

On the Cretaceous genus *Nefophyllia* WELLS, 1937 (pro *Platysmilia* FELIX, 1899, non TOULA, 1889)

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2 Text-Figures, 1 Table, 1 Plate

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Taxonomy
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Scleractinia

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Die kretazische Gattung *Nefophyllia* WELLS, 1937 (pro *Platysmilia* FELIX, 1899, non TOULA, 1889)

Zusammenfassung

Die scleractine Gattung *Nefophyllia* WELLS wird auf der Grundlage des Studiums von Original- und Typusmaterial sowie der Einbeziehung von Originaldokumentationen revidiert. Vertreter dieser Gattung wurden von Sedimenten der Oberkreide von Mitteleuropa (besonders von der Österreichischen Gosau-Gruppe) sowie von Süd- und Südosteuropa beschrieben und gehören zu den Arten: *N. angusta* (REUSS, 1854), *N. inaequalis* (DE FROMENTEL, 1873), *N. martiniana* (D'ORBIGNY, 1850), and *N. multincta* (REUSS, 1854). Neues Material, welches zur Typusart von *Nefophyllia* (*N. angusta*) gehört, wird vom Campanium von Nordspanien (Torallola, Lerida) beschrieben.

Abstract

The scleractinian genus *Nefophyllia* WELLS is revised on the basis of the study of type and original material as well as original descriptions. Representatives of this genus have been known from Upper Cretaceous sediments of central Europe (especially the Austrian Gosau Group), as well as from southern and southeastern European localities, and include the species: *N. angusta* (REUSS, 1854), *N. inaequalis* (DE FROMENTEL, 1873), *N. martiniana* (D'ORBIGNY, 1850), and *N. multincta* (REUSS, 1854). New material belonging to the type species of *Nefophyllia* (*N. angusta*) is described from the Campanian of northern Spain (Torallola, Lerida).

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Introduction

The genus *Nefophyllia* WELLS, 1937, represents a poorly known taxon which has been recorded from a small number of Upper Cretaceous localities of Europe. It has mainly been found in sediments of the Gosau Group (Austria) (e.g., REUSS, 1854; FELIX, 1903; OPPENHEIM, 1930; BEAUVAIS, 1982; BARON-SZABO, 2014), and also in a very small number of outcrops in, e.g., France (ALLOITEAU, 1957; BEAUVAIS, 1982) and Spain (BATALLER, 1937, 1949). Representatives of *Nefophyllia* have been confounded with branching scleractinians that have corallites which are circular to flabellate in outline (e.g., *Calamophyllia* [sensu VAUGHAN & WELLS, 1943] and *Rhabdophyllia* MILNE EDWARDS & HAIME, 1851), or have been grouped with colonial taxa that form a single flabellate corallite series (*Placosmilia* MILNE EDWARDS & HAIME, 1848b), or have even been assigned to solitary forms that have a compressed corallite outline (*Trochosmilia* MILNE EDWARDS & HAIME, 1848a). In addition, specimens that are now considered to belong to *Nefophyllia* were assigned to the genus *Stenosmilia* DE FROMENTEL, 1870, the latter of which, however, is invalid as it represents a *nomen nulum* (objective junior synonym of *Barysmilia* MILNE EDWARDS & HAIME, 1848b).

The purpose of this paper is to give an overview of the geographic and stratigraphic distribution of the genus *Nefophyllia*, provide discussions on taxonomic and nomenclatural issues concerning both this genus and related groups, and to illustrate unpublished material belonging to *Nefophyllia*.

Material

The material used in this work includes specimens from:

GBA	Geologische Bundesanstalt Wien, Österreich (Geological Survey, Vienna, Austria).
MB	Museum für Naturkunde Berlin, Deutschland (Natural History Museum Berlin, Germany).
NHMW	Naturhistorisches Museum Wien, Österreich (Natural History Museum Vienna, Austria).

Stratigraphical and geographical ranges of *Nefophyllia*

The genus *Nefophyllia* represents a very rare taxon. Species assigned to the genus *Nefophyllia* have, so far, been described only from Upper Cretaceous localities of Europe (see below under chapter “Material questionably belonging to *Nefophyllia* and excluded here” for reasons excluding the specimens described from the Cenomanian of Egypt and the Upper Albian of England). They have been reported from a rather small number of areas across central, southern, and southeastern Europe. Most of these records are from sediments of all stratigraphic ranges of the Gosau Group (Austria) from the Upper Turonian to the Lower Campanian (e.g., BARON-SZABO, 2014). Information regarding stratigraphical and geographical occurrences of *Nefophyllia* species was obtained from the following references:

Austria (Upper Turonian–Lower Campanian; Gosau Group): BARON-SZABO (2014; see for detailed list of Austrian occurrences); BEAUVAIS (1982); FELIX (1903); OPPENHEIM (1930); REUSS (1854).

Bulgaria (Campanian; Breznik and Yambol areas): CHESHMEDZHIEVA (1995).

Croatia (Upper Cretaceous; northern Croatia): KOCH (1918).

France (Turonian–Santonian; Depts. of Aude, Bouches-du-Rhône, and Var): ALLOITEAU (1957); BEAUVAIS (1982); DE FROMENTEL (1867, 1873).

Romania (Senonian; Bihor region): ŞURARU (1961); TODORITA-MIHAILESCU (1968).

Spain (Santonian–Maastrichtian; northern Spain, Navarre and Lerida areas): BATALLER (1937, 1949); new material from the Campanian of northern Spain (Torallola, Lerida) (this paper; for stratigraphy and locality data see BARON-SZABO, 1998).

Serbia (Coniacian; western Serbia): PAŠIĆ (1957); TURNŠEK (1992).

Material questionably belonging to *Nefophyllia* and excluded here

Czech Republic (Upper Cenomanian; Bohemian region): ELIÁŠOVÁ (1997: 64, presented as *Nefophyllia* [?] sp.; fragment of a meandrinid form, in which the type of corallite integration [solitary or colonial] is unclear).

Egypt (Cenomanian; Galala Formation at Khashm El Tarif): ABDEL-GAWAD & GAMEIL (1995: 19, presented as *Nefophyllia angusta*; material differs from *Nefophyllia* in forming solitary coralla which lack both a lamellar columella and epithecal wall, and have (?porous) septa with smooth lateral faces).

England (Upper Albian; Exeter, Haldon Hill): DOWNES (1882: 91), listed as the taxon *Trochosmilia varians* REUSS, 1854, which was believed to be a solitary coral; no description or illustration given; taxonomic position unclear. This occurrence has only been listed by later authors, but its taxonomic assignment has not been confirmed by them.

Greece (Santonian–Campanian, Edessa area): ABDEL-GAWAD & GAMEIL (1995: 19, presented as *Nefophyllia* sp.; differs from *Nefophyllia* in having a sparsely developed endotheca, lacking a columella, and apparently representing a solitary coral).

Hungary (Upper Cretaceous, Ajka area): KOLOSVÁRY (1954: 72, presented as *Platysmilia multicincta*; material unrecognizable, assignment was already questioned by BEAUVAIS [1982, vol. I: 233]).

Paleoenvironment of *Nefophyllia*

Representatives of the genus *Nefophyllia* occurred in shallow-water to subtidal environments. They have been reported from non-reefal areas like calcareous sandstones of the shoreface (e.g., Campanian of Bulgaria, see CHESHMEDZHIEVA, 1995), and siliciclastic and carbonate sediments of a variety of shallow-water, lagoonal, and subtidal environments, in which corals lived in non-reefal associations or formed small bioherms (e.g., Campanian of northern Spain, see BARON-SZABO, 1998 [new material

presented here]; and Upper Turonian–Lower Campanian sediments of the Gosau Group; see lithological and environmental descriptions in PILLER et al., 2004).

Systematic Paleontology

Order Scleractinia BOURNE, 1900

Suborder Faviina VAUGHAN & WELLS, 1943

Family Meandrinidae GRAY, 1847

(=Family Dendrogyridae ALLOITEAU, 1952 p.p.)

Diagnosis: Solitary and colonial. Budding mainly intracalicular. Polyp integration meandroid, phaceloid, flabello-meandroid, plocoid. Wall mostly septothecal and paraseptothecal, costate. Septa formed by one or more fan systems of simple trabeculae, often forming distinct median lines. Septal margins minutely dentate, septal flanks smooth or have scattered spinose granulation. Extensive thickening deposits on septa possible. Columella lamellar, variably trabecular, or absent. No pali or paliform structures. Endothecal dissepiments well-developed. Exothecal dissepiments in some forms, solid or vesicular.

Remarks: According to VAUGHAN & WELLS (1943: 188) and WELLS (1956: F415), the family Meandrinidae GRAY contains the subfamilies Meandrininae GRAY, 1847 and Dichocoeniinae VAUGHAN & WELLS, 1943. Later, ALLOITEAU (1952: 636ff.) revised the meandrinid-group by transferring some subfamilies from other families to this group and also creating new subfamilies. Of these taxa, only the subfamilies Meandrininae GRAY, 1847, Dichocoeniinae VAUGHAN & WELLS, 1943, and Euphyllinae ALLOITEAU, 1952, are considered as belonging to the family Meandrinidae. Their main differences are due to the presence or absence of corallite integration (only colonial coralla having meandroid corallite integration included in Dichocoeniinae; solitary and colonial taxa are included in the Meandrininae and Euphyllinae); the presence of a coenosteum separating the corallites (heavy coenosteum present in Dichocoeniinae; coenosteum generally absent in the Meandrininae and Euphyllinae); and the absence or presence of columellar structures (columella well-developed, often lamellar, in the Meandrininae and Dichocoeniinae; absent or rudimentary parietal in Euphyllinae).

Subfamily Meandrininae GRAY, 1847

(=Subfamily Meandrininae VAUGHAN & WELLS, 1943 [ex Meandrinidae GRAY, 1847]; Family Meandriidae ALLOITEAU, 1952; =Family Phyllosmiliidae LÖSER, 2012 [ex Phyllosmiliaceae FELIX, 1903]; =Family Phyllosmiliidae LÖSER, 2013 [ex Phyllosmilioida DUNCAN, 1884], non LÖSER, 2012)

Diagnosis: Solitary and colonial. Colony formation mainly intracalicular (often polystomodaeal intramural) budding. Colonies pedunculated or free. Walls septothecal and solid, or parathecal, covered with beaded costae, rarely epithecate. Septa laminar, composed of one fan system of simple, very small trabeculae; upper margins minutely dentate. Lateral septal faces smooth or finely granulated. Columella lamellar or trabecular. Endotheca thin and vesicular. Exotheca developed in some genera.

Remarks: FELIX (e.g., 1885, 1903, 1914, 1925, 1927, 1929) commonly used names with the suffix -ceae in his works. But, without any exception, he solely used these terms in the sense of genus-groups. This is clearly indicated by the fact that he, throughout his works, recognized the subfamily level (e.g., Eusmiliinae, Funginae, Turbinolinae) but regarding the names with the suffix -ceae he also listed them directly below families without additionally providing a subfamily assignment. Therefore, in elevating FELIX' genus-group Phyllosmiliaceae to the family level, LÖSER (2012: 544) created the family Phyllosmiliidae LÖSER, 2012.

DUNCAN (1884) published a revision of scleractinian families and genera in which he used the taxonomic level of 'alliances', combining sets of genera (e.g., Phyllosmilioida DUNCAN). For several families, e.g., Oculinidae, Anabaciidae, Poritidae, DUNCAN did not divide the family into subfamilies but still used the term alliance for groups of genera, clearly indicating that the alliances were created in the sense of genus-groups and not family-groups. Therefore, the statement in LÖSER et al. (2010: 320) that DUNCAN'S alliances corresponded to the family-level of tribus according to today's taxonomic concept, is incorrect. This is supported by the fact that in Treatise works like, e.g., VAUGHAN & WELLS (1943: 6), DUNCAN'S work was discussed in detail but, nevertheless, DUNCAN'S alliances were considered as genus-groups. In all of the subsequently published Treatise works (e.g., ALLOITEAU, 1952, 1957; WELLS, 1956) as well as in all of the volumes of the Fossilium Catalogus by FELIX (1914, 1925, 1927, 1929), these groups were referred to as genus-groups. Furthermore, the ICZN article 30.1.4.4. clearly identifies taxonomic names ending in -oida (=modified ending from -oides, see article ICZN 30.2.4 for female ending in -a, referring to -oides) as a (compound) genus-group name. Therefore, in elevating DUNCAN'S genus-group Phyllosmilioida to the rank of family, LÖSER (2013: 26) created the family Phyllosmiliidae LÖSER, 2013, thus representing both an objective junior homonym and an objective junior synonym of the family Phyllosmiliidae LÖSER, 2012.

Genus *Nefophyllia* WELLS, 1937

(pro *Platysmilia* FELIX, 1899, non TOULA, 1889
[ex DE FROMENTEL, 1873])

Table 1

Type species: *Placosmilia angusta* REUSS, 1854, Upper Santonian of Austria (Gosau Group at Neffgraben) (lectotype designation by inference, BEAUVAIS, 1982, vol. I: 231).

Remarks. Descriptions combined with photographic illustrations of material belonging to the type species of *Nefophyllia* (*N. angusta*) were provided by ŞURARU (1961: 656, Pl. 1, Figs. 4–7), TODORITA-MIHAILESCU (1968: 32, Pl. 3, Figs. 2–5, 6), BEAUVAIS (1982, vol. I: 231–233, Pl. 19, Figs. 10a–b), CHESHMEDZHIEVA (1995: 52–53, Pl. 10, Figs. 3–4), and BARON-SZABO (2014: 40, Pl. 36, Figs. 3–8).

Diagnosis: Colonial, phaceloid to subdendroid. Budding intra- but mainly extracalicular. Corallites subcircular to oval-subflabellate in outline. Costosepta compact, arranged radially and bilaterally, finely but often sparsely granulated laterally. Axial ends of septa are generally cuneiform but tend to be claviform in septa which reach

species of <i>Nefophyllia</i>	height of branches (mm)	greater corallite diameter (mm)	smaller corallite diameter (mm)	number of septa per corallite	density of septa/mm	septal arrangement
<i>angusta</i> (REUSS, 1854)	up to 45	8–21	6–17	96	24–26/10	cycles in 6 or 12 systems; 4–5 irregular size orders
<i>inaequalis</i> (DE FROMENTEL, 1873)	up to 21	5–9	3.5	96	30–40/10	3–4 size orders
<i>martiniana</i> (D'ORBIGNY, 1850)	up to 40	5–7	---	40–48	20/10	septal subequal, in ?6 systems
<i>multicincta</i> (REUSS, 1854)	up to 55	8–30	4–13	28–ca. 80	10–18/10	cycles in 6 or 12 systems; 4–5 irregular size orders

Tab. 1.
Comparison of the dimensions of the skeletal elements of the species assigned to *Nefophyllia*.

corallite center. Septa are straight or extremely wavy. Columella lamellar (formed by a single continuous lamella) or irregularly trabecular, made of discontinuous lamellar segments and spongy portions. Endothecal dissepiments thin and vesicular, abundant; might form an incomplete stereozone in some corallites. Wall septothecal (septoparathecal during re-juvenation processes possible). Epithecal wall present, generally incomplete.

Remarks: One of the most striking features of *Nefophyllia* is the highly variable development of its septal apparatus: in the same specimen, septa can be arranged in size orders and in varying systems. In addition, in different parts of the same colony, septa can be straight in one corallite and very wavy to jagged in another (see e.g., BARON-SZABO, 2014: Pl. 36, Figs. 4 and 7).

Affinities: Similar to *Aulosmilia* ALLOITEAU, 1952, but has different wall structures and forms branching colonies (*Aulosmilia* is solitary and has septothecal-septoparathecal walls).

Species of *Nefophyllia* Wells, 1937

Specimens belonging to *Nefophyllia* are assigned to the species: *N. angusta* (REUSS, 1854), *N. inaequalis* (DE FROMENTEL, 1873), *N. martiniana* (D'ORBIGNY, 1850), and *N. multicincta* (REUSS, 1854) (Table 1). Main occurrences of the species of this genus include Upper Turonian–Upper Campanian localities of Austria (Gosau Group), Turonian–Santonian sediments of France, and Santonian–Campanian localities of Spain. To a lesser extent, species of *Nefophyllia* have been reported from Upper Cretaceous localities of, e.g., Bulgaria, Croatia, and Romania.

N. angusta (REUSS, 1854) Pl. 1, Figs. 1–11
(**Placosmilia angusta* REUSS, 1854: 84, Pl. 5, Figs. 6 and 8 [non Fig. 7]; =*Trochosmilia patula* MICHELIN in DE FROMENTEL, 1867: 259; =*Rhabdophyllia nutrix* DE FROMENTEL, 1873: 392) (see BEAUVAIS [1982, vol. I: 231] for older synonyms).

Dimensions of skeletal elements: Height of branches: up to around 45 mm, often ranging between 25–45 mm; greater diameter of corallites: 8–21 mm; smaller diameter of corallites: 6–17 mm; number of septa: 96; septal density: 24–26/10 mm. Septa are arranged in cycles in 6 or 12 systems, or they are developed in 4 to 5 irregular size or-

ders. Septa are straight or wavy. Axial ends of septa that reach the corallite center are generally claviform; a small number of them is cuneiform.

Description of new material: Specimens represent individual limbs of branching colonies; limbs are up to around 30 mm in height. Corallites are subcircular to oval in outline and have the dimensions of greater corallite diameter: 19–21 mm; smaller corallite diameter: 13–17 mm; number of septa: 96+s, which appear to be arranged in 4–5 cycles in 12 irregular systems.

Distribution: Upper Turonian–Lower Campanian of Austria (Gosau Group), Senonian of Romania, Santonian of France (Aude, Bouches-du-Rhône), Santonian of northern Spain (Montsec region), Campanian of northern Spain (Torallola, Lerida, new, this paper), and Bulgaria (Breznik).

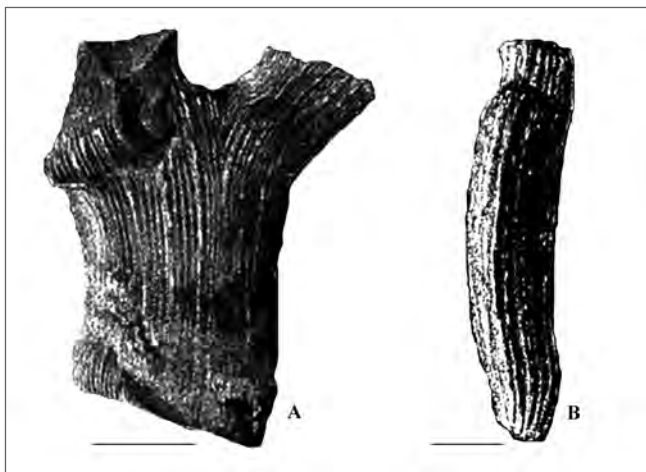
N. inaequalis (DE FROMENTEL, 1873) Text-Fig. 1A
(**Rhabdophyllia inaequalis* DE FROMENTEL, 1873: 394, Pl. 86, Figs. 4–4c).

Dimensions of skeletal elements: Height of branches: up to around 21 mm, often ranging between 12–15 mm; greater diameter of corallites: 5–9 mm; smaller diameter of corallites: 3.5 mm; number of septa: 96; septal density: 30–40/10 mm. Septa are arranged in 3 to 4 size orders (dimensions of skeletal elements based on original descriptions and measurements given in DE FROMENTEL, 1873: 394, Pl. 86, Figs. 4–4c, and ALLOITEAU, 1957: 181, Fig. 136).

Distribution: Santonian of France (Var), Campanian of Bulgaria (Yambol).

N. martiniana (D'ORBIGNY, 1850) Text-Fig. 1B
(**Calamophyllia martiniana* D'ORBIGNY, 1850, vol. 2: 204; =*Rhabdophyllia ornata* DE FROMENTEL, 1873: 395).

Dimensions of skeletal elements: Height of branches: up to around 40 mm, often ranging between 25–40 mm; diameter of corallites: 5–7 mm; number of septa: 40–48; septal density: around 20/10 mm. Septa thin, subequal (dimensions of skeletal elements based on original descriptions and measurements given in DE FROMENTEL, 1873, and ALLOITEAU, 1957).



Text-Fig. 1.

A: Sketch of *Nefophyllia inaequalis* (DE FROMENTEL, 1873), based on the illustration in DE FROMENTEL (1873: Pl. 86, Fig. 4a), contrast inverted; upper surface of colony, lateral view; Santonian of France (Var); scale bar: 5 mm. **B:** Sketch of *Nefophyllia martiniana* (D'ORBIGNY, 1850), based on the illustration in DE FROMENTEL (1873: Pl. 91, Fig. 3), contrast inverted; upper surface of corallum, lateral view; Turonian of France (Bouches-du-Rhône); scale bar: 5 mm.

Remarks: In having 12–16 septa and corallite diameters of up to 2 mm, the specimen described as *Rhabdophyllia ornata* DE FROMENTEL by PREVER (1909: 78) from the Aptian of Italy differs from DE FROMENTEL'S species *ornata* (here inter-

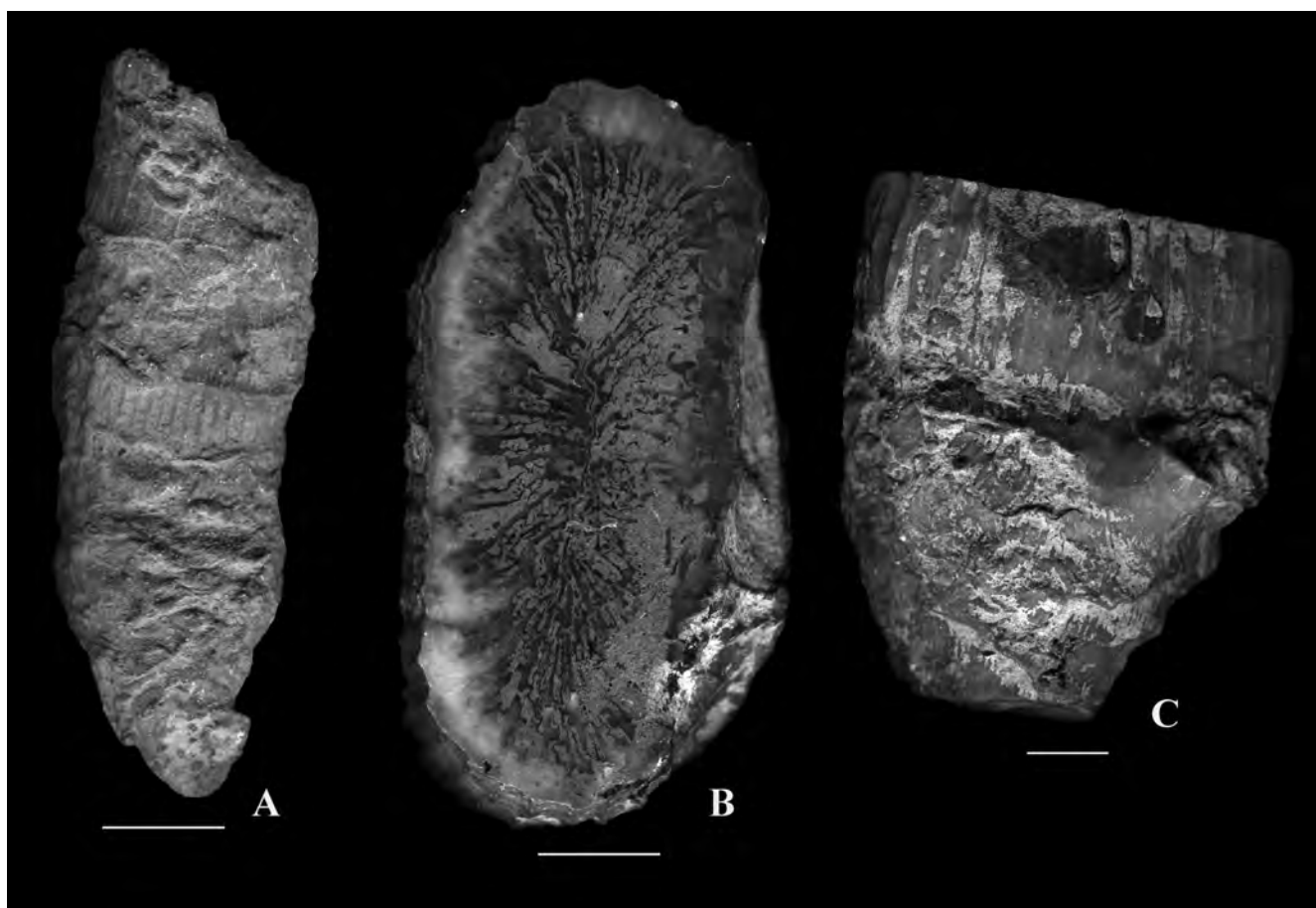
preted as a junior synonym of *N. martiniana*). Because in addition, and according to PREVER himself, the specimen is unrecognizably preserved and cannot be assigned to a genus, it is excluded here.

Distribution: Turonian and Santonian of France (Bouches-du-Rhône), Campanian–Maastrichtian of northern Spain.

N. multicincta (REUSS, 1854) Text-Figs. 2A–C
 (**Calamophyllia multicincta* REUSS, 1854: 105, Pl. 6, Figs. 12–13; = *Trochosmilia varians* REUSS, 1854: 88; = ?*Acrosmilia cylindrus* REIG ORIOL, 1997: 30, Pl. 4, Figs. 6–7) (see BEAUVAIS [1982, vol. I: 233] for older synonyms).

Dimensions of skeletal elements: Height of branches: up to around 55 mm, often ranging between 8–32 mm; greater diameter of corallites: 8–30 mm; smaller diameter of corallites: 4–15 mm; number of septa: 28 to around 80; septal density: 10–18/10 mm. Septa are arranged in cycles in 6 or 12 systems, or they are developed in 4 to 5 irregular size orders.

Distribution: Upper Cretaceous of northern Croatia, Upper Turonian–Lower Campanian of Austria (Gosau Group), Coniacian of western Serbia, Senonian of Romania, Santonian–Campanian of northern Spain.



Text-Fig. 2.

Nefophyllia multicincta (Reuss, 1854). **A:** NHMW 1864/0040/1298, paratype, originally figured in FELIX (1903: Pl. 20, Fig. 5), upper surface, lateral view; Upper Turonian–Lower Campanian of Austria (Gosau Group, probably at greater Gosau–Rußbach area); scale bar: 10 mm. **B–C:** NHMW 1970/1375/0000, paratype; Upper Santonian of Austria (Gosau Group at Piesting). **B:** upper surface, polished, cross view of corallite; scale bar: 5 mm. **C:** upper surface, lateral view, originally figured in FELIX (1903: Pl. 20, Fig. 3); scale bar: 5 mm.

Remarks on *Platysmilia* TOULA, 1889, vs. *Platysmilia* FELIX, 1899 (ex DE FROMENTEL, 1873)

DE FROMENTEL (1873: 418) used the name *Platysmilia* only in a diagram that compares several genera of various groups (e.g., stylosmiliid, caryophylliid, amphistreid, heterocoeniid). He did not provide any description or diagnosis of this taxon and did not assign any species to it. According to this diagram, *Platysmilia* was supposed to be closely related to *Dendrosmilia* but differed from it in having a (short-stylosmiliid) lamellar columella. However, because DE FROMENTEL combined genera in this diagram that have subsequently been placed in different families and even different suborders, the taxonomic validity of *Platysmilia* was not established and the name is not available. The first species assigned to this genus was *Platysmilia kozirogensis* TOULA (1889: 83), representing the first revision of *Platysmilia*. In recognizing *Platysmilia* and attributing it to DE FROMENTEL in the associated description, TOULA established an available name [ICZN article 11.5]. Consequently, in subsequently assigning the species *Placosmilia angusta* REUSS, 1854, to *Platysmilia* DE FROMENTEL, FELIX (1899: 384) transferred REUSS' taxon to an unavailable name, according to which FELIX himself acquired authorship of the genus *Platysmilia* (= *Platysmilia* FELIX, 1899). Because FELIX' genus represents a junior homonym of *Platysmilia* TOULA, WELLS (1937: 249) created the replacement taxon *Nefophyllia* (also see discussion in WELLS, 1937: 249).

Though TOULA'S genus *Platysmilia* represents an available name, its taxonomic position remains uncertain. According to TOULA, this form represents a stylosmiliid characterized by: 1) a ramose colony with plocoid corallites; 2) corallites circular in outline; 3) columella which seems to be stylosmiliid in appearance but can also be in the shape of a lamellar segment ("blattförmig"); and 4) corallite walls thick, consisting of synapticulae and costae, the latter of which connect the polyps with each other. However, the original description and illustration of TOULA'S material is insufficient in that it remains unclear how this taxon differs from genera like e.g., *Stylosmilia*, *Cladophyllia*, *Pleurocora*, and others. Attempts to track down the type material between 2009 and 2013 in the collections of the Natural History Museum Vienna, which holds parts of the TOULA-collections, were unsuccessful.

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Plate 1

Figs. 1–11: *Nefophyllia angusta* (REUSS, 1854)

Figs. 1–2: NHMW 1859/0050/0348a, lectotype; Upper Santonian of Austria (Gosau Group at Neffgraben) (photographs courtesy ANDREAS KROH, NHMW).

Fig. 1: upper surface of corallum, polished, cross view; scale bar: 4 mm.

Fig. 2: upper surface of corallum, lateral view; scale bar: 8 mm.

Figs. 3–4: NHMW 1859/0050/0348c, paralectotype; Upper Santonian of Austria (Gosau Group at Neffgraben) (photographs courtesy ANDREAS KROH, NHMW).

Fig. 3: upper surface of corallum, polished, cross view; scale bar: 3.5 mm.

Fig. 4: upper surface of corallum, lateral view; scale bar: 7.5 mm.

Figs. 5–6: GBA 1903/004/0100/01; Upper Turonian–Lower Campanian of Austria (Gosau Group at greater Gosau–Rußbach area); material originally assigned to *Stenosmilia tenuicosta* (REUSS, 1854) in FELIX (1903, p. 303).

Fig. 5: upper surface of corallum, polished, cross view of corallite; scale bar: 3 mm.

Fig. 6: upper surface of corallum, lateral view of colony; scale bar: 5.5 mm.

Figs. 7–8: sketches adopted from DE FROMENTEL (1867: 259, Pl. 38, Figs. 3a–b); originally presented as *Trochosmilia patula* MICHELIN in DE FROMENTEL (1867); Turonian of France.

Fig. 7: upper surface of corallum, lateral view of colony; scale bar: 9 mm.

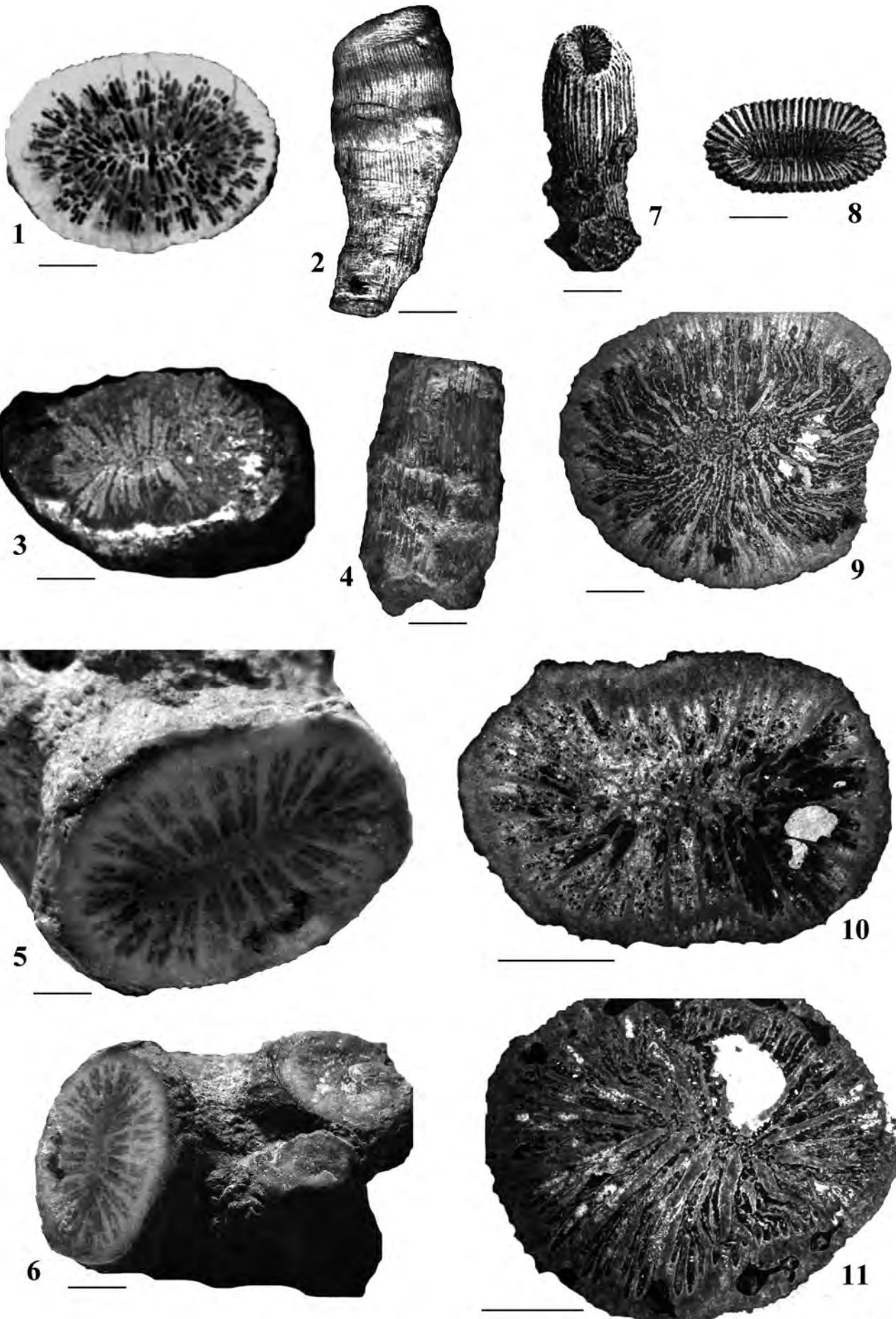
Fig. 8: upper surface of corallum, cross view; scale bar: 10 mm.

Figs. 9–11: new material, BARON-SZABO coll., Natural History Museum Berlin, Germany (MB); Campanian of northern Spain (Torallola, Lerida).

Fig. 9: specimen MB, field number BL-5; cross view of corallite, thin section; scale bar: 4 mm.

Fig. 10: specimen MB, field number BL-XXX; cross view of corallite, thin section; scale bar: 5 mm.

Fig. 11: specimen MB K.1138.2; cross view of corallite, thin section; scale bar: 5 mm.



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