Bayerische Staatssammlung für Paläontologie und Geologie

- München, 01.07.2017
- Manuscript received 01.06.2016; revision accepted 03.07.2016
- ISSN 0373-9627
- ISBN 978-3-946705-00-0

Nomenclatural and taxonomic acts and remarks for the revision of Jurassic corals

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Zitteliana 89, 133–150.

Abstract

The revision of Jurassic coral genera requires some nomenclatural and taxonomic acts such as designation of type species or type specimens, statement on availability and reversal of precedence. These acts lead to the erection of *Gillismilia* nov. gen. and Polystylidiidae nov. fam.

Key words: Taxonomy, nomenclature, corals, Scleractinia, Jurassic.

Zusammenfassung

Die Revision jurassischer Korallengattungen bedarf einiger nomenklatorischer und taxonomischer Maßnahmen wie die Festlegung von Typusarten und Typusexemplaren, die Feststellung der Verfügbarkeit und die Umkehrung der Priorität. Aufgrund dieser Maßnahmen werden *Gillismilia* nov. gen. und Polystylidiidae nov. fam. errichtet.

Schlüsselwörter: Taxonomie, Nomenklatur, Korallen, Scleractinia, Jura

1. Introduction

The revision of the Scleractinian volume of the Treatise on invertebrate paleontology was undertaken by means of a collaborative website www/corallosphere.org (Cairns *et al*. 2010). For Jurassic corals, many type specimens have been observed as far as possible. Many issues were encountered due to the progressive establishment of the nomenclatural rules before the first edition of the code in 1961 and still more to the inappropriate use of these more and more complex rules. Some nomenclatural acts require the action of the ICZN. Some others do not need this action. This article was undertaken to clarify some situations by those acts, to rectify some mistakes, but also propose some new taxonomic decisions. It is also an opportunity to formalize in a valid peer reviewed publication opinions expressed in the website. Names dealing with plocoid Stylinina Alloiteau, 1952, will be treated in other papers.

2. Abbreviations of institutions

BSPG: Bayerische Staatssammlung für Paläontologie und Geologie München (Germany)

IPB: Geologisch-Paläontologisches Institut der Rheinischen Friedrich-Wilhelms Universität, Bonn (Germany)

MHNG: Musée d'Histoire naturelle de Genève (Genève; Switzerland)

MJSN: Musée Jurassien des Sciences Naturelles de Porrentruy (Switzerland)

MNHN.F: Muséum national d'Histoire naturelle, collections de Paléontologie (Paris; France)

NHMUK: British Museum (Natural History) (London; United Kingdom)

NMB: Naturhistorisches Museum Basel (Switzerland)

3. Systematic palaeontology

In the following list, genera and the new family are considered in alphabetical order. Taxon names are followed by a list of chrysonymy which includes only

references used in the text. Concerning these lists, the aim is not to establish a taxonomic synonymy but to follow the history of nominal taxa across the bibliography.

Allocoeniopsis Alloiteau, 1958

1958 *Allocaeniopsis* [sic] nov. gen. – Alloiteau, p. 11.
1958 *Allocœniopsis* [sic] nov. gen. – Alloiteau, p. 12.
1958 *Allocoeniopsis* nov. gen. – Alloiteau, pl. 12.
1969 *Allocoeniopsis* Alloiteau – Fischer, p. 53.

Type species: *Stephanocoenia oolitica* Koby, 1905 by monotypy.

Remarks: In the same publication Alloiteau (1958) used different spellings for the genus name: *Allocaeniopsis* (p. 11), *Allocœniopsis* (p. 12) and *Allocoeniopsis* (pl. 12). As an incorrect transliteration or latinization cannot be considered for a name to be corrected (ICZN art. 32.5.1), we must follow the first revisor, Fischer (1969: 53) who used *Allocoeniopsis* and not *Allocaeniopsis,* which is considered unavailable.

Status: Available and valid. The question of synonymy with other genera such as *Allocoenia* Étallon, 1859 or *Stephanastrea* Étallon, 1864 is potentially a matter of debate.

Allocoeniopsis oolitica (Koby, 1905)

1905 *Stephanocoenia oolitica,* nov. sp. – Koby, p. 860–861 pl. 54, figs 3, 3a, 4.
1907 *Stephanocoenia oolitica* Koby – Koby, p. 11–12, pl. 2, figs 21, 21a, 22.
1958 *Allocoeniopsis oolitica* (Koby) – Alloiteau, p. 12–13, pl. 12, fig. 6.
1972 *Allocoeniopsis oolitica* (Koby) – Beauvais, p. 38, pl. A, fig. 1.

Type material: The original type material was composed of three specimens from the Bathonian of Grasse-Roquevignon (Alpes-Maritimes, southeastern France). Koby (1905: caption of pl. 54, fig. 3, 3a) designated specimen MNHN.F.A32025 (Guébhard coll.) as the holotype. He also reported Grasse-Roquevignon as type locality without more precision. However, the original label of the holotype brings more detailed data: the exact type locality is Chemin des Audides at Cabris, a neighboring village of Grasse. Among the two paratypes, only specimen MNHN.F.A32026 is still housed in the MNHN collection.

In conclusion, Alloiteau (1958), followed by Beauvais (1972), considered erroneously that the type material of *Stephanocoenia oolitica* originated from the Bathonian of Saint-Gaultier, a locality studied by Koby (1907), two years later after the initial publication.

Batophyllia Alloiteau, 1956a

1956a *Batophyllia* nov. gen. – Alloiteau, figs 1, 2.

Type species: *Batophyllia champlittensis* Alloiteau, 1956a, by monotypy.

Originally included species: *Batophyllia champlittensis* Alloiteau, 1956a. Alloiteau mentioned also *Rhabdophyllia cervina* Étallon, 1864, but with a question mark. Consequently, (ICZN art. 67.2.5) this species is not counted among the originally included species.

Remarks: The reference (Alloiteau, 1956a) is a card of Palaeontologia Universalis NS n° 84, an international set of published cards (initially directed by Zittel and advertised in English, French and German) used as an available publication for other invertebrates. Today it is also easily accessible by Internet (http://sdrv.ms/12qO0Li, see also the bibliography page of the corallosphere http://www.corallosphere.org/bibliography). We mention these facts because some authors did not consider these cards as available publications (Löser pers. com.).

Batophyllia is probably a junior synonym of *Rhabdophyllia* Edwards and Haime, 1851. Alloiteau distinguished his genus from *Rhabdophyllia* because he believed that *Rhabdophyllia* had synapticulae but the observation shows that the syntype NHMUK PI AZ 56270 of *Rhabdophyllia phillipsi* Milne Edwards and Haime, 1851, type species of the genus, has no synapticulae.

Status: Available, probably not valid.

Batophyllia champlittensis Alloiteau, 1956a
Pl. 1, Figs 9–10

1956a *Batophyllia champlittensis* nov. sp. – Alloiteau, figs 1, 2.

Originally included material: only one sample.

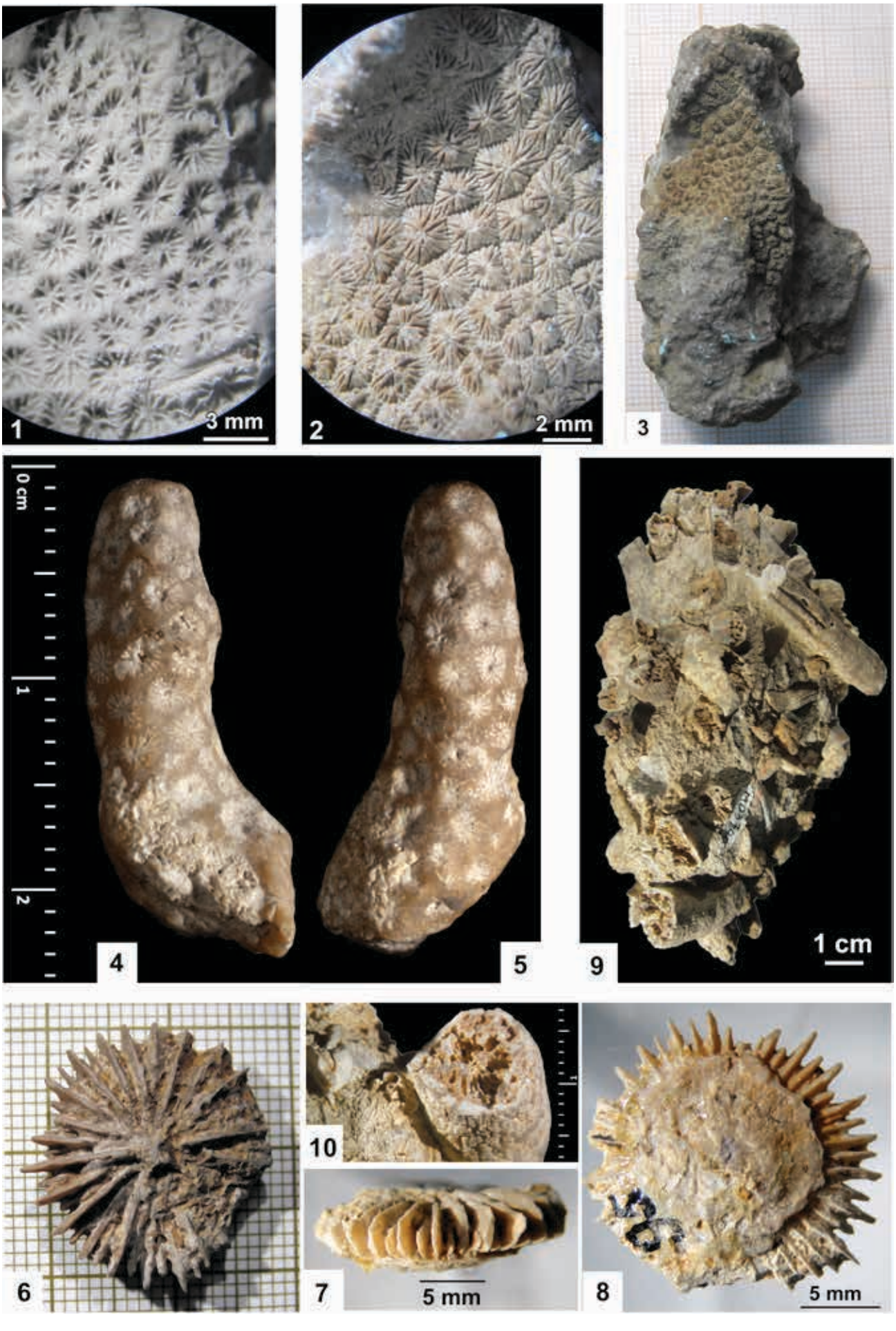
Type material: holotype fixed by monotypy (ICZN art. 73.1.2): MNHN.F.M03700, Fromentel collection. Photos available on the website of MNHN.F collections:

(https://science.mnhn.fr/institution/mnhn/collection/f/item/m03700?listIndex=222)

Type locality: Oxfordian of Champlitte, Haute-Saône, Eastern France.

Remark: The bad quality of the preservation of the type material makes difficult the usage of this genus.

Plate 1: (1–3) Lectotype MNHN.F.A32296 of *Coenastrea thurmanni* (Étallon, 1860), the type species of *Coenastrea* Étallon, 1862. **(1)** mold of the calicular surface achieved with modeling pasta. **(2)** negative of the calicular surface. **(3)** General view of the sample. **(4–5)** Neotype MNHN.F.A59986 of *Dendrastrea dissimilis* (Michelin, 1846), the type species of *Dendrastrea* d'Orbigny, 1849. Lateral views of a portion of branch, Deshayes coll., Bathonian from Luc-sur-Mer (Calvados). **(6–8)** Holotype MNHN.F.M03524 of *Gillismilia fromenteli* (Alloiteau, 1956b), type species of *Gillismilia* nov. nom. **(6)** Distal view of the calicular surface. **(7)** Lateral view. **(8)** Proximal view. **(9–10)** Holotype MNHN.F.M03700 of *Batophyllia champlittensis* Alloiteau, 1956 (photo JP Cuif MNHN). **(9)** General view. **(10)** Detail of a corallite.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Carinactinastraea Beauvais, 1981 *nomen nudum*

Remarks: Among other existing generic names, all from Liassic, Beauvais (1981, p. 354) listed the name *Carinactinastraea* and provided neither a designation of a type species nor a replacement name in conformity with ICZN art. 13.3. Moreover, this name does not appear any more in subsequent studies on Liassic corals by Beauvais.

Status: Unavailable (*nomen nudum*).

Coenastrea Étallon, 1862

1862 *Cœnastrea* [sic], nov. gen. – Étallon, p. 226.
1952 *Cænastræa* [sic] Étallon – Alloiteau, p. 603.
1956 *Coenastraea* [sic] Étallon – Wells, F437.

Type species: *Thamnastrea thurmanni*, Étallon, 1860, herein designated.

Originally included species: *C. sahleri* (Étallon, 1860) *and C. thurmanni* (Étallon, 1860).

Étallon (1862) erected *Coenastrea* (in the incorrect original spelling *Cœnastrea*, spelling corrected according to ICZN art. 32.5.2), saying it is based on two species previously described and figured in Étallon (1860: 27, pl. 6, figs 23, 24). These two species are *Thamnastrea thurmanni* and *T. sahleri*, both from the Calcaires à Ptérocères Formation (zone strombienne in the original nomenclature of Étallon) in the area of Montbéliard (no specific locality given). Two years later, Étallon (1864: 402–403, pl. 57, fig. 3) erected a third new species *Coenastrea martis* from Roche-de-Mars and Combe Vaumacon, (Switzerland). In the same text, Étallon (1864: 403) cited *Coenastrea thurmanni* with a description very close to his previous one (Étallon, 1860: 27) and mentioned a unique locality: Banné suggesting that the type locality was Banné.

Subsequently, Alloiteau (1952: 603) mentioned only *C. martis* for this genus. This is probably the reason why Wells (1956: F437) designated *C. martis* as the type species. We consider that *C. martis* was not in the originally included species in 1862, for this reason (ICZN art. 67.2) we designate here *Coenastrea thurmanni* as the type species of the genus.

The incorrect subsequent spelling *Caenastraea* (corrected from „*Cænastræa*“) by Alloiteau (1952: 603) is unavailable (ICZN art. 33.3).

Synonymy: *Coenastrea* is considered a junior synonym of *Enallocoenia*.

Status: Available and invalid.

Coenastrea thurmanni (Étallon, 1860)
Pl. 1, Figs 1–3

1860 *Thamnastrea Thurmanni* [sic], nov. sp. – Étallon, 27, pl. 6, fig. 23.
1864 *Cœnastrea Thurmanni* [sic] Étallon – Étallon, p. 403, pl. 57, fig. 4.

Type material: In order to get a clear definition of the genus *Coenastrea* and of its type species (ICZN art. 74.7.3), we designate herein as the lectotype the specimen MNHN.F.A32296 found in Étallon collection and originating from the Kimmeridgian of Banné (Bern Canton, Switzerland).

The following characters have been observed. Ramose cerioid corallum. Strictly polygonal fairly deep corallites. Radial elements are free but the major septa may join in the center. Septa unequal generally straight rather than curved. Lateral face and distal edge very finely dentate. Septa are not perfectly confluent and major septa of a corallite usually correspond to minor septa of the neighbouring corallite. No pali. Columella styliform to sublamellar. Cutting wall of unknown nature.

Dimensions:
Diameter of calices: 1–2 mm
Number of septa: 20–33
Septal density: 5 per mm.
Thickness of major septa: *circa* 0.1 mm

Confusastrea d'Orbigny, 1849
see *Isastrea*

Dendrastrea, d'Orbigny, 1849

1849 *Dendrastrea* nov. gen. – d'Orbigny, p. 9.

Originally included species: *Astrea dissimilis* Michelin, 1846.

Type species: *Astrea dissimilis* Michelin, 1846, by monotypy.

Status: Available, valid.

Dendrastrea dissimilis (Michelin, 1846)
Pl. 1, Figs 4–5, Pl. 2, Figs 1–4

1846 *Astrea dissimilis* nov. sp. – Michelin, p. 226 pl. 54, fig. 12.
1849 *Dendrastrea dissimilis* (Michelin) – d'Orbigny, p. 9.
1967 *Dendrastrea dissimilis* (Michelin) – Beauvais, p. 38 ["neotype designation"].
1969 *Dendrastrea dissimilis* (Michelin) – Fischer, p. 57, pl. 6, fig. 10a, b.

Type material: The original type material was composed of an undetermined number of syntypes originating from Langrune (Calvados). These syn-

Plate 2: (1–4) *Dendrastrea dissimilis* (Michelin, 1846) neotype MNHN.F.A59986. **(1)** Lateral view of a branch. **(2)** Detail of some calices showing the external thinning of some septa. **(3)** Another detail of some calices. **(4)** Lateral view of a branch in a place where the colonial structure appears more cerioid than in Fig. 1. **(5)** *Enallhelia gemmata* (Michelin, 1846) type species of the nominal genus *Euhelia* lectotype MNHN.F.A66680. Lateral view of the colony.


4 mm
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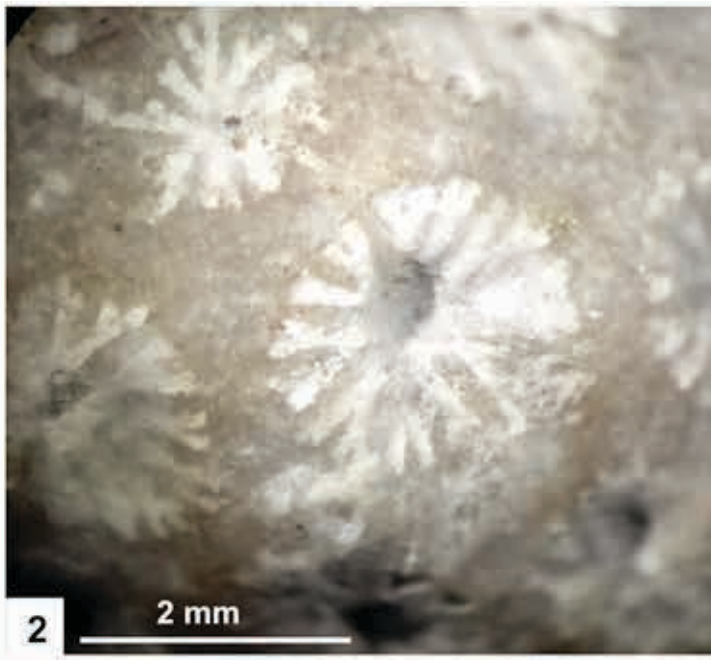
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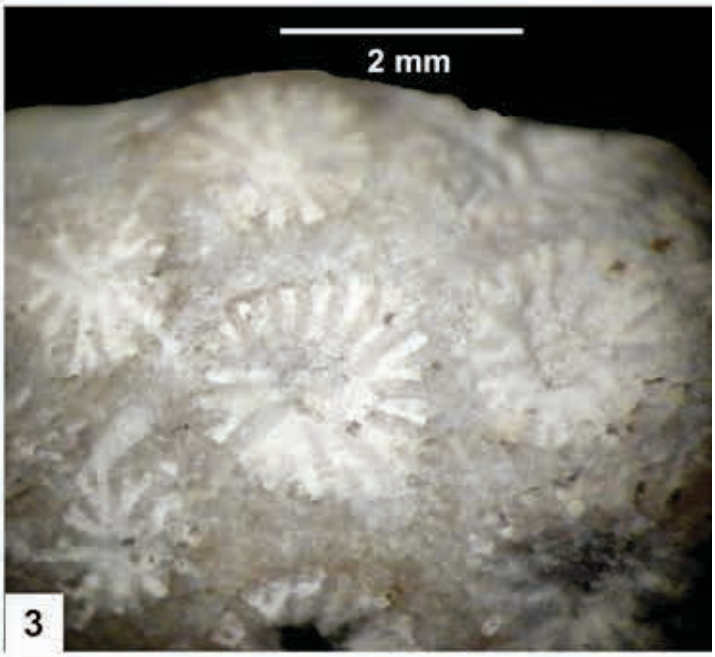
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types belonged to the Michelin and Eudes-Deslongchamps collections. Unfortunately, those collected by Eudes-Deslongchamps were destroyed during the bombardment of Caen in the Second World War (see Bigot 1945). Alloiteau (1957, p. 159) indicated in a footnote that the type material of Michelin should be considered as lost and he was also followed by Beauvais (1967). A careful examination of the Michelin collection led us to the same conclusion: Michelin specimens, including the one figured by Michelin (1846: pl. 54, fig. 12), were not recovered in the MNHN collection.

Alloiteau (1957) backed his concept of the genus *Dendrastrea* on "topotypes" originating from Luc-sur-Mer (Calvados, France) and housed in the d'Orbigny collection (n° 3060).

Later, Beauvais (1967, p. 38) studied these "topotypes" referring to Alloiteau (1957) for description. She mentioned that the "holotype *Dendrastrea dissimilis* Michelin" should be considered lost and wrote: "Néotype: *Dendrastrea dissimilis* Michelin collection d'Orbigny n° 3060". She added that the description of the "neotype" was given by Alloiteau (1957, p. 159) and the type locality was Luc (Calvados). Since the same collection number is given for both the "syntypes" and the "neotype", the selection of neotype is unsuccessful, and the qualifying conditions are not met especially with ICZN art. 75.3.3.

We see no other solution than a correct designation of a real neotype. In order to comply with the ICZN rules (ICZN art. 75.3. 1–7) we clarify the following points.

1) We affirm that the designation of a neotype is necessary to characterize the species and consequently the genus *Dendrastrea* and to distinguish from comparable taxa.

2) The following characters have been observed. Ramose cerioid corallum with polygonal corallites. The appearance can become plocoid in older parts of the colony with abrasion of the mural region. Radial elements are compact, free septa, confluent or non-confluent, weakly attenuated, straight to slightly curved unequal in length. The major septa are regularly attenuated in the external direction. Distal edge with few regular small teeth, probably corresponding to subvertical carinae. Inner edge often enlarged. Lateral faces with acute granules. No pali. Microstructure unknown. Radial symmetry rather octameral, bilateral symmetry generally not observed. Endotheca not observed, columella absent but a clear central subcircular fossa. Wall straight or in zigzag form, probably paraseptothecal.

Dimensions:
Diameter of branches: 5–7 mm
Diameter of calices: 1–1,7 mm
Number of septa: 19–28
Septal density: 3–4 per mm.

The absence of columella clearly distinguishes the genus *Dendrastrea* from *Enallocoenia*, *Stephanastrea*, *Allocoenia* and *Allocoeniopsis,* genera that include species with comparable dimensions.

3) The specimen designated is MNHN.F.A59986 (Deshayes coll.) Bathonian from Luc-sur-Mer (Calvados) and figured Pl. 1, figs 4–5 and Pl. 2, figs 1–4.

4) We came to this decision of erecting of a neotype because after previous authors (Alloiteau 1957, p. 159; Beauvais 1967, p. 38) and after long investigations in the MNHN collections we came to the same conclusion that the original type series is lost.

5) This neotype is coherent with the original description made by Michelin (1846) and especially with his illustration (pl. 54, fig. 12 a,b,c) in which no columella is drawn.

6) In order to comply with the ICZN recommendation 75A, we have looked for a new sample from the same locality or neighbouring localities from Normandy. We found specimens originating from the Bathonian of Luc (not from Langrune) in the Deshayes collection.

7) The neotype designated herein is housed in MNHN Paris under the number MNHN.F.A59986.

Enallocoenia d'Orbigny, 1849

1849 *Enallocœnia* nov. gen. – d'Orbigny, p. 7.
1964 *Enallocœnia* d'Orbigny, – Beauvais, p. 111.

Originally included species: *E. crassoramosa* (Michelin, 1844).

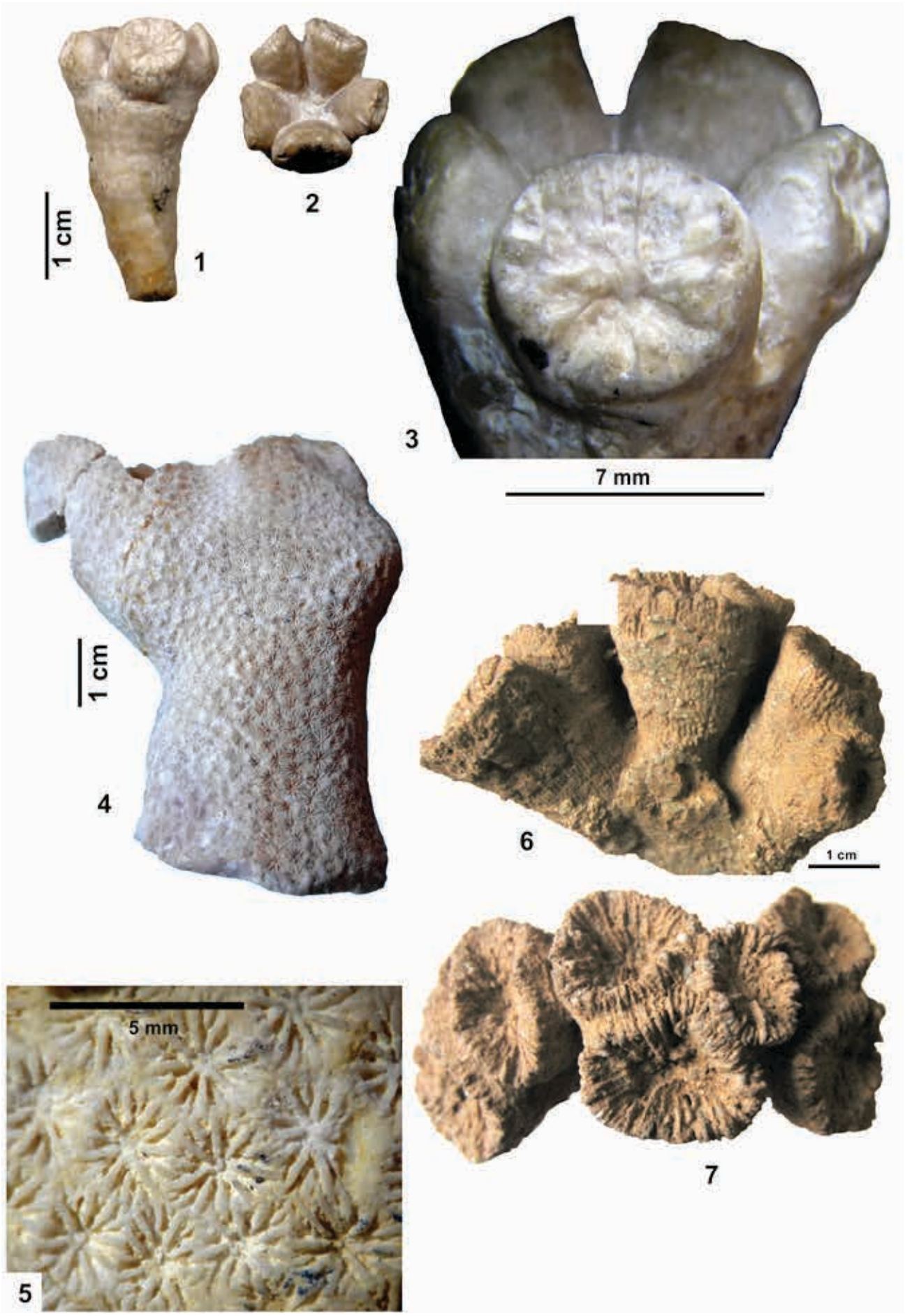
Type species: *Astrea crassoramosa* Michelin, 1844: 109 [pl. 25, fig. 2 published in 1847], by original monotypy.

Remarks: Originally spelled *Enallocœnia* and corrected into *Enallocoenia* (ICZN art. 32.5.2).

Synonymy: On the basis of the comparison between the two type species, it appears that *Enallocoenia* d'Orbigny, 1849 is a senior synonym of *Coenastrea* Étallon, 1862.

Status: Available, valid.

Plate 3: (1–3) Lectotype NMB D6423 of *Polymorphastrea variabilis* Beauvais, 1972 type species of *Polymorphastrea* Koby, 1907. **(1)** Lateral view of the colony. **(2)** Distal view of the colony. **(3)** Detail of a corallite. **(4–5)** Neotype MHNG GEPI 61505 of *Enallocoenia crassoramosa* (Michelin, 1844), type species of *Enallocoenia*. **(4)** General view of the colony. **(5)** Detail of the calicular surface in distal view. **(6–7)** Lectotype (IPB Goldfuss coll. N° 158) of *Thecosmilia trichotoma* (Goldfuss, 1826). **(6)** Lateral view of the colony. **(7)** Distal view of the colony.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Enallocoenia crassoramosa (Michelin, 1844)
Pl. 3, Figs 4–5

1844 *Astrea crasso-ramosa* nov. sp. – Michelin, p. 109.
1849 *Enallocœnia crasso-ramosa* – d'Orbigny, p. 7.
1964 *Enallocoenia crasso-ramosa* – Beauvais, p. 112.

Type species of *Enallocoenia.*

Originally included material: Michelin 1844, p. 109 mentioned two localities Maxey-sur-Vaise and Saint-Mihiel (Meuse, France) and figured one specimen pl. 25, fig. 2. The specimens come from the Moreau collection.

Type material: Beauvais (1964, p. 112) designated a neotype, the specimen figured by Koby (1885, pl. 87, fig. 2) presently housed in the Musée d'Histoire Naturelle de Genève under the number MHNG GEPI 61505. Type locality: Côtes du Doubs (Suisse) (ICZN art. 76.3).

Remarks: The original spelling *CRASSO-RAMOSA* is to be corrected into *crassoramosa* (ICZN art. 32.5.2). The syntypes of *A. crassoramosa* were searched for in Paris without success. In order to provide a more detailed comparison with the genera *Coenastrea* and *Dendrastrea* described in this article, the reader can find more numerous illustrations in the corallosphere (Cairns et al. 2010).

Euhelidae Vaughan & Wells, 1843

1843 Euhelinae nov subfam. – Vaughan and Wells, p. 113.
1976 Euhellidae [sic] – Roniewicz, p. 58.

Originally included genera: *Euhelia* Edwards and Haime, 1850b*, Tiaradendron* Quenstedt, 1857*, Enallhelia* d'Orbigny, 1849*, Stylangia* Fromentel, 1857.

Type designation: *Evhelia* Edwards and Haime, 1850b spelled as *Euhelia*, designated by Vaughan & Wells (1943, p. 113) as type genus of the subfamily Euhelinae nov. subfamily (ICZN art 36.).

Remarks: The name of the family Euheliidae Vaughan & Wells, 1943, despite the junior synonymy of its type genus, is still available (ICZN art. 40.1) and even in that spelling (ICZN art. 33.2.3.1, 29.5), since Evheliidae was never used. Nevertheless, in our opinion, all the genera originally included within the family have found another place in the classification. More specifically, we consider *Euhelia* as a Stylinidae.

Status: Available, invalid.

Euhelia Edwards & Haime, 1850b

1850b *Evhelia* nov. gen. – Edwards & Haime, p. 90.
1857 *Euhelia* Edwards & Haime – Edwards & Haime, p. 124.
1943 *Euhelia* Edwards & Haime – Vaughan & Wells, p. 113.

Originally included species: *Oculina gemmata* Michelin, 1846.

Type species: *Oculina gemmata* Michelin, 1846, by original monotypy in Edwards and Haime, (1850b, p. 90).

Remarks: *Evhelia* Edwards and Haime 1850 is the original spelling of this genus currently spelled *Euhelia* in conformity with ICZN art. 33.3.1. Milne Edwards and Haime (1857) themselves corrected their initial spelling.

Synonymy: Junior subjective synonym of *Enallhelia*; we renew here the old taxonomic position adopted by d'Orbigny 1850 (p. 321).

Status: Available, invalid.

Euhelia gemmata (Michelin, 1846)
Pl. 2, Fig. 5, Pl. 4, Figs 7–8

1846 *Oculina gemmata*, nov. sp. – Michelin, p. 228, pl. 54, fig. 5.
1850 *Enallhelia gemmata* (Michelin) – Orbigny, 321.
1850b *Evhelia gemmata* (Michelin) – Milne-Edwards & Haime, p. 91.
1857 *Euhelia gemmata* (Michelin) – Milne-Edwards & Haime, t. 2, p. 124.
1967 *Euhelia gemmata* (Michelin) – Beauvais, p. 18, pl. 1, fig. 7.

Type species of *Euhelia.*

Originally included material: Michelin 1846 (p. 228) mentioned several specimens and two collections (Michelin and Deslongchamps) and figured only one syntype (pl. 54, fig. 5).

Type material: A neotype MNHN.F.R54654 was selected in the d'Orbigny collection and figured in Beauvais (1967, p. 18, pl. 1, fig. 7), but Michelin syntypes MNHN.F.M00169 were recently recovered. In conformity to the last version of the code (ICZN, art. 75.8), the neotype proposed by Beauvais is set aside and the Michelin syntypes constitute the name-bearing type. We select the lectotype MNHN. F.A66680 figured here pl. 2, fig. 5 among the two syntypes. The specimen with number MNHN.F.M00169 becomes a paralectotype.

Type locality: Langrune (Calvados; France).

Remarks: In terms of taxonomy, samples from Michelin and d'Orbigny collections seem to be conspecific. Thin sections have been prepared in topotypes MNHN.F. A05586 and MNHN.F. A05587 to complete the description and to compare with *Enallhelia* (see pl. 4, figs 7–8). Consequently, *Euhelia* is considered as a junior synonym of *Enallhelia* d'Orbigny, 1849.

Gillismilia nov. nom.

Derivatio nominis: Dedicated to G.A. Gill who gave so much to the understanding of coral morphology.

Originally included species: *G. fromenteli* (Alloiteau, 1956).

Type species: *Palaeocyathus fromenteli* Alloiteau, 1956b, card n° 86, designated herein.

Remarks: *Palaeocyathus* Alloiteau, 1956b is a junior homonym of *Palaeocyathus* Foerste, 1888 (p. 129) created as a subgenus for a Paleozoic coral (ICZN art. 43.1). As the genus depicted by Alloiteau is clearly peculiar, despite the type species is presently known only by a single specimen, a *nomen*

novum is proposed here.

Status: Available, valid.

Gillismilia fromenteli (Alloiteau, 1956b)
Pl. 1, Figs 6–8

1956b *Palaeocyathus fromenteli* nov. sp. - Alloiteau, n°86–1956, figs 1–2.

Type species of *Gillismilia.*

Originally included material: Only the holotype.

Type material: Holotype by original designation: MNHN.F.M03524.

Type locality: May-sur-Orne (Calvados; France). Early Jurassic, Pliensbachian (Domerian).

Description: Solitary discoid corallum. Epitheca weakly folded covering a little more than half of the basal face. Calice circular in outline. Radial elements are prominent, compact, straight costo-septa. Distal edge ornamented by some regular and wide festoons corresponding to the variations in thickness. No pali but some detached columns. Hexameral symmetry easy to decipher especially with the external part of radial elements. Endotheca not observed. Columella formed by teeth fused to inner edges of S1 septa; other cycles show free septa. Wall parathecal or septothecal.

Dimensions:

Diameter: 21–22 mm (septa are partly eroded)

Height: 6mm

Number of septa: 46 (extrapolated from a half calice)

Septal density: 4–5 per 5 mm

Thickness of major septa: circa 0.7 mm.

Heterastraea Tomes, 1888

1888 *Heterastræa* nov. gen. – Tomes, p. 210.
2013 *Lepidophyllia* (*Heterastraea)* – Gretz et al., p. 138.

Originally included species: *H. murchisoni* (Wright in Duncan 1867), *H. eveshami* (Duncan, 1868), *H. fromenteli* (Terquem & Piette, 1865), *H. stricklandi* (Duncan, 1868), *H. insignis* (Duncan, 1868), *H. endothecata* (Duncan, 1868), *H. haimei* (Wright in Duncan, 1867), *H. tomesi* (Duncan, 1868), *H. latimaeandroidea* (Duncan, 1868), *H. ? sinemuriensis* (Fromentel), *H. excavata* (Fromentel, 1860) *H. etheridgei* Tomes, 1888, *H. regularis* Tomes, 1888, *H. bintonensis* Tomes, 1888, *H.* sp. Tomes, 1888.

Type species: *Isastrea tomesii* Duncan, 1868, p. 46, pl. 15, fig. 20; by subsequent designation of Vaughan and Wells (1943, p. 156).

Remarks: The initial spelling *Heterastræa* is corrected into *Heterastraea* (ICZN art. 32.5.2). The genus is now considered as a subgenus of *Lepidophyllia* (Gretz et al. 2013)

Status: Available, valid.

Heterastraea tomesi (Duncan, 1868)

1868 *Isastræa Tomesii* nov. sp. – Duncan, p. 46, pl. 15, fig. 20.
1878 *Isastræa Tomesi* Duncan – Tomes, p. 184.
1888 *Heterastræa tomesi* (Duncan) – Tomes, p. 214 pl. 7, figs 5–6.
1976b *Heterastraea tomesi* (Duncan) – Beauvais, p. 59 pl. 12, fig. 6, pl. 13, fig. 1, text-figs 21–25.

Type species of *Heterastraea*.

Originally included material: Duncan (1868) described (p. 46) and figured (pl. 15, fig. 20) a fragment of colony of "*Isastræa Tomesii"* as a new species but did not specify the number of specimen(s).

Type material: The identity of the type specimen NHMUK PI AZ R 11850 in the collections of the Natural History Museum in London is questionable. In order to clarify the taxonomic status of the genus of which the species is the type species, we designate this specimen as a neotype. In order to comply with the ICZN art. 75.3.2–3, the characters of the species are described in Beauvais 1976b (p. 59), and it is figured and can be recognized with help of pl. 12, fig. 6, pl. 13, fig. 1. In order to comply with ICZN art. 73.3.4, we affirm that we have searched for other indices of occurrence of type material in the B.M (Natural History) collections of Tomes and Duncan with help of J. Darrell in charge of these collections without success. The dimensions of corallites and the number of septa is compatible with the name-bearing type in conformity with ICZN art. 75.3.5. To comply with the ICZN art. 75.3.6, it is worth noting that the neotype comes from the initial type locality and from the same geological horizon. Finally the ICZN art. 75.3.7 is also satisfied as the sample is already housed in the British Museum (Natural History) in London.

Type locality: Hettangian of Long Coppice (near Binton, Warwickshire, Great Britain).

Remarks: The identity of the type specimen is questionable. Tomes (1878, p.184–185) mentioned "*the type specimen*" and referred to "the specimen" (singular) described by Duncan. We can consider that Tomes made a valid designation of the lectotype of the species described and figured by Duncan (ICZN art.74-6). The sample presented as the type specimen NHMUK PI AZ R 11850 in the collections of the Natural History Museum in London comes from Hettangian of Long Coppice (near Binton, Warwickshire, Great Britain) in conformity with the initial description of Duncan (1868). It is composed of one sectioned sample and two thin sections figured, described in Beauvais (1976b p. 59 pl. 12, fig. 6; pl. 13, fig. 1 and text figs 21–25) and interpreted as a holotype by her.

This specimen does not look like the type specimen figured by Duncan (1868) and designated as such by Tomes (1878). The colony sample NHMUK PI AZ R 11850 has about 7–8 calices across the diameter of the colony while the specimen figured by Duncan encompasses only about 5 calices across the colony. However, both specimens appear to be of conspecific character and have the same calyx size ranges and compatible numbers of septa. The

sample available in collection is obviously better preserved than the initial sample for which Tomes (1888) quoted that "*the type of this species is so indifferently preserved that were it not a well marked species it would be practically useless for comparison*". The initial specimen figured by Duncan is lost and the designation of a neotype is justified by the necessity to provide a clear definition of the genus. The selected specimen NHMUK PI AZ R 11850 originating from the type locality is an excellently preserved sample coming from the Tomes-collection. The presence of thin sections is an excellent opportunity to distinguish *Heterastraea* from other cerioid forms such as *Amphiastrea* Étallon, 1859 or *Isastrea* Milne Edwards and Haime, 1851, with which it has been so often confused. After the recent work of Gretz *et al*. (2013), *Heterastraea* is considered a subgenus of *Lepidophyllia* Duncan, 1868.

Isastrea Edwards and Haime, 1851

1851 *Isastrea* Edwards and Haime, p. 102 (see below, paragraph remarks for other references).

Originally included species: Forty species are listed the first of them is *I. helianthoides*, 27 with a question marks.

Type species: *Astrea helianthoides* Goldfuss designated subsequently by Quenstedt 1857, p. 704.

Remarks: With regards to the principle of priority, *Isastrea* Edwards and Haime, 1851 should be a junior subjective synonym of *Confusastrea* d'Orbigny, 1849 (p. 10) a genus initially based on a single species *Astrea crassa* Goldfuss 1826 (then the type species by original monotypy).

Nevertheless, in order to preserve stability it is proposed to promote usage of this widely known genus over priority in conformity with ICZN (art. 23.9.1).

The reversal of precedence requires that the junior synonym has been used for a particular taxon, as its presumed valid name, in at least 25 works, published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years. These conditions are widely fulfilled. Hereafter some of the references corresponding to these ICZN requirements.

1) Beauvais 1967, p. 22.
2) Beauvais 1970a, p. 19/55.
3) Beauvais 1970c, p. 41.
4) Beauvais 1972, p. 19/51.
5) Roniewicz 1976, p. 66.
6) Babaev & Krasnov 1977, p. 142.
7) Ljuljeva & Permjakov 1980, p. 110.
8) Bendukidze 1982, p. 58.
9) Roniewicz 1982, p. 173.
10) Krasnov 1983, p. 112.
11) Lathuilière 1988, p. 269.
12) Lathuilière 1989, p. 887.
13) Errenst 1990, p. 193.
14) Prinz 1991, p. 170.
15) Pandey & Fürsich 1993, p. 17.
16) Bertling 1993, p. 93.
17) Liao & Xia 1994, p. 163.
18) Eliasova 1994, p. 67.
19) Turnsek 1997, p. 107.
20) Lathuilière 2000, p. 61.
21) Baron Szabo 2002, p. 36.
22) Löser & Mori 2002, p. 89.
23) Pandey & Fürsich 2003, p. 53.
24) Morycowa & Misik 2005, p. 426.
25) Morycowa 2012, p. 20.
26) Liao, Wei-hua & Deng, Zhan-qiu 2013, p. 159.

Another condition ICZN (art. 23.9.1.1) is that the senior synonym has not been used as a valid name after 1899. The available name *Confusastrea* has often been used after 1899 but generally in a false identification for a *Complexastrea* d'Orbigny, 1849 and then cannot be considered as valid. Then, *Isastrea* is maintained in use (*nomen protectum*), *Confusastrea* should fall into oblivion (*nomen oblitum*). "*Isastraea"* is a commonly used bad spelling for *Isastrea.*

Status: Available, valid

Isastrea helianthoides (Goldfuss, 1826)

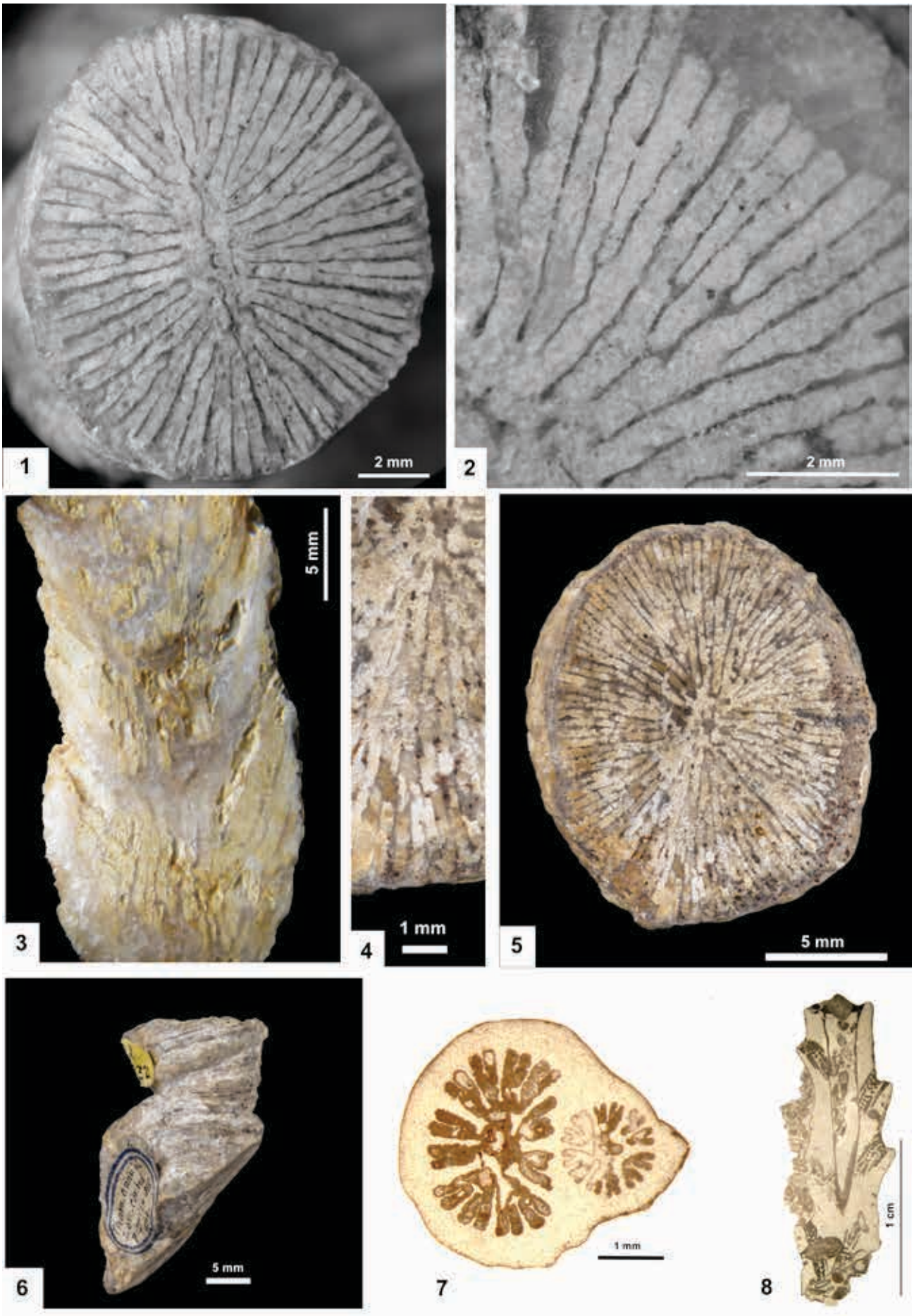
1826 *Astrea helianthoides* Goldfuss, p. 65, pl. 22, fig. 4 a,b.
1851 *Isastrea helianthoides* (Goldfuss) – Edwards & Haime, p. 103.
1964 *Isastrea helianthoides* (Goldfuss) – Beauvais, p. 164 pl. 17, fig. 2a, 2b.
1950 *Isastraea helianthoides* (Goldfuss) – Pelletier, p. 60.

Type species of *Isastrea* Edwards & Haime

Originally included material: Goldfuss (1826, p. 65) did not specify the number of specimens, but he figured two of them (pl. 22, fig. 4a, b) and cited two localities Giengen and Heidenheim.

Type material: lectotype n° IPB 218 (figured by Goldfuss 1826, pl. 22, fig. 4a) designated by Pelletier (1950, p. 160) (ICZN art. 74.5). The lectotype was also figured in Beauvais (1964, pl. 17, figs 2a, b). It can be recognized with help of an encrusting oyster on the calicular surface. It is accompanied with a thin section. The fig. 4b of Goldfuss (1826, pl. 22) is a paralectotype.

Plate 4: (1–3) *Polystylidium articulatum* specimens figured by Fischer (1965). **(1)** MNHN.F.R50405, view of a transverse section. **(2)** MNHN.F.A57773, detail of another sample with the same number showing the junction pattern of septa and the special pores. **(3)** MNHN.F. A57774, longitudinal section of a corallite. **(4–6)** *Thamnosmilia annulata* Tomes Lectotype NHMUK PI AZ R 10832. **(4)** Detail of some septa. **(5)** Distal view of a corallite. **(6)** General lateral view of the corallum. **(7–8)** Topotypes of *Enallhelia gemmata* (Michelin, 1846). **(7)** transverse thin section of the specimen MNHN.F. A05586 showing typical auriculae of stylinids. **(8)** Longitudinal section of the specimen MNHN.F. A05587 (extensively bioeroded) showing the arrangement of corallites within the corallum.


1
2 mm
2
2 mm
3
5 mm
4
1 mm
5
5 mm
6
5 mm
7
1 mm
8
1 cm

Type locality: Heidenheim (Upper Jurassic of Germany).

Melikerona Alloiteau, 1958

1958 *Melikerona* Alloiteau, p. 64.

Originally included species: *M. madagascariensis* Alloiteau, 1958.

Type species: *Isastrea* (?) *parva* Gregory var. *madagascariensis* Alloiteau by original designation (Alloiteau 1958, p. 64).

Remarks: Firstly *Melikerona* is not based on a type species but on a variety. Alloiteau (1958, p. 65) wrote: "*Melikerona* (?) *parva* Greg. sp. 1900 p.p., var. *madagascariensis* nov. var." As the name *madagascariensis* is published before 1961, this variety is considered a subspecific taxon (ICZN art. 45.6.4). According to the ICZN art. 61.4, if a nominal subspecies is fixed as the name-bearing type of a nominal genus-group taxon, it is deemed to have been raised first to the rank of species. Then we should consider that Alloiteau designated *Melikerona madagascariensis* Alloiteau 1958 as the type species of the genus. We understand that Alloiteau considered that *Isastrea parva* Gregory should be split and specimens of this species belong either to *Melikerona* or to another genus *Pseudisastrea* Alloiteau 1958 (p. 57) based on the type species *Isastrea parva* Gregory, 1900. Then from the context we understand that the question mark refers to the questionable assignation of a part of Indian specimens described by Gregory 1900 to his new genus *Melikerona* and then this tentative assignation can be accepted under ICZN art. 11.9.3.

Synonymy: In terms of taxonomy, the validity of the concept of *Melikerona* is still a matter for discussion. The material on which Alloiteau based his concept of *Melikerona* (Holotype MNHN.F.M05091 and paratype MNHN.F.M08176) is available, described and illustrated in the corallosphere. As we can understand from his text, Alloiteau never saw the Indian material of *Isastrea parva* Gregory. *Melikerona* is probably a junior synonym of *Septastraeopsis* Alloiteau, 1953, probably better preserved than the possible senior synonym. The type material of *Pseudisastrea* preserved in Calcutta (India) obviously deserves a revision to ensure that *Pseudisastrea* is really different from *Melikerona*.

Status: Available, probably invalid.

Melikerona madagascariensis Alloiteau, 1958

1958 *Melikerona* (?) *parva* Greg. sp. 1900 p.p., var. *madagascariensis* nov. var. – Alloiteau, p. 65, pl. 1, fig. 8, pl. 7, fig. 4.

Originally included material: Two specimens (MNHN.F.M05091 and J08176).

Type material: *Melikerona madagascariensis* Alloiteau 1958 holotype (MNHN.F.M05091), by original designation, described and figured by Alloiteau (1958: 65–66, pl. 1, fig. 8). Paratype MNHN.F.J08176 (pl. 7, fig. 4).

Type locality: Lower Callovian (*fide* Collignon) of Ankazomiheva (Madagascar).

Remarks: Erroneously, Alloiteau (1958) listed the same plate-figure for the illustration of *Pseudisastrea parva* (Gregory) (Alloiteau 1958: 57) and for *Melikerona* (?) *parva* (Alloiteau 1958, p. 65). From the context, the extensive description of the specimen figured and from its origin (Ankazomiheva and not Soaravikely, the locality of the single sample known of *Pseudisastrea parva* from Madagascar) we interpret this reference to pl. 7, fig. 4 in p. 57 as a lapsus calami. Then the specimen figured pl. 7, fig. 4 housed under the number MNHN.F.J08176 is considered as a paratype of *M. madagascariensis*. The Indian material of Gregory, doubtfully referred to "*M.* (?) *parva* Greg. sp. 1900 p.p. var. *madagascariensis*" by Alloiteau (1958: 65, 66), is excluded from the type series of *M. madagascariensis* (ICZN art. 72.4.1.).

Opisthophyllum Ogilvie, 1897

1897 *Opisthophyllum* Ogilvie, p. 101.
1936 *Opisthophyllum* Ogilvie – Wells, p. 122.

Originally included species: *O. zitteli* Ogilvie, 1897, *O. vesiculare* Ogilvie, 1897, *O. minimum* Ogilvie, 1897.

Type species: *Opisthophyllum zitteli* Ogilvie, 1897, p. 102, by subsequent designation of Wells (1936; p. 122).

Synonymy: A synonymy with *Cheilosmilia* Koby, 1888 is possible and not really well established. The difficult question is the discriminant value of the steadily character of the marginarium all along the longitudinal section.

Status: Available and possibly valid.

Opisthophyllum zitteli Ogilvie, 1897

1897 *Opisthophyllum Zitteli* nov. sp. – Ogilvie, p. 102, pl. 12, fig. 11, 11a, 11b, 11c 11d.
1955 *Opisthophyllum zitteli* Ogilvie – Geyer, p. 189.
1976a *Opisthophyllum zitteli* Ogilvie – Beauvais, p. 15, pl. 4, fig. 1.

Type species of *Opisthophyllum.*

Originally included material: Ogilvie 1897 mentioned 4 specimens.

Type material: Lectotype Ogilvie, 1897, p. 102 figured pl. 12, fig. 11 designated by Geyer (1955, p. 189) and housed in Münich under BSPG AS III 34. Illustrated in Beauvais (1976a, pl. 4, fig. 1). But also BSPG AS III 36 (see remark).

Type locality: Štramberk (Czech Republic) interval Tithonian (Late Jurassic)–Berriasian (Early Cretaceous).

Remarks: A transverse section of the lectotype was figured in Beauvais (1976a, pl. 4, fig. 1). Beside

the sample numbered BSPG AS III 34 designated by Geyer (1955) another specimen numbered BSPG As III 36 exists. We interpret this specimen as sectioned from the lectotype (a crust of a probable *Neuropora* is visible on both sides of the cutting surface). This specimen was sawed for a thin section by L. Beauvais and figured as a "topotype" (Beauvais, 1976a; pl. 1, fig. 2 and pl. 3, fig. 4b). It is in fact a part of the lectotype with its own number. A third specimen (in two pieces and 2 thin sections) is numbered BSPG As III 35 and is figured by Beauvais (1976a; pl.3, fig. 4); it was a part of the original Ogilvie syntypes and is either a part of the lectotype or more probably a paralectotype.

Paraphyllogyra Beauvais, 1970b

1970b *Paraphyllogyra* Beauvais, p. 1117.

Originally included species: *P. sinuosa* (Tomes, 1882).

Type species: *Phyllogyra sinuosa* Tomes, 1882, by original designation (Beauvais 1970b, p. 1117).

Synonymy: *Phylloseriopsis* Beauvais, 1970b is proposed herein as subjective junior synonym in accordance with the principle of the first reviser (ICZN art. 24.2).

Status: Available and valid.

Paraphyllogyra sinuosa (Tomes, 1882)

1882 *Phyllogyra sinuosa* nov. sp. – Tomes, p. 431, pl.18, figs 5–7.
1970b *Paraphyllogyra sinuosa* (Tomes) – Beauvais, p. 1117, pl. 1, fig. 2.

Type species of *Paraphyllogyra.*

Originally included material: Tomes (1882) specified that he had "examples of this coral from the oolite marl of Leckhampton Hill; and one has been forwarded to [him] from Mr W. Jenkins, of Cheltenham, which he took from the 'oyster-bed' Cleeve Hill". He figured one specimen pl. 18, figs 5–7 today housed under NHMUK PI AZ R 10991 in London. Other syntypes are housed under the numbers NHMUK PI AZ R 10992 to R 10995.

Type material: In the legend of her figure, Beauvais (1970b pl. 1, fig. 2) used the term "holotype". According to the ICZN art. 74.6, this mention constitutes a fixation of lectotype.

It is the specimen NHMUK PI AZ R 10991 figured by Tomes (1882, pl.18, figs 5–7). Specimens NHMUK PI AZ R 10992 to R 10995 are paralectotypes and provide good indications on the variability of the colonial morphology.

Type locality: Bajocian (Middle Jurassic) of Leckhampton (Gloucestershire, Great Britain).

Remarks: As it is frequent in the material of Tomes, the colony has been prepared mechanically and chemically leading to some artificial external surface but producing an excellent view of anatomical characters.

Synonymy: By applying the principle of the first reviser (ICZN art. 24.2), we consider that *Paraphyllogyra sinuosa* should be considered as subjective senior synonym of *Phylloseriopsis tabulata*. They have similar dimensions of corallites, similar septal and trabecular densities and were found in the same stratigraphic level. We consider that the assignation by Beauvais 1970b of these species to different families results from a misinterpretation of synapticulae in the wall. A similar situation already happened between *Isastrea* and *Andemantastraea* that has been discarded by a careful observation of the wall structure in *Isastrea* (Roniewicz 1982) and a population study of the same genus (Lathuilière 1988). We choose *Paraphyllogyra sinuosa* because of its better preservation.

Phylloseriopsis Beauvais, 1970b

1970b *Phylloseriopsis* nov. gen. – Beauvais, p. 1126.

Originally included species: *P. tabulata* (Tomes, 1882).

Type species: *Latimeandra tabulata* Tomes, 1882 by original designation (Beauvais 1970b, p.1126).

Synonymy: see *Paraphyllogyra.*

Status: Available and invalid.

Phylloseriopsis tabulata Tomes, 1882

1882 *Latimæandra tabulata* nov. sp. – Tomes, p. 427.
1970b *Phylloseriopsis tabulata* (Tomes) – Beauvais, p. 1126 pl. 2 fig. 8, pl. 3 fig. 1.

Type species of *Phylloseriopsis.*

Originally included material: Tomes (1882, p. 428) mentioned: "From the oolite marl at Sheepscombe. Young examples have also been taken from the same bed by my friend Mr T. J. Slatter F.G.S., and by myself at Leckhampton Hill." Then several specimens were constituting the type series.

Type material: In the legend of her figure, Beauvais (1970b pl. 2, fig. 8, pl. 3, fig. 1) used the term "holotype". According to the ICZN art. 74.6, this mention constitutes a fixation of lectotype.

It is the specimen NHMUK PI AZ R10983 described but not figured by Tomes (1882).

Type locality: Bajocian (Middle Jurassic) of Sheepscombe (Great Britain).

Remarks: The rocky sample NHMUK PI AZ R10983 bears simultaneously the type specimens of *Latimeandra tabulata* Tomes and *Oroseris incrustans* Tomes, well named because it is incrusted upon the former. Unfortunately two small labels were attached to the sample but their positions were inverted.

Synonymy: subjective junior synonym of *Paraphyllogyra sinuosa* (see previous paragraph).

Pleurostylina Fromentel, 1861

1856 *Pleurostylina, [nomen nudum]* – Fromentel, p. 854.
1861 *Pleurostylina* nov. gen. – Fromentel, p. 201.
1936 *Pleurostylina* Fromentel – Wells, p. 125.

Originally included species: *P. corallina* Fromentel, 1861 and *P. frondescens* Fromentel, 1861.

Type species: *Pleurostylina corallina* Fromentel (1861, p. 201); subsequent designation by Wells (1936; p. 125).

Remarks: *Pleurostylina* appeared first as unavailable name in Fromentel (1856, p. 854) and becomes available in Fromentel (1861) with the first description.

Synonymy: Taxonomically, *Pleurostylina* is probably a subjective junior synonym of *Amphiastrea* Étallon, 1859. However, according to Eliasova (written comm.) they could be differentiated by the presence of an epitheca around each corallite in *Amphiastrea*.

Status: Available (since 1861) and possibly valid (?).

Pleurostylina corallina Fromentel, 1861

1861 *Pleurostylina corallina* nov. sp. – Fromentel, p. 201.
1964 *Pleurostylina corallina* Fromentel – Beauvais, p. 202, pl. 22, fig. 2.

Type species of *Pleurostylina.*

Originally included material: Fromentel (1861, p. 201) just mentioned one locality (Corallien of Ecuelle, (Haute Saône)) but did not specify the number of specimens in the type series. For this reason, by applying ICZN art. 7.2.1.1, the single specimen found in the Fromentel collection and housed under the reference number MNHN.F.M03902 is recognised to be the single syntype known at the present time.

Type material: We designate herein the syntype above mentioned (MNHN.F.M03902) as the lectotype of *Pleurostylina corallina* Fromentel.

Type locality: Ecuelle (Haute Saône; France), Oxfordian (Late Jurassic)

Remarks: the lectotype designated herein is not sectioned. Beauvais (1964 p. 201) discarded this syntype to use a better preserved sample, a topotype of her collection (MNHN.F.R10744), and she designated it as the “holotype”. This nomenclatural act cannot be accepted (ICZN art. 73.1.3). Both samples correspond to *Pleurostylina.* The specimen MNHN.F.R10744, with its thin sections, remains an interesting sample for the description but is not a name-bearing type.

Polymorphastrea Koby, 1907

1907 *Polymorphastrea* nov. gen. – Koby, p. 17.
1972 *Polymorphastræa* – Beauvais, p. 23, 55.

Originally included species: Only one species *Polymorphastrea variabilis* Beauvais, 1972, with three varieties *simplex* Koby, 1907*, coronata* Koby, 1907 and *ramosa* Koby, 1907.

Type species: *Polymorphastrea variabilis* Beauvais, 1972, by subsequent designation of Beauvais (1972).

Remarks: Koby (1907) described three varieties: *Polymorphastrea variabilis simplex*, *Polymorphastrea variabilis coronata* and *Polymorphastrea variabilis ramosa*, all of them rightly considered by Koby as developmental stages. None of them is named *P. variabilis variabilis* with a corresponding type material (ICZN art. 72.4.1). Then, the species name *Polymorphastrea variabilis* is available only in Beauvais, (1972 p. 55).

Status: Available and valid.

Polymorphastrea variabilis Beauvais, 1972
Pl. 3, Figs 1–3

1907 *Polymorphastrea variabilis* [unavailable name] Koby, p. 17, pl. 1, figs 1–14.
1972 *Polymorphastræa variabilis* Koby [sic] nov. sp – Beauvais, p. 23, 55, pl. B, fig. 5.

Originally included material: Koby (1907, p. 17–18) clearly quoted 6 specimens for *Polymorphastrea variabilis simplex,* four of them are figured (pl. 1, figs 1–4); 6 specimens for *P. variabilis coronata,* three of them figured (pl. 1, figs 5–7); 3 specimens qualified of “exemplaire de passage” without trinominal nomenclature (pl. 1 figs 8–10) and 10 specimens for *P. variabilis ramosa,* four of them figured (pl. 1, figs 11–14).

All the figured material is available in Basel Museum under the reference numbers NMB D6419 to D6432.

All the non-figured material is available in Paris under a common number MNHN.F.A24849. Both collections share the common character of an excessive preparation (metallic brush ?) quite probably from the hand of Koby.

Type material: We designate herein the specimen NMB D6423 figured in natural size by Koby pl. 1, fig. 8 as the lectotype in order to define the species *P. variabilis* and then the genus of which it is a type species. The lectotype, re-figured here Pl. 3, figs 1–3, is chosen because calicular and septal characters can be observed, the developmental stage is not too early to demonstrate the peculiar mode of septal budding. It is an illustrated specimen (recommandation 74B) from the type locality (74E) from the institution having the higher number of syntypes (74D).

Specimens NMB D6419 to D6422, D6424 to D6432 and MNHN.F.A24849 are paralectotypes.

Type locality: Bathonian (*niveau 4* of Benoist), Middle Jurassic of Saint Gaultier (Indre; France).

Remarks: The specimens figured by Koby are still preserved in Basel (NMB D6419 to D6432) and constitute the figured part of the type series. Specimens in Paris having the common number MNHN.F.A24849 are the non-figured part of the type series. Beauvais (1972, p. 23, 55) considered erroneously that the “syntypes” (in fact, the figured

specimens in her mind) were lost. She used samples of a part of the Koby collection located in Paris and designated simultaneously “neoholotype”, neotype (p. 24/56) “neosyntype” and “neolectotype” (legend pl. B, fig. 6)[sic]. We consider that the designation of a neotype is not in conformity with the ICZN rules at least because the so-called “neotype” was chosen among syntypes (ICZN art. 75.1 and 75.8). The selection of a lectotype by inference of a “type”under the ICZN art. 74.6 cannot be more accepted because the initial description mentioned numerous specimens in the type series. That is why we selected a lectotype. Considering that the genus was based on taxa of subspecific rank, the authorship of the genus is kept for Koby (1907).

Thecosmilia Edwards & Haime, 1848

1848	*Thecosmilia* nov. gen. – Edwards & Haime, p. 468.
1965	*Thecosmilia* Edwards & Haime – Cuif, p. 530.
2002	*Thecosmilia* Edwards & Haime – Baron Szabo, p. 44.

Originally included species: *T. trichotoma* (Goldfuss, 1826).

Type species: *Lithodendron trichotomum* Goldfuss, 1826, by original monotypy (Edwards and Haime 1848, p. 468).

Status: Available and valid.

Thecosmilia trichotoma (Goldfuss, 1826)
Pl. 3, Figs 6–7

1826	*Lithodendron trichotomum* nov. sp. – Goldfuss, p. 45, pl. 13, fig. 6.
1965	*Thecosmilia trichotoma* (Goldfuss) – Cuif, p. 530 pl. 11, figs 1–2.
2002	*Thecosmilia trichotoma* (Goldfuss) – Baron Szabo, p. 44, pl. 27, figs 1–4.

Type species of *Thecosmilia.*

Originally included material: Goldfuss (1826, p. 45) did not precise the number of specimens in his type series. He figured only one specimen pl. 13, figs 6 and cited a single locality: Giengen.

Type material: a lectotype is designated here (IPB Goldfuss coll. N° 158) in order to clarify the taxonomic status of the species *Thecosmilia trichotoma* and of the genus of which it is the type species. It is figured in Baron Szabo 2002 pl.27, figs 1–4.

Remarks: A first attempt to designate a neotype was done by Cuif (1965: 530, pl. 11, figs 1–2). The corresponding specimen is housed at Paris under the reference number MNHN.F.R09988 but the designation does not completely fulfill the requested conditions especially article 75.3.6 and 75.3.7. More importantly, a syntype has been rediscovered by Baron-Szabo (2002) who mentioned that the specimen Goldfuss n°32 had an attached label with a handwriting attributed to Goldfuss himself. As the unique locality indicated by Goldfuss (1826) is Giengen, we consider that the syntype rediscovered comes from this locality. Consequently by applying the ICZN art. 75.8, this specimen again becomes the name-bearing type. Unfortunately this specimen has been designated as a “neotype” (Baron-Szabo 2002, p. 44) without any mention of the first attempt by Cuif (1965). This second so-called “neotype” is not more valid than the first one (ICZN art. 75.3.1, 2, 4, 6, 7 not fulfilled) and a neotype could not be chosen among the syntypes. For the latter reason a lectotype is designated herein.

Type locality: Upper Jurassic of Giengen (Germany).

Description of the lectotype: Dendroid/phaceloid colony with short trichotomous intracalicular increase not obvious on this sample. Infundibuliform calicular platform. The increase produce a plocoid stage in which the peritheca is made of costae. Radial elements are compact, straight to bent, bicuneiform, probably montlivaltioid costosepta. They are confluent during the plocoid stage. Radial symmetry transformed with torsion of septa and trichotomous budding. Axial fossa not really observable in this sample. Wall probably parathecal. No synapticule, no pali, no columella observed.

Calicular diameter = 9, 55 to 19, 45 mm
Number of septa=circa 43 to circa 60
Costal density = 6 to 7 costae per 5 mm
Trabecular density = 4 to 6 trabecules per 2 mm.

Polystylidiidae nov. fam.

Included genera: *Polystylidium* Fischer, 1965, (solitary) and *Thamnosmilia* Tomes, 1886 (phaceloid/dendroid).

Type genus: *Polystylidium* Fischer, 1965.

Diagnosis of the family: Wrinkled epitheca. Radial elements subcompact, sligthly attenuated but of a rather constant thickness (excluding ornamentation), flexuous septa, often in zigzag form, or even straight, never exsert. Radial elements are frequently joining in a typical pattern (Pl. 3, Fig. 1). Pores are wide openings not necessarily close to the inner edge. Septa are often shifted in direction on a short length on both sides of pores. Lateral faces ornamented with fine acute granules irregularly distributed.

Columella parietal, sublamellar.

Stratigraphy: This family is presently known only in the Bajocian–Bathonian interval.

Discussion: The genus *Polystylidium* was initially placed within the Ellipsosmiliidae Alloiteau 1957 by Fischer (1965). From the description given by Alloiteau (1957) it appears that in *Ellipsosmilia,* septa are compact. Nothing is said about the joining versus free pattern of septa. The morphology of septa is different in *Polystylidium*; a crucial point is that pores have been overlooked in the description of *Polystylidium* and they have a so peculiar distribution and shape in the whole set of Jurassic corals that they deserve the erection of a new family.

Polystylidium Fischer, 1965

1965 *Polystylidium* nov. gen. – Fischer, p. 584.

Type species: *Montlivaltia articulata* Fromentel and Ferry, 1869, p. 193, pl. 41, fig. 3, pl. 42, fig. 2 a–b; Original designation.

Status: Available and valid.

Diagnosis: solitary ceratoid Polystylidiidae.

Polystylidium articulatum
(Fromentel and Ferry, 1869)
Pl. 4, Figs 1–3

1869 *Montlivaltia articulata* nov. sp. – Fromentel & Ferry, p. 193, pl. 41, fig. 3, pl. 42, fig. 2 a–b.
1965 *Polystylidium articulatum* (Fromentel & Ferry) – Fischer, p. 584, figs 1–6.

Originally included material: Fromentel & Ferry described and measured 4 samples coming from Piette & Ferry collections.

Type material: Lectotype; MNHN.F. R50394 designated in Fischer 1965 p. 584. Specimens illustrated by Fischer 1965 are illustrated here (Pl. 4, Figs 1–3).

Type locality: Bathonian (Calcaires blancs) of Rumigny (Ardennes; France).

Thamnosmilia Tomes, 1886

1886 *Thamnosmilia* nov. gen – Tomes, p. 396.

Type species: *Thamnosmilia annulata* Tomes, 1886, p. 396, pl. 10, figs 7–9; Fixation by monotypy.

Status: Available and valid.

Diagnosis: Phaceloid/dendroid Polystylidiidae.

Thamnosmilia annulata Tomes 1886
Pl. 4, Figs 4–6

1886 *Thamnosmilia annulata* nov. sp. – Tomes, p. 396, pl. 10, figs 7–9.

Type material: Among syntypes NHMUK PI AZ R 10832, R 11576, R 11578 (Tomes 1886, p. 396) we select NHMUK PI AZ R 10832 as the lectotype.

Type locality: Oolite Marl of Leckhampton Hill (England).

Acknowledgements

It is a pleasure to thank W. Werner within this special issue in his honour. He welcomed one of us (BL) so nicely when he visited the Museum in München to work on the type material! We are also very thankful to J. Darrell who helped us with types of the UK and provided the photos of *Thamnosmilia*. Thanks also to Olivier Schmidt and Walter Etter for welcoming one of us (BL) in the collections of Basel and to Sandra Kaiser for her help in the Goldfuss collection in Bonn. We are especially thankful to K. Johnson for his remarks on the manuscript. We are also especially indebted to Markus Moser (Munich), a highly competent person in nomenclature. His input in this manuscript was so important that he should be associated as a real author. We also acknowledge the assistance of P. Bouchet (MNHN) and A. Dubois (MNHN) for generously sharing their opinion on the delicate nomenclatural issue about *Coenastrea.* For some photos, this work benefited from a grant of the French state managed by the Agence nationale de la Recherche via the programm “Investissements d’avenir” (ANR-11-INBS-0004-RECOLNAT).”

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