl. VIII; fig. 2 and pl. IX, fig. 1
1954 *Oribcella reussiana* (EDWARDS & HAIIME) – Kopec, p. 9, pl. I, figs. 9-12
1960 *Heliastraea reussiana* (EDWARDS & HAIIME) – Kojumdjigieva, p. 16, pl. III, figs. 1,2
1968 *Heliastraea reussiana* (EDWARDS & HAIIME) – Hinculov, p. 75, pl. I, figs. 1a, 1

Material: 14 colonies (Inv. MPSUBB 23377)

Description: massive colonies. Plocoid corallites The calices are 1-3 mm in diameter, with 1-6 mm distance in-between. The coenosteum surface is slightly deepened, and mainly ornamented with fine costae.

The circular calices are distinctive and arisen as compared to the coenosteum surface. Inside the calices, 24 septa belonging to 3 cycles were noticed. The first two cycles touch the columella while the third cycle represents ½ of S1. The claviform- or rhopaloid-type septa are thicker in the axial zone. They are covered with granulations. The styliform-type columella is sometimes poorly visible due to the thickening of the septa. Septothecate wall. A vesicular caenosteum is present, while the endothecal dissepiments are very scarce and thin.

Remarks: The species was mentioned at Lăpugiu by Neugeboren (1877, p. 48).

Genus *Montastraea* BLAINVILLE, 1830

*Montastraea tchihatcheffi* (CHEVALIER, 1961)

Pl.2, fig. 2

1954 *Oribcella defrancei* (EDWARDS et HAIIME) – Kopec, p.10, pl.
1960 *Heliastraea defrancei* (EDWARDS et HAIIME)- Kojumdjigieva, p. 16, Pl. III, fig. 1, 2
1968 *Heliastraea defrancei* (EDWARDS et HAIIME) Hinculov, p. 76, pl.II, fig. 1
2002b *Montastraea tchihatcheffi* (CHEVALIER), Schuster, p. 63, Pl. 4, fig. 1, 2

Material: 14 fragments of colonies (Inv. MPSUBB 23378).

Description: Massive colonies. Plocoid corallites. The coenosteum surface almost totally ornamented with costae.

The calices are more or less circular, distinctive and slightly conical. They show diameters of 1-2 cm, and the distances in-between range between 3-4 mm. The 20-24 septa are displayed into three cycles. Septa belonging to the fourth cycles have been also noticed; they are very thin and short. The first two cycles touch the trabecular, well-developed columella. The septa are ornamented with subvertical spines ornamentation. The septa are compact in their distal end, but they become porous towards their proximal area.

Septothecate wall. The endothecal dissepiments are rare and thin; the exothecal dissepiments are also rare.

Remarks: Species *M. tchihatcheffi* (=*Heliastraea defrancei*) was mentioned from Lăpugiu de Sus by Neugeboren (1877, p. 48) and Papp (1976, p. 102, pl. XVII, fig. 2). The described species is similar to *Heliastraea oligophilla major* CHEVALIER, according to Hegedűs & Jancovich (1970, p. 47, pl. II, figs. 1,4) and to *Heliastraea oligophilla* REUSS, 1871 described by Hegedűs & Jancovich (1970, p. 49, pl. III, figs. 1-2) and Tsaparas & Marcopoulos-Diakantoni (2005 p. 631, pl. I, figs. 3, 4).

*Montastraea sp.*
Pl. 2, fig. 3

**Material**: one colony fragment (Inv. MPSUBB 23393).

**Description**: poorly-preserved colony, in the upper part no intact calice is noticeable. The coenosteum surface consists of thick costae that are curved at the junction points. There are numerous septa (20-24) belonging to four cycles. The first two cycles are similar concerning length and thickness, and they reach the trabecular columella. The last cycle is much shorter and thinner. The septa are distally porous. A well-developed septotheca is present.

**Remarks**: the species is very similar to the previously described one (M. tchihatcheffi), except for the calices that are larger and show thicker septa.

**Genus** *Tarbellastraea* ALLOITEAU, 1952

**Tarbellastraea reussiana** (MILNE-EDWARDS & HAIME, 1950)

Pl.2, fig. 4

1963b *Tarbellastraea reussiana* (MILNE-EDWARDS & HAIME): Kühn, p. 104, pl. 1, figs. 4-6
1990 *Tarbellastraea reussiana* (MILNE-EDWARDS & HAIME)-Oosterbaan, p. 9, pl. 1, fig., 3
1996 *Tarbellastraea reussiana* (MILNE-EDWARDS & HAIME)-Stolarsky, p. 630, pl. 176, fig. 2
2002d *Tarbellastraea reussiana* (MILNE-EDWARDS & HAIME)- Schuster, p. 142, pl. 5, figs. 7,8
2005 *Tarbellastraea reussiana* (MILNE-EDWARDS & HAIME)- Tsaparas & Marcopoulou-Diacantoni, p. 632, pl. I, figs. 5, 6

**Material**: three fragments of colony (Inv. MPSUBB 23379).

**Description**: massive and plocoid colonies. The calices have diameters of 1-2 mm. They are well-individualised by a thickened wall and they are slightly arisen from the coenosteum surface. A distance of about 2-3 mm separates the individual calices. Inside the calices, 24 septa belonging to three cycles were noticed. S1 and S2 are almost similar concerning length and thickness and they reach the spongy columella. S3 are thinner and shorter, they represent ½ of S2. The septa of the first two cycles show paliform lobes that are bound to the columella. The septa are heavily ornamented with granulations. The endothecal dissepiments are very rare or even absent, while the exothecal ones are numerous and they build-up a vesicular coenosteum. Septothecate wall.

**Remarks**: Stolarski (1996, p. 631, pl. 176, fig. 1) established a synonymy between *Cyphastraea distans* (REUSS) and *Plesiastrea romenttensis* (SEGUEZNA), and *Palaeoplesiastraea desmoulinsi* (MILNE-EDWARDS & HAIME). Oosterban (1990, p. 11) established a synonymy between *Cyphastraea distans* and *Solenastrea desmoulinsi* (MILNE-EDWARDS & HAIME). Schuster (2002d, p. 143) considered that the species *Solenastrea romenttensis* and *Solenastrea desmoulinsi* are distinctive, but showing very similar features.

**Family** Mussidae ORTMAN, 1890

**Genus** *Syzygophyllia* REUSS, 1860

**Syzygophyllia brevis** REUSS, 1860

Pl.2, figs.6, 7

1909 *Syzygophyllia brevis* REUSS.- Macovei p. 129, tab. VII, fig. 3
1960 *Syzygophyllia brevis* REUSS.- Kojumdjgjeva p. 19, pl. V, figs. 3, 4,5
1996 *Syzygophyllia brevis* REUSS – Stolarski p. 631, pl. CLXXV, fig. 2

**Material**: one solitary coralla (Inv. MPSUBB 23381).

**Description**: a small trochoid corallum (2.5 cm in height, 1.6 cm in diameter).

The calice is circular, enlarged and slightly elongated with parietal spongy columella (3 mm diameter).

The 64 septa prominent and thick belong to three cycles. S1 and S2 touch the columella
while S3 represents ½ of S2. The septa are ornamented on the lateral sides with fine grains. Numerous thick endothecal dissepiments are present. The polypier shows several seasonal growth rings.

Rejuvenation is a phenomenon that is common in the case of this species, also remarked on the studied specimen. It seems that after an interval when the growth of the polypier has stagnated due to various causes, it continued its growth. The septotheca is ornamented with thick ribs.

Remarks: the species has been mentioned from Lăpugiu de Sus by Neugeboren (1877, p. 46), Halavats (1976, p. 232), and Papp (1976, p. 103).

Genus **Acantophyllia** Wells, 1937

*Acanthophyllia ampla* (REUSS, 1871)

Pl. 2, figs. 8, 9

1954 *Lithophyllia ampla* REUSS – Kopek p. 14, pl. III, figs. 4, 5 and pl. IV, figs. 4, 5

1960 *Lithophyllia ampla* REUSS - Kojumdgieva p. 19, pl. V, figs. 1, 2

1990 *Acanthophyllia ampla* (REUSS) – Oosterban p. 12, pl.2, fig. 5

Material: 10 solitary coralla (Inv. MPSUBB 23382).

Description: turbinate corallum shapes with lengths varying between 4.5-1.7 cm and the diameter in the 6-1.5 cm range.

The calice is circular and very slightly deepened.

There are numerous septa that belong to at more four cycles. They are regularly anastomosed. The septa belonging to the first cycle are more visible due to their much more developed thickness and heights. S2 are thicker, but they show almost the same height and they reach the columella. S3 join S2 before reaching the columella, while S4 are much thinner and shorter, representing ½ of S1. The septa of the S1 and S2 cycles show paliform lobes. The septa are ornamented with fine grains displayed as subvertical rows, their distal margin being heterodont. Spongy and thin columella. Endothecal dissepiments present.

Remarks: the species was mentioned at Lăpugiu de Sus by Neugeboren (1877, p. 46, *Lithophyllia ampla*), and Papp (1976, p. 103, *Lithophyllia ampla*).

Suborder Caryophylliidida VAUGHAN & WELLS 1943

Family Caryophylliididae GRAY 1847

Genus **Deltocyatus** Edwards & Haimé, 1848

*Deltocyatus italicus* MILNE-EDWARDS & HAIMÉ, 1848

Material: one solitary corall (Inv. MPSUBB 23383).

Description: solitary, turbinate to flabellate corallum (1.2 cm in height, and 1.8 cm/1.5 cm diameter).

Corallite elliptical with very large and deepened calice. Inside the calice numerous septa belonging to four cycles are noticeable. The septa (6) of the first cycle are longer and thicker. S2 (6) reach the proximity of the columella. S3 (12) are 2/3 of S1. They join S2 in their axial part. The fourth order septa are clearly shorter. The first three cycles show well-individualised pali. The septal faces are ornamented with irregular granulations. The parietal columella is distinctive. Septotheca wall with pronounced costae, that correspond to S1 and S2 septa.

Remarks: The species is remarkably similar with *Trochocyathus majzoni* Hegedüs illustrated by Kopek (1954, p. 26, pl. IX, figs. 21-22, pl. XI, figs. 10-11).

Genus **Caryophyllia** (Acanthocyatus)

**EDWARDS & HAIME 1848**

*Caryophyllia (Acanthocyatus) transilvanicus* (REUSS 1871)

Pl. 3, figs. 3, 4, 5

1954 *Acanthocyatus vindobonensis* REUSS - Kopek p. 25, pl. IX, figs. 12-20

1909 *Acanthocyatus transilvanicus* REUSS, - Macovei, p. 127, pl. VII, fig. 1

1960 *Caryophyllia (Acanthocyathus) vindobonensis* (REUSS), - Kojumdgieva, p. 21, pl. VI, figs. 6, 7

1963a *Acanthocyatus verrucosus transilvanicus* REUSS – Kuhn, p. 99, pl. 17, fig., 8

1996 *Caryophyllia (Acanthocyatus) transilvanicus* REUSS- Stolarski, p. 634, pl. 177, fig. 3

Material: one solitary corall (Inv. MPSUBB 23384).

Description: small ceratoid corallum. Inside the calice, 32 thick septa curved towards the axial side and regularly anastomosed are noticeable. These septa belong to three cycles. The septa of the fourth cycle are rare, and they are obviously thinner and shorter. Lateral, the septa are ornamented with spines granulation.

The columella is spongy and well-developed.

Epithecal wall shows fine ribs corresponding to the septa. Besides this ornamentation, small
granules displayed in vertical rows are visible. The theca is ornamented and it shows spines of various sizes displayed on 6 vertical rows.

Remarks: the species has been mentioned from Lăpugiu de Sus by Neugeboren (1877, p. 44).

Suborder Fungiina VERILL, 1865
Family Calamophylliidae VAUGHAN & WELLS, 1943
Genus Calamophyllia BLAINVILLE, 1830

Calamophyllia sp.
Pl.3, figs. 6, 7

Material: two solitary corals and two colonies (Inv. MPSUBB 23385).

Description: This species shows both solitary individuals and colonies that form only through budding processes, having always centres of monocentric type. The height of the corals varies between 1.3-3 cm. The calices diameter is in the 3-5 mm range. Inside the calices 20-26 free, bicuneiform septa are individualised, belonging to three cycles. Inside the larger calices, also the fourth cycle may develop. The first two cycles (S1, S2) are equal concerning thickness and length, and they reach the trabecular columella. S3 are almost of the same length, but thinner and they occasionally may reach the columella. When S4 are present, they are very thin and short. The septa are compact and ornamented on the lateral sides with fine granulations displayed on subvertical rows.

The epithecal wall is well-developed. Besides the numerous and thick ribs, also exothecal dissepiments crossing the ribs, thus forming the coenosteum.

Family Siderastreidae VAUGHAN & WELLS, 1943
Genus Siderastrea BLAINVILLE, 1830

Siderastrea froechlichiana (REUSS, 1847)
Pl.3, fig. 8

1954 Siderastraeaa froechlichiana (REUSS)- Kopek, p. 16, pl. IV, fig. 7

Material: three fragments of colony (Inv. MPSUBB 23386).

Description: massive, cerioid colonies. The calices are irregular, polygonal in shape, with diameters of about 2-3 mm. The wall is poorly individualised due to its very reduced thickness. The calices is almost flat. There are numerous septa belonging to at least three cycles. The septa are free and they may join the neighbouring septa. The first cycles' septa touch the columella and may develop paliform lobes. The septa of the last cycle are shorter. The columella seems to consist of the internal trabeculae of the septa that gather in the centre of the calice. Extremely thinned endothecal dissepiments are present, and the parathecal wall is very thin too.

Family Poritidae GRAY, 1842
Genus Porites LINK, 1807

Porites leptoclada REUSS 1871
Pl.3, fig. 9

1954 Goniopora leptoclada (Reuss)- Kopek, p. 29, pl. XI, fig. 8
1990 Porites cf. leptoclada Reuss- Oosterbaan, p. 8, pl.1, fig. 4
1996 Porites leptoclada Reuss- Stolarski, p. 632, pl. 176, fig. 4

Material: a colony fragment (Inv. MPSUBB 23387).

Description: foliaceous colony, 1.5 cm in heights and 5.5 cm in diameter. The structural elements are well-developed and the calices are well-individualised. A slightly deepened calice as compared to the calicinal border is visible. There are 12 septa belonging to two cycles. Those of the first cycle always touch the columella and they may show paliform lobes. The septa may be free or they may gather and show a fine granulations. A very thin trabecular calomella is typical. Synapticulothecate wall.

Porites sp
Pl. 4, fig. 1

Material: four fragments of colony (Inv. MPSUBB 23388).

Description: cerioid corallites. The structural elements are rudimentary, thus very difficult to define. Small, 1-2 mm in size calices are present, with irregular shapes. The septa and columella are rudimentary and irregular.

Porites incrustans MILNE-EDWARDS & HAIME, 1851
Pl.4, fig. 2

1954 Porites incrustans MILNE-EDWARDS & HAIME- Kopek, p. 29, pl. XI figs. 2, 4

Material: a fragment of colony (Inv. MPSUBB 23389).

Description: the calices are poorly developed and flat. A number of 12 very thin and poorly granulated septa is present. The calomella is trabecular and porous.
**Porites vindobonarum prima** KÜHN 1925
Pl.4, fig. 3

1954 *Porites vindoborum prima* KÜHN, Kopek, p. 29, pl. XI, fig. 7,9
1960 *Porites vindobonarum prima* KÜHN, Kojumdgieva, p. 24, pl. VII, fig. 3,4
1996 *Porites vindobonarum prima* KÜHN in FELIX-Stolarsky, p. 632, pl. 176, fig. 3

Material: six fragments of colony (Inv. MPSUBB 23390).
Description: the colonies are rounded or irregular, with heights between 2-8 cm and diameters between 3-10 cm. It is difficult to separate the calices, as well as to establish the number of septa or to define the columella. The radial elements consist of discontinuous vertical trabecules that are very porous, like the whole skeleton.

**Suborder Dendrophyllina VAUGHAN &WELLS, 1943**

**Family Dendrophylliidae GRAY, 1847**

**Genus Dendrophyllia** BLAINVILLE, 1830

*Dendrophyllia poppelacki* REUSS, 1871
Pl.4, figs. 4, 5

1954 *Dendrophyllia poppelacki* REUSS, - Kopek, p. 19, pl. VII, figs. 3, 12

Material: two fragments of colony (Inv. MPSUBB 23391).
Description: dendroid colonies with the coenosteum surface constituted of costae. The corallites are circular or elliptical shape, being distinctive due to a very thick wall. They may be located at distances of a few mm, or they may be next to each other. There are numerous septa (25-35) that belong to 3 cycles. The first cycle of septa reaches the trabecular columella. S2 partly reach the columella, while S3 join with S2 at about 2/3 from the distance between the wall and the columella. Some septa are slightly curved towards the axial side. The septa are ornamented by granulations.

Epitheca is thick, prominent and it is ornamented with fine and parallel ribs.

Remarks: the species was mentioned from Lăpugiu de Sus by Papp (1976, p. 103, pl. XVII, fig. 3).

**Dendrophyllia sp.**
Pl.4, figs. 6, 7

Material: a fragment of colony (heights: 3.5 cm, maximum diameter: 2 cm, diameter of the calices: 2-4 mm) (Inv. MPSUBB 23392).

Description: dendroid colonies, the branches of the colony are short but they show different thicknesses. In transversal section, the branches are almost circular. The calices are more or less circular. Inside the calices, septa belonging to at least 3 cycles are individualised. The septa are regularly anastomosed, by a specific pattern. The longest ones reach the spongy, rudimentary columella. Endothecal dissepiments of various thicknesses are also present. The synapticulotheca is thick.

Remarks: The species is similar with *Balanophyllia varians* (REUSS) (Kopec, 1954, p. 18, pl. V, figs. 4,5,6,7 and pl. VI fig. 2) and *Dendrophyllia taurinensis* MILNE-EDWARDS & HAIME (Stolarsky 1996, p. 638, pl. 176, fig. 8). Stolarski (1996) established a synonymy between *Balanophyllia varians* and *Dendrophyllia taurinensis*.

**Genus Astroides** QUOI &GAIMARD; 1827

*Astroides sp.*
Pl. 4, fig. 8

Material: one colony (Inv. MPSUBB 23394).
Description: the colony is slightly convex. The calices are poorly individualised. Inside the calices, 12-14, very porous septa are present. The central columella is trabecular. Synapticulothece wall.

**CONCLUSIONS-DISCUSSIONS**

24 scleractinian corals species belonging to 9 families (*Acroporidae, Pocilloporidae, Faviidae, Mussidae, Caryophylliidae, Calamophylliidae, Siderastreidae, Poritidae, and Dendrophylliidae*) have been described.

**Genus Plesiastraea** is dominant quantitatively, while genus *Porites* is best represented as number of species (by four species). As mentioned by Saint Martin et al. (2000), *Porites* is frequent in the coral patch reefs that occur near Budapest (Hungary).

The Badenian corals from Lăpugiu de Sus are remarkable due to the abundance and diversity, supporting the opinion that the Middle Miocene seas were characterised by abundant of scleractinian corals and the last climax of reef development was reached (Kiessling et al., 1999).

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TAXONOMIC NOTES ON THE BADENIAN CORALS FROM LĂPUGIU DE SUS (FĂGET BASIN, ROMANIA)

Rus Monica (2006); Corali badenieni de la Lapugiu. Lucrare de diploma, 59 p., 6 pl., Cluj-Napoca.


PLATES

Plate I.
Fig. 1 Astreopora sp. -x3
Fig. 2 Stylophora subreticulata REUSS – x4
Fig. 3 Favia gotschevi KOJUMDGIEVA –x3.5
Figs. 4, 5 Favites neglecta (MICHIELOTTI in D’ACHIARDI) - x2
Fig. 6 Favites oligocenica CHEVALIER – x2.5
Figs. 7, 8 Plesiastraea conoidea REUSS - fig. 7-x3; fig.8-x4

Plate II.
Fig. 1 Plesiastraea reussiana (MILNE-EDWARDS et HAIME) – x3
Fig. 2 Montastraea tchihatcheffi (CHEVALIER) –x2
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Fig. 4 Tarbellastraea reussiana (MILNE-EDWARDS & HAIME) – x2.5
Fig. 5 Solenastrea romettensis (SEGUENZA) – x5
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Plate III.
Figs. 1, 2 Deltocyathus italicus MILNE-EDWARDS & HAIME – fig. 1-x2.5; fig. 2-x3
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Fig. 8 Siderastrea froechlichiana (REUSS) – x4
Fig. 9 Porites leptoclada REUSS – x2.5

Plate IV.
Fig. 1 Porites sp. – x2.5
Fig. 2 Porites incrustans MILNE-EDWARDS & HAIME – x5
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Figs. 4, 5 Dendrophyllia poppelacki REUSS - fig. 4-x5, fig.5-x2
Figs. 6, 7 Dendrophyllia sp. - fig. 6-x2.5; fig.7-x8
Fig. 8 Astroides sp. – x2.5