



主要珊瑚化石类群的中译名：沿革与建议*

王光旭^{1**} 崔雨浓^{1,2}

1 中国科学院南京地质古生物研究所, 现代古生物学和地层学国家重点实验室, 南京 210008;

2 中国科学院大学, 北京 100049

提要 Rugosa、Tabulata和Scleractinia是显生宙3个主要的珊瑚化石类群, 它们的中文译名曾繁杂不一, 至今未有一致意见。本文在追溯这些类群(及其同名)译名沿革的基础上, 综合考虑它们的出处、准确性和接受度等因素, 提出使用建议。Rugosa应译作目前广泛使用的“皱纹珊瑚”, 而非少见的“皱珊瑚”“皱壁珊瑚”等, 亦不宜译为意思不对应的“四射珊瑚”(因后者对应的是Tetracoralla、Tetracorallia或Tetraseptata, 均属Rugosa的晚出同名, 已被国际学界长期弃用)。Tabulata应译为由来已久(19世纪末)且影响广泛的“床板珊瑚”, 而非出现较晚(20世纪60年代)、使用相对较少的“横板珊瑚”, 更非鲜为人知的“牀板珊瑚”和“板珊瑚”等。Scleractinia应译作使用早、接受度极高的“石珊瑚”, 而非不常见的“硬珊瑚”。

关键词 中译名 珊瑚化石 皱纹珊瑚 床板珊瑚 石珊瑚

中文引用 王光旭, 崔雨浓, 2022. 主要珊瑚化石类群的中译名: 沿革与建议. 古生物学报, 61(4): 664–671. DOI: 10.19800/j.cnki.aps.2022035

英文引用 Wang Guang-xu, Cui Yu-nong, 2022. Chinese names of major fossil coral groups: traditional and recommended usage. Acta Palaeontologica Sinica, 61(4): 664–671. DOI: 10.19800/j.cnki.aps.2022035

Chinese names of major fossil coral groups: traditional and recommended usage

WANG Guang-xu¹, CUI Yu-nong^{1,2}

1 State Key Laboratory of Palaeobiology and Stratigraphy, Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, Nanjing 210008, China;

2 University of Chinese Academy of Sciences, Beijing 100049, China

Abstract Rugosa, Tabulata and Scleractinia are the three major fossil coral groups in the Phanerozoic. However, Chinese translations of their names are inconsistent. In this paper, following an introduction of the concepts of the three groups, the history of their Chinese names is reviewed, and their recommended usages are discussed.

Rugosa ranges from the Middle Ordovician through the Permian, and is typified by serial septal insertion in four quadrants. This taxon was established by Milne-Edwards and Haime in 1850. Therefore, Rugosa has priority over Tetracorallia Haeckel, 1866, Tetracoralla Haeckel, 1870, and Tetraseptata Grabau, 1913, names subsequently introduced based on its distinctive mode of septal insertion. Chinese names of this fossil group first appeared in Japanese literature at the end of the nineteenth and the beginning of the twentieth century, with Tetracoralla being translated as “四射珊瑚” or “四放珊瑚”, and Rugosa as “褶襞珊瑚” or “皱皮珊瑚”. Other translations introduced later by Chinese

收稿日期: 2022-07-14; 改回日期: 2022-10-13; 录用日期: 2022-10-27

* 国家自然科学基金(42072007)和中国科学院青年促进会(2020311)共同资助。

** 通讯作者: 王光旭, 副研究员; e-mail: gxwang@nigpas.ac.cn

authors include “皱纹珊瑚”, “皱壁珊瑚”, and “皱珊瑚”. Among all these translations, “四射珊瑚” and “皱纹珊瑚” are presently accepted and most widely used. But “皱纹珊瑚” is preferred herein due to the obsolescence of the terms *Tetracorallia*, *Tetracoralla*, and *Tetraseptata*, and their translation “四射珊瑚”.

Tabulata was the other dominant coral group in the Paleozoic, ranging also from the Middle Ordovician to the end of the Permian. First proposed by Milne-Edwards and Haime in 1850, the name *Tabulata* takes priority over *Aseptata* Grabau, 1913. Its earliest Chinese translation was derived from the Japanese kanji name “床板珊瑚” at the end of the nineteenth century. Subsequent names translated by Chinese coral workers include “牀板珊瑚”, “横板珊瑚”, and “板珊瑚”. Among them, both “床板珊瑚” and “横板珊瑚” are still commonly used. However, we prefer the former due to its much longer history and more popularity. It is noteworthy that some authors used the name *Aseptata* and its translation “无射珊瑚”, and some adopted the concept of *Tabulatomorpha* Sokolov, 1971 and its translations of “床板珊瑚形珊瑚” and “床板珊瑚型珊瑚”. However, none of them has received much attention.

Scleractinia, one of the major reef-building groups, first occurred in the Middle Triassic and persists to the present day. Forms now assigned to *Scleractinia* were initially part of *Madreporaria* Milne-Edwards and Haime, 1857. However, it was not until 1900 when Bourne introduced the name *Scleractinia*, and 1943 when Vaughan and Wells proposed its current concept. Two Chinese translations of the name *Scleractinia* have thus far been available, i.e., “石珊瑚” and “硬珊瑚”, with the former being more widely used and thus being recommended in this paper.

Key words Chinese translations, fossil corals, *Rugosa*, *Tabulata*, *Scleractinia*

1 前言

Rugosa、*Tabulata*和*Scleractinia*是显生宙3个主要的珊瑚化石类群,隶属于刺胞动物门(*Phylum Cnidaria*)珊瑚纲(Class *Anthozoa*)。这些类群的名字常见于中文学术期刊和科普出版物,但它们的译名繁杂不一,给读者造成了不便甚至误解。本文在澄清这3个化石类群概念、追溯其中译名沿革的基础上,综合考虑这些译名的出处、准确性和接受度等因素,提出使用建议,以期达成更广泛的共识。

2 *Rugosa*

2.1 概念

Rugosa (或*rugose corals*、*rugosans*),一般被归作珊瑚纲的一个亚纲或目,生存于中奥陶世至二叠纪末(Hill, 1981; Scrutton, 1997)。它由Milne-Edwards和Haime (1850)作为一个单独的类群提出,后因其隔壁具有四分排列的特点又被称为*Tetracorallia* Haeckel, 1866、*Tetracoralla* Haeckel, 1870或*Tetraseptata* Grabau, 1913。Hill (1956)在经典的《古无脊椎动物论丛——F部分》(下文简称《论丛》)中,将*Tetracorallia*、*Tetracoralla*和*Tetraseptata*全部列为*Rugosa*的晚出同名,并在此后新的《论丛》版本里(Hill, 1981)重申了这一观点,得到学界

的广泛认同。

2.2 译名沿革与建议

这类珊瑚的汉字译名最初由日本学者译出,最早似见于横山又次郎(1894)所著的《化石学教科书(上卷)》。横山氏当时采用的是*Tetracoralla*,因此相应译之为“四射珊瑚”。这一译名在他此后的著作中得到沿用(如:横山又次郎, 1894, 1903, 1907, 1918, 1920),影响甚大。也有学者将*Tetracoralla*译作“四放珊瑚”(如:饭岛魁 1918)。相比之下,*Rugosa*在日文文献里鲜见,被译为“褶襞珊瑚”(石川成章, 1903)或“皱皮珊瑚”(饭岛魁, 1918)。

在我国,从清末民初直至1956年,“四射珊瑚”一名盛行。原因有二:首先这与当时日译教科书或大众读物的广泛影响有关,这些著作中均使用了*Tetracoralla*及其译名“四射珊瑚”(如:张作人, 1927, 1930; 毛文麟, 1936)。其次,国内学界普遍采用的*Tetraseptata* Grabau, 1913,也译作“四射珊瑚”。该译名由孙云铸在Grabau (1922)的《中国古生代之珊瑚化石》中文节译稿中提出(他同时把*Tetracorallia*改译为“四珊瑚类”,以示区别)。相反,*Rugosa*因当时未获学术界普遍认可而鲜被论及。据查证,丁道衡(1939)曾提到此名,但未给出中译名;杜亚泉等(1932)编纂的《动物学大辞典》中将*Rugosa*译为“皱珊瑚类”。

自Hill (1956)的《论丛》出版后,国际学界普遍采用 *Rugosa*。在国内, *Tetracoralla* (或 *Tetracorallia*)不乏使用者,被译为“四射珊瑚”,但主要见于古生物学教科书(如:郝诒纯、杨式溥, 1957; 杨遵仪等, 1957; 陈旭等, 1961; 杨遵仪、郝诒纯, 1980; 何心一、徐桂荣, 1987, 1993; 范方显, 1994; 童金南、殷鸿福, 2007; 朱才伐, 2018; 童金南, 2021; 杜远生等, 2022); 但 *Rugosa* 的使用无疑是目前最为广泛的,一开始被相应译为“皱纹珊瑚”(俞建章, 1962, 1963)、“皱壁珊瑚”(秦洪宾, 1962)和“皱珊瑚”(曹宣铎、林宝玉, 1982)等。其中的“皱纹珊瑚”在此后影响最大(俞建章等, 1983; 门凤岐、赵祥麟, 1993; 林宝玉等, 1995; 何原相, 1996; 金淳泰等, 1997; 范影年等, 2003; 童金南、殷鸿福, 2007; 姜红霞等, 2013; 陈建强等, 2019; 王光旭等, 2020)、“皱壁珊瑚”(张永辂等, 1988; 范方显, 1994)和“皱珊瑚”(杨遵仪、郝诒纯, 1980)极为少见,其他译名(如“褶皱珊瑚”“皱皮珊瑚”等)则完全不被注意。与此同时,“四射珊瑚”尽管是 *Tetracorallia* (或 *Tetracoralla*、*Tetraseptata*)所对应的译名,但因使用习惯之故亦被一些学者用作 *Rugosa* 的译名(如:王鸿祯等, 1955, 1989; 俞昌民, 1956, 2010; 何心一、唐兰, 2013; 廖卫华、梁昆, 2020; 王小娟、杜光映, 2020)。

鉴于上述事实,本文建议采用国际上目前普遍采用的 *Rugosa*, 而非其晚出同义的 *Tetracorallia* (或 *Tetracoralla*、*Tetraseptata*), 后者不宜“喧宾夺主”; *Rugosa* 的译名应选择目前广泛使用的“皱纹珊瑚”, 而非其他(如“皱珊瑚”或“皱壁珊瑚”等), 更不宜译作意思不对应的“四射珊瑚”, 以避免不必要的误解。

3 Tabulata

3.1 概念

Tabulata (或 *tabulate corals*、*tabulates*), 与 *Rugosa* 类似, 一般也被视作珊瑚纲的一个亚纲或目, 出现于中奥陶世、灭绝于二叠纪末(Hill, 1981; Scrutton, 1997; Elias *et al.*, 2020)。Grabau (1913)曾创名 *Aseptata* 代表这类珊瑚, 但在此后两版的《论丛》

里(Hill and Stumm, 1956; Hill, 1981)将均 *Aseptata* 列为 *Tabulata* 的同名, 得到广泛采纳。此外, Sokolov (1971)提出 *Tabulatomorpha* 的概念, 包含了 *Tabulata*、*Heliolitoidea* 和 *Chaetetida*, 但响应者寥寥。

3.2 译名沿革与建议

Tabulata 的汉字译名亦由日本学者译出, 最早亦出现在横山又次郎(1894)的《化石学教科书(上卷)》, 被译作“床板珊瑚”。该译名在此后得到沿用(横山又次郎, 1896, 1903, 1907, 1918, 1920; 石川成章, 1903)。

我国在1956年之前曾出现过 *Tabulata* 的不同译法。在教科书或大众出版物中, 被称作“床板珊瑚”(张作人, 1927, 1930)或“板珊瑚”(如: 杜亚泉等, 1932; 毛文麟, 1936)。但在学术界, 除少数学者(如: 丁道衡, 1937)采用 *Tabulata* 及译名“板珊瑚”外, 多数学者(如: Chi, 1931, 1933; Huang, 1932; Yu, 1933)使用了 *Aseptata* Grabau, 1913 及译名“无射珊瑚”(Grabau, 1922)。受此影响, 有学者(王鸿祯等, 1955)直接将 *Tabulata* 译为“无射珊瑚”。

Hill和Stumm (1956)的《论丛》出版后, *Tabulata* 被普遍采用, *Aseptata* (及其译名)自此不再被提及和使用。*Tabulata* 对应的译名最初繁杂不一, 包括“床板珊瑚”(俞昌民, 1956; 乐森璋, 1959)、“板珊瑚”(郝诒纯、杨式溥, 1957)、“板状珊瑚”(杨遵仪等, 1957)和“横板珊瑚”(陈旭等, 1961)等。其中, “床板珊瑚”此后在学界得到广泛使用, 影响最大(如: 俞昌民等, 1964; 王宝瑜, 1977; 林宝玉等, 1988; 姜红霞等, 2013; 王光旭等, 2011; 韩小梦等, 2017)。“横板珊瑚”则多见于古生物学教科书(如: 杨遵仪、郝诒纯, 1980; 张永辂等, 1988; 何心一等, 1987, 1993; 门凤岐、赵祥麟, 1993; 范方显, 1994; 童金南、殷鸿福, 2007; 朱才伐, 2018; 陈建强等, 2019; 童金南, 2021; 杜远生等, 2022), 但在学术论著中较为少见(如: 王鸿祯等, 1989)。相比之下, 其他译名则全然不见。

此外, 也有一些学者曾使用 Sokolov (1971) 所提出的 *Tabulatomorpha*, 相应译之为“床板珊瑚形珊瑚”(如: 林宝玉等, 1988; 严幼因等, 1991)或“床板珊瑚型珊瑚”(如: 邓占球、郑春子, 2000), 但如

今已不多见。

上述事实表明“床板珊瑚”一名由来已久(19世纪末)且影响广泛,同时考虑到“床板”二字可形象地表达珊瑚虫栖居之义,本文认为把“床板珊瑚”作为Tabulata的译名是合适的。

4 Scleractinia

4.1 概念

Scleractinia (或 scleractinian corals、scleractinians), 一般被归为四射珊瑚亚纲的一个目,代表该亚纲中具钙质外骨骼的类型,自中三叠世出现后延续至今(如: Wells, 1956; Daly *et al.*, 2007)。这类珊瑚在19世纪曾和Rugosa、Tabulata等一起被归入Madreporaria Milne-Edwards and Haime, 1857。Haeckel (1896)将Madreporaria的含义限定为四射珊瑚中具钙质外骨骼的类型,和其他诸如海葵、黑珊瑚等被共同归入四射珊瑚亚纲。不过, Vaughan和Wells (1943)用Scleractinia Bourne, 1900来代表四射珊瑚中具骨骼的类型,而不建议用Madreporaria作为正式的分类学术语使用。他们的观点此后得到学界普遍认同(如Wells, 1956; Daly *et al.*, 2007)。

也就是说,尽管中、新生代四射珊瑚化石类群多属Scleractinia,但它们的含义显然不相当,即Scleractinia仅代表四射珊瑚中具钙质外骨骼的类型。因此,有些资料(如: 廖卫华、李璋荣, 1979, 2页; 廖卫华、夏金宝, 1994, 1页; 廖卫华、邓占球, 2013, 2页)将四射珊瑚表述为Scleractinia的别称有待商榷。

4.2 译名沿革与建议

如前所述,这类珊瑚最初被归于Madreporaria(广义),而后又被归称Haeckel (1896)提出的Madreporaria狭义概念,而目前广泛使用的Scleractinia Bourne, 1900长期得不到认可。日本学者最初在翻译这些术语时,仅译出了Madreporaria(广义),称作“石珊瑚”(如横山又次郎, 1894, 1907, 1920; 饭岛魁, 1918)。直至19世纪40年代,随着Scleractinia概念的普及,对应的译名开始出现,一般被译为“石珊瑚”(如: 杨遵仪等, 1957;

吴望始, 1975; 邹仁林等, 1975; 廖卫华、李璋荣, 1979; 邹仁林, 2001; 刘瑞玉, 2008; 戴昌凤、洪圣雯, 2009; 廖卫华、邓占球, 2013; 黄林韬等, 2020; 黄晖等, 2021),但也被少数学者(如: 段丽兰, 1983; 张永轲等, 1988; 门凤岐、赵祥麟, 1993; 范方显, 1994)译为“硬珊瑚”。考虑到“石珊瑚”使用最为广泛,本文建议把它作为Scleractinia的译名。

5 结论

本文得出如下三点结论:

1) Rugosa应译作出现早、影响大的“皱纹珊瑚”,而非其他不为人熟知的译名(如“褶皱珊瑚”“皱皮珊瑚”“皱珊瑚”和“皱壁珊瑚”等);同时,为避免不必要的误解,不建议将Rugosa译为Tetracoralla (Rugosa的晚出同名)所对应的“四射珊瑚”。

2) Tabulata应译为由来已久(19世纪末)、且影响广泛的“床板珊瑚”,而非出现晚(20世纪60年代)且使用少的“横板珊瑚”,更非鲜见的“牀板珊瑚”和“板珊瑚”等。

3) Scleractinia应译作出现早、接受度极高的“石珊瑚”,而非不常见的“硬珊瑚”。

致谢 中国科学院南京地质古生物研究所俞昌民研究员和廖卫华研究员、梁昆副研究员、一位匿名评审人和期刊编辑提出修改建议,特此一并致谢!

参考文献 (References)

- 曹宣铎, 林宝玉, 1982. 皱珊瑚目. 见: 地质矿产部西安地质矿产研究所(编), 西北地区古生物图册——陕甘宁分册1, 前寒武纪-早古生代部分. 北京: 地质出版社. 12-50.
- 陈建强, 何心一, 李全国, 2019. 古生物学教程. 北京: 地质出版社. 1-291.
- 陈旭, 张永轲, 夏树芳, 罗宝信, 1961. 古生物学. 北京: 人民教育出版社. 1-424.
- 戴昌凤, 洪圣雯, 2009. 台湾石珊瑚志I——复杂类群. 台北: 台湾大学出版社. 1-172.
- 邓占球, 1999. 新疆北部一些古生代床板珊瑚, 新疆北部古生代化石. 南京: 南京大学出版社. 187-269.
- 邓占球, 郑春子, 2000. 吉林二道沟组的床板珊瑚型珊瑚. 古生物学报, 39: 217-229.
- 丁道衡, 1937. 解决一个所谓“古杯珊瑚”的统系纠纷. 地质论评, 2: 223-232.

- 丁道衡, 1939. 关于有盖珊瑚的一点讨论. 地质论评, 4: 253-258.
- 杜亚泉, 杜就田, 吴德亮, 凌昌焕, 许家庆, 1932. 动物学大辞典. 上海: 商务印书馆, 1-3175.
- 杜远生, 童金南, 何卫红, 袁爱华, 2022. 古生物地史学概论(第三版). 武汉: 中国地质大学出版社, 1-395.
- 段丽兰, 1983. 川西北晚三叠世卡尼期的硬珊瑚. 成都地质学院学报, 10: 48-58.
- 饭岛魁, 1918. 动物学提要. 东京: 大日本图书, 1-950.
- 范方显, 1994. 古生物学教程. 东营: 石油大学出版社, 1-417.
- 范影年, 俞学光, 何原相, 2003. 中国西藏与邻区晚古生代皱纹珊瑚及其生物古地理. 长沙: 湖南科学技术出版社, 1-679.
- 韩小梦, 张新勇, 杨宝忠, 孙军刚, 周发侨, 赵鹏飞, 王庆同, 2017. 新疆柯坪地区奥陶纪印干组珊瑚化石的发现及意义. 地质科技情报, 36: 13-19.
- 郝诒纯, 杨式溥(译), 1957. 古生物学教程(第1分册), 古无脊椎动物学. 北京: 地质出版社, 1-350.
- 何心一, 唐兰, 2013. 论扬子区中晚奥陶世和志留纪四射珊瑚的分类及一些科属的演化. 古生物学报, 52: 35-50. DOI: 10.19800/j.cnki.aps.2013.01.003
- 何心一, 徐桂荣, 1987. 古生物学教程. 北京: 地质出版社, 1-440.
- 何心一, 徐桂荣, 1993. 古生物学教程. 北京: 地质出版社, 1-255.
- 何原相, 1996. 全球早泥盆世皱纹珊瑚古地理. 特提斯地质, 20: 129-149.
- 横山又次郎, 1894. 化石学教科书(上卷). 东京: 富山房, 1-214.
- 横山又次郎, 1896. 地质学教科书. 东京: 富山房, 1-363.
- 横山又次郎, 1903. 地质学教科书. 东京: 富山房, 1-308.
- 横山又次郎, 1907. 古生物学. 东京: 富山房, 1-472.
- 横山又次郎, 1918. 前世界史. 东京: 早稻田大学出版部, 1-670.
- 横山又次郎, 1920. 古生物学纲要. 东京: 早稻田大学出版部, 1-657.
- 黄晖, 江雷, 袁涛, 刘胜, 2021. 南沙群岛造礁石珊瑚. 北京: 科学出版社, 1-244.
- 黄林韬, 黄晖, 江雷, 2020. 中国造礁石珊瑚分类厘定. 生物多样性, 28: 515-523.
- 姜红霞, 包洪平, 孙六一, 吴亚生, 刁建波, 2013. 鄂尔多斯盆地南缘奥陶系生物礁的珊瑚化石及其古生态. 古生物学报, 52: 243-255. DOI: 10.19800/j.cnki.aps.2013.02.009
- 金淳泰, 万正权, 陈继荣, 1997. 上扬子地台西北部志留系研究新进展. 特提斯地质, 21: 142-181.
- 廖卫华, 邓占球, 2013. 中国中生代石珊瑚化石. 合肥: 中国科学技术大学出版社, 1-224.
- 廖卫华, 梁昆, 2020. 贵州省惠水县王佑中泥盆世晚期的四射珊瑚(二). 古生物学报, 59: 179-191. DOI: 10.19800/j.cnki.aps.2020.02.05
- 林宝玉, 池永一, 金淳泰, 李耀西, 严幼因, 1988. 古生代珊瑚专著, 床板珊瑚形珊瑚(一). 北京: 地质出版社, 1-467.
- 林宝玉, 许寿永, 贾慧贞, 郭胜哲, 欧阳萱, 王曾吉, 丁蕴杰, 曹宣铎, 严幼因, 陈华成, 1995. 皱纹珊瑚与异形珊瑚. 北京: 地质出版社, 1-790.
- 刘瑞玉, 2008. 中国海洋生物名录. 北京: 科学出版社, 1-1267.
- 毛文麟, 1936. 化石生物学. 上海: 商务印书馆, 1-86.
- 门凤岐, 赵祥麟, 1993. 古生物学导论. 北京: 地质出版社, 1-260.
- 秦洪宾, 1962. 下石炭纪皱壁珊瑚一新属及其意义. 成都地质学院学报, 58-61.
- 石川成章, 1903. 地球发达史. 东京: 大日本图书, 1-255.
- 童金南, 2021. 古生物学(第二版). 北京: 高等教育出版社, 1-361.
- 童金南, 殷鸿福, 2007. 古生物学. 北京: 高等教育出版社, 1-421.
- 王宝瑜, 1997. 新疆昆其布拉克地区床板珊瑚、日射珊瑚新资料. 新疆地质, 15: 34-41.
- 王光旭, 邓占球, 詹仁斌, 2011. 川东华蓥山志留系兰多维列统白云庵组的珊瑚动物群. 古生物学报, 50: 450-469. DOI: 10.19800/j.cnki.aps.2011.04.004
- 王光旭, 詹仁斌, 王怿, 黄冰, 吴荣昌, 陈清, 唐鹏, 魏鑫, 方翔, 马俊业, 燕夔, 袁文伟, 周航行, 闫冠州, 张一弛, 崔雨浓, 2020. 中国志留纪地层及标志化石图集. 杭州: 浙江大学出版社, 1-365.
- 王鸿祯, 何心一, 陈建强, 1989. 中国古生代珊瑚分类演化及生物古地理. 北京: 科学出版社, 1-391.
- 王鸿祯, 俞建章, 乐森瑛, 1955. 珊瑚纲. 见: 陈旭, 丁道衡, 王鸿祯, 俞建章, 乐森瑛, 孙云铸, 许杰, 穆恩之, 田奇瑛, 杨敬之(编), 中国标准化石(无脊椎动物)第一分册. 北京: 地质出版社, 16-49.
- 王小娟, 杜光映, 2020. 论中国二叠纪四射珊瑚 *Liangshanophyllum*. 古生物学报, 59: 215-222. DOI: 10.19800/j.cnki.aps.2020.02.08
- 吴望始, 1975. 珠穆朗玛峰地区的珊瑚化石, 见: 珠穆朗玛峰地区科学考察报告 古生物(第一分册). 北京: 科学出版社, 83-128.
- 严幼因, 张松林, 林宝玉, 池永一, 武耀诚, 1991. 床板珊瑚形珊瑚属种鉴定的微机处理系统. 北京: 地质出版社, 1-140.
- 杨绳武, 金淳泰, 周希云, 1978. 床板珊瑚亚纲. 见: 贵州地层古生物工作队(编), 西南地区古生物图册 贵州分册 1寒武纪-泥盆纪. 北京: 地质出版社, 161-251.
- 杨遵仪, 郝诒纯, 1980. 古生物学教程. 北京: 地质出版社, 1-521.
- 杨遵仪, 郝诒纯, 陈国达, 1957. 古生物学教程. 北京: 地质出版社, 1-498.
- 俞昌民, 1956. 甘肃酒泉盆地西北部志留纪珊瑚化石. 古生物学报, 4: 599-620. DOI: 10.19800/j.cnki.aps.1956.04.008
- 俞昌民, 2010. 广西泥盆纪早埃姆斯期郁江组 *Heterophaulactis* Yu, 1974 的再研究(英文). 古生物学报, 49: 29-43. DOI: 10.19800/j.cnki.aps.2010.01.003
- 俞建章, 1962. 石炭二叠纪一些皱纹珊瑚的订正. 长春地质学院庆祝建院十周年科学论文集, 1-11.
- 俞建章, 1963. 论述泡沫内沟珊瑚与六射珊瑚的关系并建立中珊瑚目与泡沫内沟珊瑚科. 古生物学报, 11: 307-318. DOI: 10.19800/j.cnki.aps.1963.03.001
- 俞建章, 林英翎, 时言, 黄柱熙, 俞学光, 1983. 石炭纪二叠纪珊瑚. 吉林: 吉林人民出版社, 1-357.
- 乐森瑛, 1959. 贵州奥陶纪珊瑚化石的新资料. 北京大学学报(自然科学), 4: 395-418. DOI: 10.13209/j.0479-8023.1959.048
- 张永铭, 刘冠邦, 边立曾, 1988. 古生物学(上). 北京: 地质出版社, 1-363.
- 张作人, 1927. 化石. 上海: 商务印书馆, 1-101.
- 张作人, 1930. 化石. 上海: 商务印书馆, 1-85.
- 周瑞, 严恩增, 1984. 古生物学. 北京: 地质出版社, 1-235.
- 朱才伐, 2018. 古生物学基础教程. 北京: 中国石化出版社, 1-189.
- Bourne G C, 1900. Anthozoa. In: Lankester E R (ed.), Treatise on

- Zoology Vol. 2. London: A. & C. Black. 1–84.
- Cao Xuan-duo, Lin Bao-yu, 1982. Rugosa. *In*: Xi'an Institute of Geology and Mineral Resources (ed.), Palaeontological Atlas of Northwest China, Shaanxi-Gansu-Ningxia Volume, Part 1, Precambrian and Early Palaeozoic. Beijing: Geological Publishing House. 12–50 (in Chinese).
- Chen Jian-qiang, He Xin-yi, Li Quan-guo, 2019. Text-book of Palaeontology. Beijing: Geological Publishing House. 1–291 (in Chinese).
- Chen Xu, Zhang Yong-luo, Xia Shu-fang, Luo Bao-xin, 1961. Palaeontology. Beijing: People's Education Press. 1–424 (in Chinese).
- Chi Y S (Ji Rong-sen), 1931. Weiningian (Middle Carboniferous) corals of China. *Palaeontologia Sinica, Series B*, 12: 1–70.
- Chi Y S (Ji Rong-sen), 1933. Lower Carboniferous syringoporas of China. *Palaeontologia Sinica, Series B*, 12: 1–48.
- Dai Chang-feng, Hong Sheng-wen, 2009. Scleractinia Fauna of Taiwan, Part 1, The Complex Group. Taipei: National Taiwan University. 1–172 (in English with Chinese title).
- Daly M, Brugler M R, Cartwright P, Collins A G, Dawson M N, Fautin D G, France S C, McFadden C S, Opresko D M, Rodriguez E, Romano S L, Stake J L, 2007. The phylum Cnidaria: A review of phylogenetic patterns and diversity 300 years after Linnaeus. *Zootaxa*, 1668: 127–182.
- Deng Zhan-qiu, 1999. Some Palaeozoic tabulate corals from northern Xinjiang. *In*: Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences (ed.), Palaeozoic Fossils of Northern Xinjiang, China. Nanjing: Nanjing University Press. 187–269 (in Chinese with English summary).
- Deng Zhan-qiu, Zheng Chun-zi, 2000. Tabulatormorphic corals from the Erhtaokou Formation of Jilin Province. *Acta Palaeontologica Sinica*, 39: 217–229 (in Chinese with English abstract).
- Du Ya-quan, Du Jiu-tian, Wu De-liang, Ling Chang-huan, Xu Jia-qing, 1932. The Comprehensive Dictionary of Zoology. Shanghai: The Commercial Press. 1–3175 (in Chinese).
- Du Yuan-sheng, Tong Jin-nan, He Wei-hong, Yuan Ai-hua, 2022. Introduction to Palaeontology and Historical Geology (Third Edition). Wuhan: China University of Geosciences Press. 1–395 (in Chinese).
- Duan Li-lan, 1983. Some Late Triassic (Carinian) Scleractinia from Northwest Sichuan. *Journal of Chengdu College of Geology*, 10: 48–58 (in Chinese with English abstract).
- Elias R J, Lee D J, Pratt B R, 2020. The “earliest tabulate corals” are not tabulates. *Geology*, 49: 304–308.
- Fan Fang-xian, 1994. Text-book of Palaeontology. Dongying: China University of Petroleum Press. 1–417 (in Chinese).
- Fan Ying-nian, Yu Xue-guang, He Yuan-xiang, 2003. The Late Palaeozoic Rugose Corals of Xizang (Tibet) and Adjacent Regions and their Palaeobiogeography. Changsha: Hunan Science and Technology Press. 1–679 (in Chinese).
- Grabau A W, 1913. Principles of Stratigraphy. New York: A. G. Seiler and Company. 1–1185. DOI: 10.5962/bhl.title.15101
- Grabau A W, 1922. Palaeozoic corals of China. *Palaeontologia Sinica, Series B*, 2: 1–76.
- Haeckel E, 1866. *Generelle Morphologie der Organismen: v. 2, Allgemeine Entwicklungsgeschichte der Organismen*. G. Berlin: Reimer. 1–462.
- Haeckel E, 1870. *Natürliche Schöpfungsgeschichte*, 2nd edition. G. Berlin: Reimer. 1–688.
- Haeckel E, 1896. *Systematische Phylogenie. Entwurf eines natürlichen Systems der Organismen auf Grund ihrer Stammesgeschichte. 2, Systematische Phylogenie der wirbellosen Tiere*. G. Berlin: Reimer. 1–720.
- Han Xiao-meng, Zhang Xin-yong, Yang Baozhong, Sun Jun-gang, Zhou Fa-qiao, Zhao Peng-fei, Wang Tong-qing, 2017. Discovery and geological significance of the coral fossils of Yingan Formation in Keping, Xinjiang. *Geological Science and Technology Information*, 36: 13–19 (in Chinese with English abstract). DOI: 10.19509/j.cnki.dzq.2017.0202
- Hao Yi-chun, Yang Shi-pu, 1957. Text-book of Palaeontology, Volume 1, Invertebrate Palaeontology. Beijing: Geological Publishing House. 1–350 (in Chinese).
- He Xin-yi, Tang Lan, 2013. Classification and evolutionary trends of Middle Ordovician to Silurian rugosa from the Yangtze Region. *Acta Palaeontologica Sinica*, 52: 35–50 (in Chinese with English abstract). DOI: 10.19800/j.cnki.aps.2013.01.003
- He Xin-yi, Xu Gui-rong, 1987. Text-book of Palaeontology. Beijing: Geological Publishing House. 1–440 (in Chinese).
- He Xin-yi, Xu Gui-rong, 1993. Text-book of Palaeontology. Beijing: Geological Publishing House. 1–255 (in Chinese).
- He Yuan-xiang, 1996. Palaeogeography of the Early Devonian rugose corals in the world. *Tethyan Geology*, 20: 129–149 (in Chinese with English abstract).
- Hill D, 1956. Rugosa. *In*: Moore R C (ed.), *Treatise on Invertebrate Paleontology, Part F. Boulder, Colorado and Lawrence: Geological Society of America and University of Kansas Press*. 233–324.
- Hill D, 1981. Rugosa and Tabulata. *In*: Teichert C (ed.), *Treatise on Invertebrate Paleontology. Coelenterata, Part F, Supplement 1. Boulder, Colorado and Lawrence, Kansas: The Geological Society of America and The University of Kansas*. 1–762.
- Hill D, Stumm E C, 1956. Tabulata. *In*: Moore R C (ed.), *Treatise on Invertebrate Paleontology, Part F. Boulder, Colorado and Lawrence: Geological Society of America and University of Kansas Press*. 444–477.
- Huang Hui, Jiang Lei, Yuan Tao, Liu Sheng, 2021. Hermatypic Scleractinian Corals of Nansha Islands. Beijing: Science Press. 1–244 (in Chinese).
- Huang Ji-qing (Huang T K), 1932. Permian corals of southern China. *Palaeontologia Sinica, Series B*, 8: 1–163.
- Huang Lin-tao, Huang Hui, Jiang Lei, 2020. A revised taxonomy for Chinese hermatypic corals. *Biodiversity Science*, 28: 515–523 (in Chinese with English abstract). DOI: 10.17520/biods.2019384
- Iijima I, 1918. *A manual of Zoology*. Tokyo: Dainippon Tosho. 1–950 (in Japanese).
- Ishikawa S, 1903. *Earth History*. Tokyo: Dainippon Tosho. 1–255 (in Japanese).

- Jiang Hong-xia, Bao Hong-ping, Sun Liu-yi, Wu Ya-sheng, Diao Jian-bo, 2013. Tabulate and rugose corals from the Ordovician reefs in the southern edge of the Ordos Basin and their paleoecology significance. *Acta Palaeontologica Sinica*, 52: 243–255 (in Chinese with English abstract). DOI: 10.19800/j.cnki.aps.2013.02.009
- Jin Chun-tai, Wan Zheng-quan, Chen Ji-rong, 1997. Recent progress in the research of the Silurian System on the northwestern margin of the Upper Yangtze Platform. *Tethyan Geology*, 21: 142–181 (in Chinese with English abstract).
- Liao Wei-hua, Deng Zhan-qiu, 2013. Mesozoic Scleractinian Corals of China, Hefei: University of Science and Technology of China Press. 1–224 (in Chinese).
- Liao Wei-hua, Liang Kun, 2020. Givetian (Devonian) rugose corals from Wangyou, Huishui, Guizhou (2). *Acta Palaeontologica Sinica*, 59: 179–191 (in Chinese with English abstract). DOI: 10.19800/j.cnki.aps.2020.02.05
- Lin Bao-yu, Chi Yong-yi, Jin Chun-tai, Li Yao-xi, Yan You-yin, 1988. Monograph of Palaeozoic Corals: Tabulatomorphic Corals, Volume 1. Beijing: Geological Publishing House. 1–467 (in Chinese with English summary).
- Lin Bao-yu, Xu Shou-yong, Jia Hui-zhen, Guo Sheng-zhe, Ouyang Xuan, Wang Zeng-ji, Ding Yun-jie, Cao Xuan-duo, Yan You-yin, Chen Hua-cheng, 1995. Monograph of Palaeozoic Corals Rugosa and Heterocorallia. Beijing: Geological Publishing House. 1–790 (in Chinese with English abstract).
- Liu Rui-yu, 2008. Checklist of Marine Biota of China Seas. Beijing: Science Press. 1–1267 (in Chinese).
- Mao Wen-lin, 1936. Palaeontology. Shanghai: The Commercial Press. 1–86 (in Chinese).
- Men Feng-qi, Zhao Xiang-lin, 1993. Introduction to Palaeontology. Beijing: Geological Publishing House. 1–260 (in Chinese).
- Milne-Edwards H, 1857. Histoire Naturelle des Coralliaires, Volumes 1, 2. Paris: Roret. 1–959.
- Milne-Edwards H, Haime J, 1850. A Monograph of the British Fossil Corals. Part I. Introduction; Corals from the Tertiary and Cretaceous Formations. Palaeontographical Society Monograph, i–ixxxv, 1–72, pls. 1–11.
- Qin Hong-bin, 1962. A new Lower Carboniferous rugose coral genus and its significance. *Journal of Chengdu College of Geology*, 58–61 (in Chinese).
- Scrutton C T, 1997. The Palaeozoic corals, I: origins and relationships. *Proceedings of the Yorkshire Geological Society*, 51: 177–208.
- Sokolov B S, 1971. Uspekhi i zadachi izucheniya drevnikh kishhechnopolostnykh (vstupitelnoe slovo). In: Dubatolov V N (ed.), *Tabulyaty i geololitoidei paleozoya SSSR*, Tr. II Vsesoyuznogo simpoziuma po izucheniyu iskopaemykh korallov SSSR, pt. 1. Moscow: Nauka. 6–11 (in Russian).
- Ting T H (Ding Dao-heng), 1937. About the controversy over the systematic position of archaeocyathids. *Geological Review*, 2: 223–232 (in Chinese).
- Ting T H (Ding Dao-heng), 1939. A brief discussion on operculate corals. *Geological Review*, 4: 253–258 (in Chinese).
- Tong Jin-nan, 2021. Palaeontology (2nd edition). Beijing: Higher Education Press. 1–361 (in Chinese).
- Tong Jin-nan, Yin Hong-fu, 2007. Palaeontology. Beijing: Higher Education Press. 1–421 (in Chinese).
- Vaughan T W, Wells J W, 1943. Revision of the suborders, families, and genera of the Scleractinia. *Geological Society of America, Special Paper*, 44: 1–343.
- Wang Bao-yu, 1997. New data of Tabulata and *Heliolites* in Kongqibulak area of Xinjiang. *Xinjiang Geology*, 15: 34–41 (in Chinese with English abstract).
- Wang Gang-xu, Deng Zhan-qiu, Zhan Ren-bin, 2011. Coral fauna of the Baiyun'an Formation (Silurian, Llandovery) from Huaying Mountain, eastern Sichuan. *Acta Palaeontologica Sinica*, 50: 450–469 (in Chinese with English abstract). DOI: 10.19800/j.cnki.aps.2011.04.004
- Wang Gang-xu, Zhan Ren-bin, Wang Yi, Huang Bing, Wu Rong-chang, Chen Qing, Tang Peng, Wei Xin, Fang Xiang, Ma Jun-ye, Yan Kui, Yuan Wen-wei, Zhou Hang-hang, Yan Guan-zhou, Zhang Yi-chi, Cui Yu-nong, 2020. Silurian Stratigraphy and Index Fossils of China. Hangzhou: Zhejiang University Press. 1–365 (in Chinese).
- Wang Hong-zhen, He Xin-yi, Chen Jian-qiang, 1989. Classification, Evolution and Biogeography of the Palaeozoic Corals of China. Beijing: Science Press. 1–391 (in Chinese).
- Wang Hong-zhen, Yu Jian-zhang, Yue Sen-xun, 1955. Anthozoa. In: Chen Xu, Ding Dao-heng, Wang Hong-zhen, Yu Jian-zhang, Yue S S, Sun Yun-tao, Xu Jie, Mu En-zhi, Tian Qi-sui, Yang Jing-zhi (eds.), *Index fossils of China (Invertebrates)*. Beijing: Geological Publishing House. 16–49 (in Chinese).
- Wang Xiao-juan, Du Guang-ying, 2020. Discussion on Permian rugose coral *Liangshanophyllum* in China. *Acta Palaeontologica Sinica*, 59: 215–222 (in Chinese with English abstract). DOI: 10.19800/j.cnki.aps.2020.02.08
- Wells J W, 1956. Scleractinia. In: Moore R C (ed.), *Treatise on Invertebrate Paleontology, Part F. Boulder, Colorado and Lawrence: Geological Society of America and University of Kansas Press*. 328–444.
- Wu Wang-shi. 1975. Corals from Qomolangma region. In: *Scientific Investigation Report of Qomolangma Region, Paleontology (Volume 1)*. Beijing: Science Press. 83–128 (in Chinese).
- Yan You-yin, Zhang Song-lin, Lin Bao-yu, Chi Yong-yi, Wu Yao-cheng, 1991. The Microcomputer Processing System for the Identification of Tabulatomorphic Corals Genera-Species. Beijing: Geological Publishing House. 1–40 (in Chinese).
- Yang Sheng-wu, Jin Chun-tai, Zhou Xi-yun, 1978. Subclass Tabulata. In: Guizhou Provincial Work Team of Stratigraphy and Palaeontology (ed.), *Palaeontological atlas of Southwest China, Guizhou Volume, Part 1*. Beijing: Geological Publishing House. 161–251 (in Chinese).
- Yang Zun-yi, Hao Yi-chun, 1980. Text-book of Palaeontology. Beijing: Geological Publishing House. 1–521 (in Chinese).
- Yang Zun-yi, Hao Yi-chun, Chen Guo-da, 1957. Text-book of Palaeontology. Beijing: Geological Publishing House. 1–498 (in Chinese).

- Yoh S S (Yue Sen-xun), 1959. Some new coral species from the Ordovician of Kueichow Province, southwestern China. *Journal of Peking University (Natural Sciences)*, 4: 395–418 (in Chinese with English summary).
- Yokoyama M, 1894. Text-book of Palaeontology, Volume 1. Tokyo: Fuzambo. 1–214 (in Japanese).
- Yokoyama M, 1896. Text-book of Geology. Tokyo: Fuzambo. 1–363 (in Japanese).
- Yokoyama M, 1903. Text-book of Geology. Tokyo: Fuzambo. 1–308 (in Japanese).
- Yokoyama M, 1907. Palaeontology. Tokyo: Fuzambo. 1–472 (in Japanese).
- Yokoyama M, 1918. Historical Geology. Tokyo: Waseda University Press. 1–670 (in Japanese).
- Yokoyama M, 1920. General Palaeontology. Tokyo: Waseda University Press. 1–657 (in Japanese).
- Yu C C (Yu Jian-zhang), 1933. Lower Carboniferous corals of China. *Palaeontologia Sinica, Series B*, 12: 1–211.
- Yu C C (Yu Jian-zhang), 1962. A revision of some Carboniferous–Permian rugose corals. *Collection of Scientific Papers on the 10th Anniversary of Changchun Institute of Geology*, 1–11 (in Chinese).
- Yu C C (Yu Jian-zhang), 1963. On the relationship of *Cystophrentis* with the hexacorals and the establishment of the order Mesocorallia Yü (ord. nov) and family Cystophrentidae Yü (fam. nov.). *Acta Palaeontologica Sinica*, 11: 307–318 (in Chinese with Russian summary). DOI: 10.19800/j.cnki.aps.1963.03.001
- Yu C C (Yu Jian-zhang), Lin Ying-dang, Shi Yan, Huang Xi-zhu, Yu Xue-guang, 1983. Carboniferous and Permian Corals. Jilin: Jilin People's Publishing House. 1–357 (in Chinese with English abstract).
- Yu Chang-min, 1956. Some Silurian corals from the Chiuchuan Basin, western Kansu. *Acta Palaeontologica Sinica*, 4: 599–620 (in Chinese with English summary). DOI: 10.19800/j.cnki.aps.1956.04.008
- Yu Chang-min, 2010. Further study on Devonian rugose coral *Heterophaulactis* Yu, 1974 from lower Emsian Yujiang Formation in Guangxi, China. *Acta Palaeontologica Sinica*, 49: 29–43 (in English with Chinese abstract). DOI: 10.19800/j.cnki.aps.2010.01.003
- Zhang Yong-luo, Liu Guan-bang, Bian Li-zeng, 1988. Palaeontology (Volume 1). Beijing: Geological Publishing House. 1–363 (in Chinese).
- Zhang Zuo-ren, 1927. Fossils. Shanghai: The Commercial Press. 1–101 (in Chinese).
- Zhang Zuo-ren, 1930. Fossils. Shanghai: The Commercial Press. 1–85 (in Chinese).
- Zhou Rui, Yan En-zeng, 1984. Palaeontology. Beijing: Geological Publishing House. 1–235 (in Chinese).
- Zhu Cai-fa, 2018. Text-book of Palaeontology. Beijing: China Petrochemical Press. 1–189 (in Chinese).

(责任编辑: 王 博)