

CORALS FROM THE ŠTRAMBERK LIMESTONE (SILESIAN UNIT, OUTER WESTERN CARPATHIANS, CZECH REPUBLIC)

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Abstract: The submitted contribution informs about the present-day situation of the coral fauna occurring in the Štramberk Limestone at the Kotouč Quarry near Štramberk. 120 determined species belong to 50 genera that pertain to 7 suborders of order Scleractinia.

Key words: Scleractinia, Štramberk Limestone, Late Tithonian/Early Berriasian, Outer Western Carpathians

INTRODUCTION

The coral fauna of Štramberk Limestones is extraordinarily richly differentiated with respect to genera and species. At present, more than 80 genera of corals from these limestones are known. This is approximately double the number stated by Ogilvie (1897) in her monograph “Die Korallen der Stramberger Schichten”. The material of the named author, deposited in museums in Vienna, Munich, Stuttgart and Tübingen, was revised briefly by Geyer (1955) who supplemented it by several new taxa. A few genera and species from the Štramberk Limestone were also studied by Beauvais (1976). Moreover, Eliášová (1960–1990) published many works on corals from the Štramberk Limestone.

New abundant findings of well preserved corals from a secondary soft “washable layer” on the 8th level of Kotouč Quarry at Štramberk has enabled the present-day revision of the whole coral fauna of Štramberk Limestone. Thanks to freshwater phreatic diagenesis, easy-to-obtain fossils with well preserved morphological details occur in this layer. In many cases, thin sections from older, rather poorly preserved coral skeletons attached to the rock, in which however the microstructure of coral skeleton has been preserved better, can be added to them. For the time being, merely the 1st part of newly revised coral fauna of the suborders *Archaeocoeniina* Alloiteau, 1952 and *Stylinina* Alloiteau, 1952 is prepared to print.

Up to now, 120 species belonging to 50 genera that pertain to 7 suborders have been taxonomically processed or at least preliminarily determined from a disintegrated washable layer of the Štramberk Limestone (see – the List).

SHAPES OF CORAL SKELETONS

All known forms of skeletons can be found in corals from the “washable layer”: solitary (all genera in several species), e.g., *Axosmilia*, *Opisthophyllum*, gen. nov. 2, gen. nov. 3; colonial: massive nodular, semi-spherical, inverted cone-shaped, amorphous forms growing upward (e.g., genera *Heliocoenia*, *Microsolena*, *Latiastrea*). Lamellar colonies, such as *Microsolena*, thinly branched, such as *Stylosmilia*, *Cladophyllia*, *Enallhelia*, thickly branched, such as *Meandrophyllia*, gen. nov. 1, phaceloid colonies, such as *Thecosmilia*, *Pseudopisthophyllum*, *Mitrodendron*. For the first time and as a single specimen, the hydnochoroid shape of colony was found in the Štramberk Limestone, namely in the case of *Felixigyra* sp.

Most frequently, representatives of genera *Heliocoenia* and *Microsolena*, mainly the species *Heliocoenia carpathica*, *H. orbigny*, *H. variabilis*, *Microsolena agariciformis*, *M. thurmanni*, *M. foliosa*, *M. loginovae* occur in the “washable layer”.

Also the following species are common: *Stylosmilia corallina*, *Stylina tubulifera*, *S. arborea*, *Thecosmilia dichotoma*, *Latomeandra fromenteli*, *L. juettneri*, *Latiastrea variabilis*, *L. minima*, *L. bachmayeri*, *Protoseris robusta*, and *Placophyllia rugosa*.

PRESERVATION

The condition of preservation can affect, to a certain extent, the appearance of colony surface. On an undamaged surface of calyces there are e.g. ribs differentiated according to age in strength and height. On the outer surface of the same colony, equally strong ribs can be seen (e.g., *Stylina arborea*).

Mostly corals from the “washable layer” are preserved well to exceptionally well and thus it is possible to show details of ornamentation e.g. on the lateral surfaces of corallites in *Stylosmilia corallina* and *Stylosmilia michelini* or the shape of auriculae in *Enallhelia* sp. n.

INTERESTING FINDINGS AND SOME RESULTS OF STUDY

A colony of very rare species *Enallhelia corallina* with calyces on the whole surface of branches belongs to unique findings. Altogether 6 species, of which 3 are new, represent the genus *Enallhelia* in the Štramberk Limestone. Moreover, an important finding is also a representative of problematic genus *Polyphyloseris* with calyces on the tops of small cones and with features of microsolenids as described originally.

An interesting solitary gen. nov. 2 should be especially mentioned. It resembles the genus *Epistreptophyllum* Milaschewitsch.

On the basis of the new findings it was possible to supplement the diagnosis of the genus *Eugyriopsis* Beauvais, 1976 (type species *Dendrogyra sinuosa* Ogilvie, 1897) and to make it more accurate. On several specimens of type species *Diplocoenia jansenica*, the calyx area of the colony is preserved well and in the longitudinal section through another specimen the endotheca of vesicular dissepiments can be seen clearly. On the thin section of older material, a rhipidogryid microstructure of the genus is visible.

AGE OF CORALS FROM THE ŠTRAMBERK LIMESTONE

The occurrence of the Štramberk Limestone in clasts makes the stratigraphic and facial interpretation of corals they contained more difficult. Shallow-water carbonate sedimentation on

the top of slope of the Baška Cordillera, where the Štramberk Limestone was formed, passed without interruption from the reef facies (Late Tithonian) to the facies of shallow-water carbonate platform (Early Berriasian). On thin sections, this younger facies is distinguishable according to the presence of callipionelids (*Calpionella alpina*) and small oolites that are missing in the reef facies. In both the facies, coral species are the same; the accurate age of them can be determined merely exceptionally. That is why the age of Štramberk corals is stated generally, namely the Late Tithonian/Early Berriasian.

CONCLUSION

Thanks to a considerable generic and species richness of corals with exceptionally well preserved skeletons from the “washable layer” in the Kotouč Quarry, the corals from the Štramberk Limestones, after being completely processed, will be a good reference material in the study of coral fauna from Late Jurassic/Early Cretaceous layers of other regions in Europe.

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List of determined corals

Order **Scleractinia** Bourne, 1900

Suborder **Archaeocoeniina** Alloiteau, 1952

- Allocoenia trochiformis* Etallon, 1864
- Stephanastraea jurassica* Roniewicz, 1976
- Axosmia crassa* (Milaschewitsch, 1976)
- Axosmia marcoui* (Etallon, 1858)
- Axosmia cylindrica* (Fromentel, 1856)
- Axosmia infundibuliformis* Milaschewitsch, 1876
- Miscellosmia famosa* Eliášová, 1976

Suborder **Stylinina** Alloiteau, 1952

- Cladophyllia clemencia* de Fromentel, 1857
- Cladophyllia* sp. nov.
- Cyathophora tithonica* Ogilvie, 1897
- Cyathophora globosa* Ogilvie, 1897
- Bilaterocoenia amica* Eliášová, 1981
- Pseudocoenia radisensis* d'Orbigny, 1850
- Pseudocoenia bernensis* (Etallon, 1850)
- Stylosmia corallina* Koby, 1881
- Stylosmia michelini* Milne Edw. et Haime, 1848
- Stylina arborea* d'Achiardi, 1880
- Stylina* sp. nov.
- Stylina strambergensis* Geyer, 1955
- Stylina tubulifera* (Phillips, 1829)

Stylina decemradiata (Quenstedt, 1881)
Heliocoenia orbignyi Roniewicz, 1976
Heliocoenia carpathica Morycowa, 1964
Heliocoenia variabilis Etallon, 1859
Heliocoenia sp. nov.
Enallhelia compressa (Goldfuss, 1829)
Enallhelia sp. nov. 1
Enallhelia elegans (Goldfuss, 1829)
Enallhelia corallina d'Orbigny, 1850
Enallhelia sp. nov. 2
Enallhelia sp. nov. 3

Suborder **Faviina** Vaughan et Wells, 1943

Smilostylia sp. nov.
Thecosmilia trichotoma (Goldfuss, 1826)
Thecosmilia dichotoma Koby, 1884
Thecosmilia longimana (Quenstedt, 1881)
Thecosmilia virgulina (Etallon, 1864)
Clausastraea confluens (Quenstedt, 1852)
Clausastraea pseudoconfluens Eliášová, 1976
Clausastraea topalensis Roniewicz, 1976
Clausastraea bohemoslovaca Eliášová, 1976
Complexastraeopsis kouteki Eliášová, 1976
Thecomeandra celtica Eliášová, 1976

Suborder **Microsolenina** Morycowa et Roniewicz, 1995

Latiastrea minima (Koby, 1885)
Latiastrea bachmayeri (Geyer, 1955)
Latiastrea variabilis (Etallon, 1859)
Microphyllia sp. nov.
Latomeandra fromenteli (Koby, 1885)
Latomeandra juettneri Eliášová, 1990
Fungiastraea moeschi (Koby, 1887)
Dimorphastraea sp. nov.
Protoseris robusta Becker, 1875
Protoseris recurvata Ogilvie, 1897
Thamnoseris sp. 1
Thamnoseris sp. 2
Meandrophyllia amedei (Etallon, 1862)
 Gen. nov. 1 et sp. nov.
Microsolena agariciformis Etallon, 1858
Microsolena ornata Koby, 1887
Microsolena foliosa Roniewicz, 1976
Microsolena cf. *irregularis* d'Orbigny, 1850
Microsolena loginovae Krasnov et Starostina, 1970
Microsolena sp. nov. 1

Microsolena sp. nov. 2
Microsolena sp. nov. 3
Polyphylloseris sp.
Dendraraea racemosa (Michelin, 1843)
Gen. nov. 2 et sp. nov. 1
Gen. nov. 2 et sp. nov. 2

Suborder **Rhipidogyrina** Roniewicz, 1976

Rhipidogyra alata (Quenstedt, 1881)
Aplosmilia nuda d'Orbigny, 1850
Aplosmilia suevica Geyer, 1954
Aplosmilia semisulcata (Michelin, 1843)
Columnogyra micra (Eliášová, 1973)
Tiaradendron cf. *germinans* (Quenstedt, 1881)
Tiaradendron sp.
Placophyllia rugosa Becker, 1875
Placophyllia dianthus (Goldfuss, 1826)
Placophyllia tenuis Roniewicz, 1976
Placophyllia blastemon Eliášová, 1976
Tegocoenia jasenica (Frajová, 1960) gen. nov.

Suborder **Fungiina** Verrill, 1865

Kobyastraea coquandi (Etallon, 1864)
Thamnasteria concinna (Goldfuss, 1826)
Actinaraea granulata (Goldfuss, 1829)
Actinaraea minuta Roniewicz, 1976
Actinaraea robusta Roniewicz, 1976

Suborder **Amphiastracina** Alloiteau, 1952

Opisthophyllum zitteli Ogilvie, 1897
Opisthophyllum minimum Ogilvie, 1897
Opisthophyllum vesiculare Ogilvie, 1897
Cheilosmilia cf. *strambergensis* Ogilvie, 1897
Amphiastraea basaltiformis Koby, 1888
Mitrodendron tenuiseptum Eliášová, 1975
Pleurophyllia trichotoma de Fromentel, 1856
Pleurophyllia aff. *trichotoma* de Fromentel, 1856
Pleurophyllia cara Eliášová, 1975
Pseudopisthophyllum cf. *berckhemeri* Geyer, 1955
Pseudopisthophyllum woznikensis Morycowa, 1974
Aulastraea macer Eliášová, 1975

Incertae sedis

Solenocoenia sexradiata (Goldfuss, 1826)
Epistreptophyllum tithonicum Geyer, 1955
Haplarea columnaris Ogilvie, 1897
Gen. nov. 3 et sp. nov.



Fig. 1. *Microsolena foliosa* Roniewicz, 1976, Štramberk, Kotouč Quarry (kamieniołom), HE17

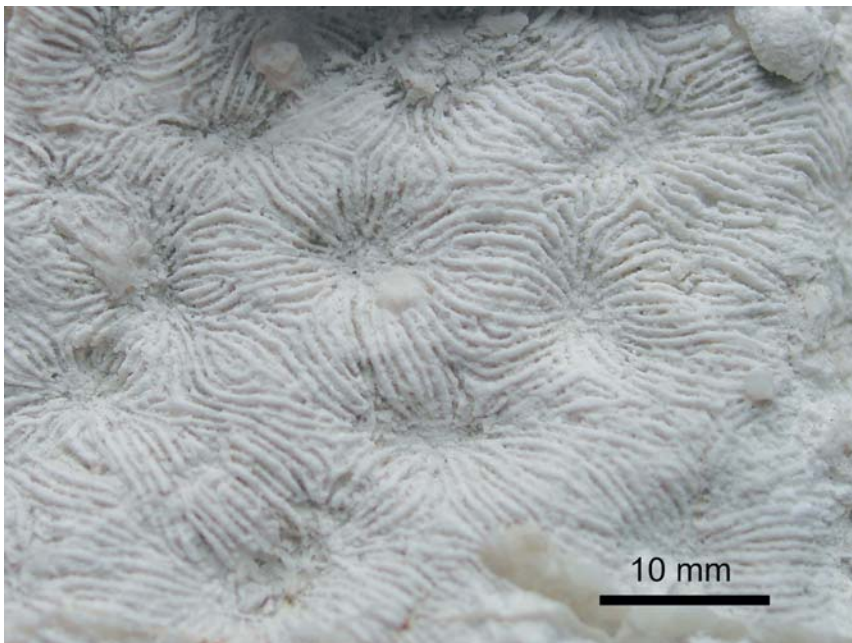


Fig. 2. *Microsolena thurmanni* Koby, 1887, Štramberk, Kotouč Quarry (kamieniołom), HE499



Fig. 3. *Thecosmilia cf. magna* (Etallon 1864), Štramberk, Kotouč Quarry (kamieniólom), HE11

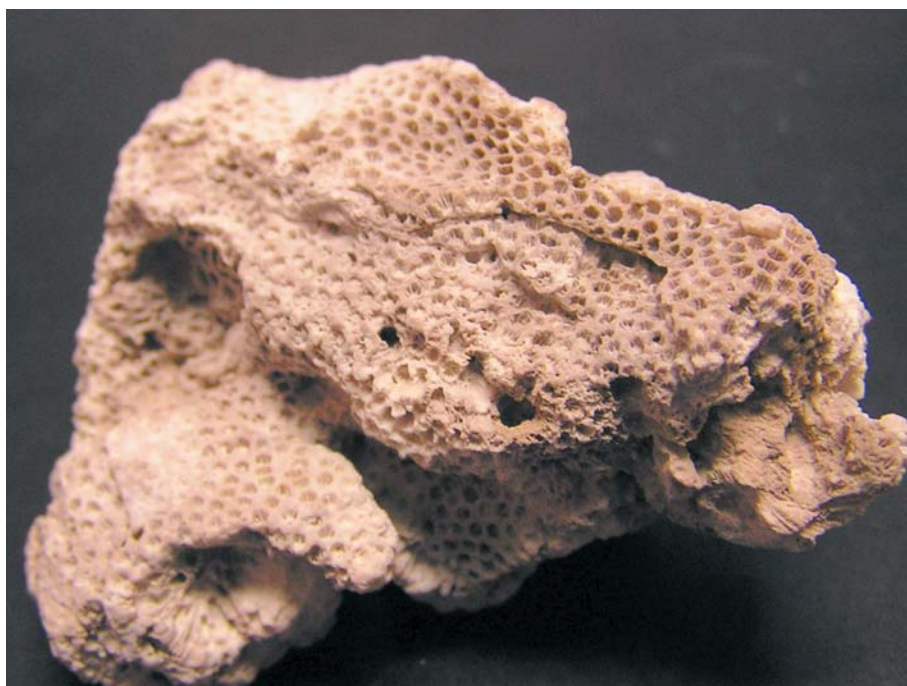


Fig. 4. *Styliina arborea* d'Achiardi, 1880, Štramberk, Kotouč Quarry (kamieniólom), HE8



Fig. 5. *Styliina lobata* (Muenster, 1829), Štramberk, Kotouč Quarry (kamieniołom), HE426

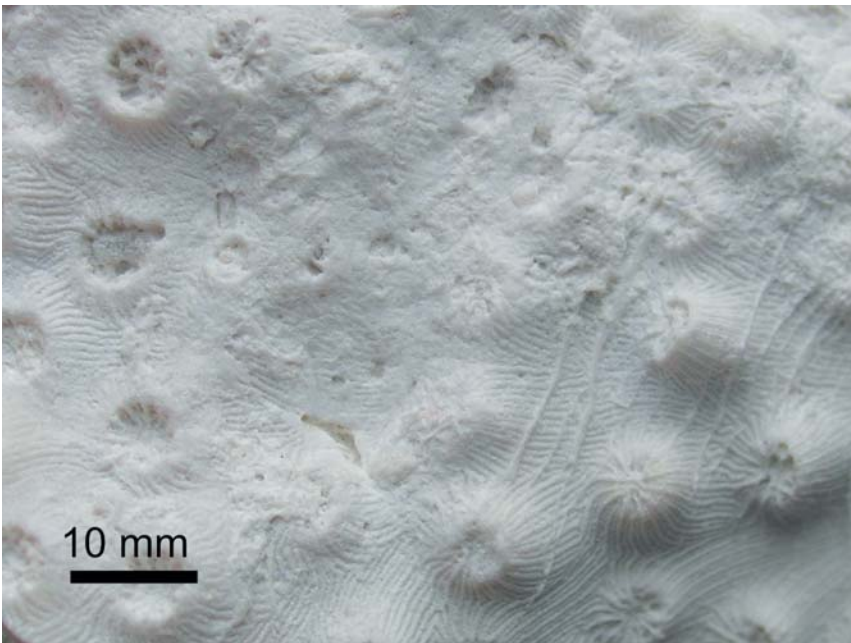


Fig. 6. *Styliina tubulifera* (Phillips, 1829), Štramberk, Kotouč Quarry (kamieniołom), HE 716



Fig. 7. *Latomeandra fromenteli* (Koby,1885), Štramberk, Kotouč Quarry (kamieniołom), HE27



Fig. 8. *Latiastrea magna* Sichekulidze, 1985, Štramberk, Kotouč Quarry (kamieniołom), HE28

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