

## 我国西沙群岛腹枝藻属一新种\*

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我们在对我国西沙群岛海藻的研究过程中,发现有两号标本,根据其形态构造,其地位应属于真红藻纲红皮藻目节荚藻科的腹枝藻属(*Gastroclonium*)或腔炼藻属(*Coeloseira*)。

腹枝藻属是 Kützing 在 1843 年建立的。本属的主要特征为藻体具一中实的主干,上生中空并有横隔膜的小枝,小枝由一些缢缩成节的节片组成;囊果中心有一大的融合胞,胞周围附有大的果孢子;四分孢子体具四分孢子囊,有时有多孢子囊。1940 年, Hollenberg 把某些只具多孢子囊的种自腹枝藻属内分出成立一新属,命名为腔炼藻属(*Coeloseira*)。但 Okamura (1907) 报告产于日本的 *Coeloseira pacifica* Dawson [原发表名称为 *Gastroclonium ovale* (Huds.) Okamura (*non* Kütz.)], 其附图表明具有四分孢子囊(原文图版 17, 图 3、8)和多孢子囊(原文图版 17, 图 9、10)两种;另据 Smith (1938:336) 的报告, *Gastroclonium coulteri* (Harv.) Kylin 也可以发生多孢子囊; De-Toni (1924:311) 也报告了 Buffham 曾观察到具有 16 个孢子的 *G. ovale* (Huds.) Papenfuss [原发表名称为 *G. ovale* (Huds.) Kütz.]。

上述这些报告表明:多孢子囊与四分孢子囊并存在腹枝藻属的某些种中,已被许多藻类学家观察到;另一方面,红藻门中也有不少的属内包含了具四分孢子囊的种和具多孢子囊的种,而这些种类并未被分置于两属中。此外,考虑到多孢子源于四分孢子,以及腔炼藻属除只具有多孢子囊这一特点与腹枝藻属不同外,迄今还没有发现这两属之间有其他重要的区别特征,而且前人既已观察到腹枝藻属有些具四分孢子囊的种类,同时也见到多孢子囊,这表明多孢子囊的不稳定性;那末,腔炼藻以此作为属征,显然是不恰当的。为此,我们建议撤销腔炼藻属(*Coeloseira* Hollenberg, 1940),把原置于这一属的三个种<sup>1)</sup>并入腹枝藻属中。Dawson<sup>[2]</sup>以他检查过的日本标本(原发表名称为 *Coeloseira pacifica*)只具多孢子囊以及 De-Toni 提到的 Buffham 的观察结果,以未见报道为理由来确认腔炼藻属,其根据是不稳妥的。

腹枝藻属除了上述新组合的三个种外,世界上已知的腹枝藻属种类还有四种<sup>[11,15]</sup>,即:卵形腹枝藻 *Gastroclonium ovatum* (Huds.) Papenf., 库特腹枝藻 *G. coulteri* (Harv.) Kylin,

\* 中国科学院海洋研究所调查研究报告第 425 号。本文承曾呈奎教授提出宝贵意见,文中的图版由本所冯明华同志描绘,宋华中同志拍摄照片,特此致谢。  
本文于 1977 年 10 月 5 日收到。

- 1) ①矮小腹枝藻 *Gastroclonium parvaum* (Hollenberg) C. F. Chang et B. M. Xia, **comb. nov.**, 基本异名: *Coeloseira parva* Hollenberg, 1940:871, fig. 7a—b, figs. 8—12.; ②扁压腹枝藻 *Gastroclonium compressaum* (Hollenberg) C. F. Chang et B. M. Xia, **comb. nov.**, 基本异名: *Coeloseira compressa* Hollenberg, 1940:874, fig. 7c—d, figs. 13—17.; ③太平洋腹枝藻 *Gastroclonium pacificaum* (Dawson) C. F. Chang et B. M. Xia, **comb. nov.**, 基本异名: *Coeloseira pacifica* Dawson, 1950:343, fig. 2., 异名: *Gastroclonium ovale* (Huds.) Okamura (*non* Kütz.) Okamura, 1907:74—76, figs.

棒状腹枝藻 *G. clavatum* (Roth) Ardiss. 和多节腹枝藻 *G. iyengarii* Srinivasan<sup>[15]</sup>。这样,世界上已知的腹枝藻属种类共有七个种。我们在研究我国西沙群岛金银岛产的这两号标本时,虽经详细镜检全部标本,都没有找到生殖器官,但从其藻体的形态构造来看,则无疑应属于腹枝藻属;这些标本又与腹枝藻属的已知种类有截然不同的特征,因此,我们认为西沙标本应为腹枝藻属的一个新种,其特征如下:

**西沙腹枝藻 (新种) (图 1:1—5; 图 2:1—3)**

***Gastroclonium xishaensis*** C. F. Chang et B. M. Xia, sp. nov.

Frondes erectae, cylindricae, usque 15—25 mm altae; ramis tubulatis ex axibus solidis primaris orientibus, simplicibus vel dichotomae. Ramuli tumescentes, lineari-oblongi, basi angustata, apice plus minusve acuto, membranacei, molles 11—19 mm longi, segmentati, segmentorum numero 7—13 in singulis ramulis. Ramulorum parietes una cellula crassi; eorum vero cavitates diaphragmatibus ad intervalla interceptae. Segmenta in parte media ramulorum 0.57—1.24 mm longa, in parte basali 1.35—1.47 mm longa, in parte apicali 0.24—0.41 mm longa. Corporibus reproductivis ignotis.

**Hab.** In rupe corallino submarino ca. 0.5 m infra superficiem crescens ad Jinyindao, Ins. Xisha, Guangdong Province, China II, 1976. (AST 76—571, Holotypus; 76—581, Paratypus).

藻体直立,干标本浅紫褐色,高 15—25 毫米,宽 1.5—2 毫米,基部有一不规则的盘形固着器,借以固着在珊瑚石上。体下部有一分枝或不分枝的圆柱状主干,长 2—5 毫米,宽 0.9—2 毫米,中实,细胞自内向外逐渐变小,髓部由许多不规则圆形或长圆形的薄壁细胞组成,径 48—110 微米,外层细胞较小,不规则圆形或扁圆形,径 13—16 微米,中间无纵走丝体;主干顶端丛生出 2—8 个小枝,在解剖镜下检查,小枝呈极短距离的互生状,枝单条或在上部节处长出次生幼枝,但较少见;枝长圆柱形,念珠状,长 11—19 毫米,由 7—13 节组成,节处略缢缩,内有多角形细胞组成的横隔膜,膜的细胞径 0.06—0.15 毫米;最基部的关节细而长,1.35—1.47 毫米 × 0.53—0.91 毫米;枝端节片略尖,长小于宽,0.24—0.41 毫米 × 0.64—0.83 毫米;越靠近中部,其节片长与宽的比例逐渐近似,0.57—1.24 毫米 × 1.14—1.93 毫米;幼枝一般 2—4 个节片,顶端略圆,0.10—0.46 毫米 × 0.32—0.64 毫米;枝内部充满粘液,横切面观,由一层近方形、长方形或近圆形细胞组成,38—64 微米 × 38—70 微米,偶有不规则圆形或近三角形的小细胞镶嵌在细胞间,其径 13—16 微米;体壁内侧延伸有细长的丝体,径 13—16 微米;丝体上生有球形或卵形的腺细胞,胞径 26—32 微米;外围胶质层厚约 32—51 微米。体内充满粘液,制成的干标本极易附着于纸上。生殖器官未见到。

**习性和产地** 生长在礁平台低潮线下 0.5 米处的珊瑚礁石上,生活时在水中发荧光。新种的模式标本为 AST 76—571 号;副模式标本 AST 76—581 号(采集者:夏邦美于 1976 年 2 月 1 日采自我国西沙群岛的金银岛。),存中国科学院海洋研究所植物标本室。

**主要特征** (1) 主干短,2—5 毫米;(2) 主干顶端丛生 2—8 个小枝;(3) 小枝长柱形,长 1.1—1.9 厘米;(4) 节片 7—13 个;(5) 最下面的节片长 1.4—1.5 毫米。

在腹枝藻属已知的七个种中和西沙腹枝藻的枝壁同为单层细胞的只有卵形腹枝藻,

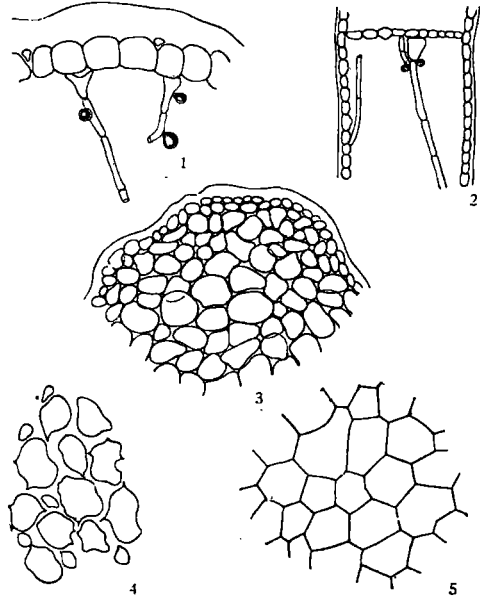


图1 西沙腹枝藻 *Gastroclonium xishaensis* sp. nov. (76-571)

1. 部分藻体的横切面, 图示纵丝上生长的腺细胞  $\times 66$ ; 2. 部分藻体的纵切面, 图示纵丝上生长的腺细胞  $\times 27$ ; 3. 茎的横切面的一部分(干标本)  $\times 200$ ; 4. 部分藻体的表面观  $\times 133$ ; 5. 横隔膜细胞的表面观  $\times 66$ 。



10毫米

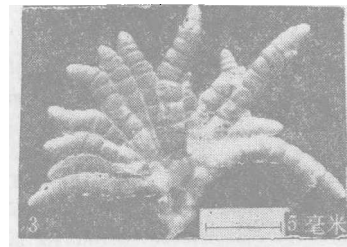
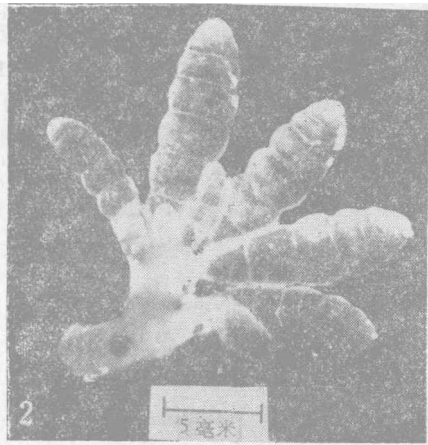


图2 西沙腹枝藻 *Gastroclonium xishaensis* sp. nov. (76-571)

1. 模式标本; 2. 幼体、液浸标本; 3. 枝上部节处长出初见的次生幼枝。

多节腹枝藻和扁压腹枝藻。卵形腹枝藻和多节腹枝藻的藻体大而粗壮,主干长,分枝互生或不规则叉分,小枝的节片数分别为4—7个和11—20个,而西沙腹枝藻的藻体则矮小,主干短,其顶端丛生小枝,小枝的节片数为7—13个,它们之间具有明显的区别;西沙腹枝藻在体形,主干、分枝和小枝的节片数等形态上与扁压腹枝藻都很相似,但后者的管状小枝扁压,弧形弯曲以及整体形成平卧匍匐状等特征则与西沙腹枝藻全然不同。此外,西沙腹枝藻在藻体的大小和外形上与矮小腹枝藻也有些相似,二者的区别主要在于西沙腹枝藻的管状小枝壁为1层细胞,而矮小腹枝藻的枝壁则为2—3层细胞所组成。

腹枝藻属为我国属的新记录。

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## A NEW SPECIES OF *GASTROCLONIUM* FROM THE XISHA ISLANDS, GUANGDONG PROVINCE, CHINA\*

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### ABSTRACT

The genus *Gastroclonium* was established by Kützing in 1843. It differs from other members of the family Lomentariaceae in the possession of a solid stalk and the development of large carpospores attached to the periphery of a large fusion cell in the center of the cystocarp. Hollenberg (1940:871) erected a new genus, *Coeloseira*, based on the material collected from southern California, U.S.A. According to Hollenberg, this genus is distinguished from *Gastroclonium* by the formation of 12—16 polyspores instead of tetraspores in the sporangia. Furthermore, the vegetative structure is very similar to some species of *Gastroclonium*.

The occurrence of polysporangia and tetrasporangia in some species of the genus *Gastroclonium* have already been noted by phycologists. Okamura (1907) in reporting *Gastroclonium ovale* from Japan, illustrated both tetrasporangia (pl. 17, figs. 3, 8) and polysporangia (pl. 17, figs. 9, 10). Smith (1938:336) reported the occasional occurrence of polysporangia in *Gastroclonium coulteri* (Harv.) Kylin. De-Toni (1924: 311) reported that Buffham observed sixteen spores in *G. ovale*. [*G. ovatum* (Huds.) Papenf.]

In view of the polyspores are derivatives of tetraspores<sup>[5,10,13]</sup> and of the polysporangia are accompanied by tetrasporangia in some species of the genus *Gastroclonium*<sup>[4,12,14]</sup>, it is clear that *Gastroclonium* can not be divided into two genera on the basis of the presence of tetrasporangia or polysporangia. Consequently, it becomes necessary to reduce *Coeloseira* to a synonym of *Gastroclonium*. Three species<sup>1)</sup> of *Coeloseira* need to be transferred to *Gastroclonium*.

Diagnosis of ***Gastroclonium xishaensis*** C. F. Chang et B. M. Xia, sp. nov.<sup>2)</sup> (text-figs. 1:1—5; 2:1—3)

Frond erect, 15—25 mm tall, 1.5—2 mm in diam., attached by a irregular discoid holdfast from which 1 erect axis arises; erect axis short, simple or furcate, solid, cylindrical, 2—5 mm high, 0.9—2 mm in diam.; 2—8 tubular ramuli arising from this erect axis; ramuli inflated, linear-oblong, soft, 11—19 mm long, with a narrow base

\* Contribution No. 425 from the Institute of Oceanology, Academia Sinica.

- 1) ① ***Gastroclonium parvum*** (Hollenberg) C. F. Chang et B. M. Xia, **comb. nov.** Basionym: *Coeloseira parva* Hollenberg, 1940:871, fig. 7a—b, figs. 8—12.;
  - ② ***Gastroclonium compressum*** (Hollenberg) C. F. Chang et B. M. Xia, **comb. nov.** Basionym: *Coeloseira compressa* Hollenberg, 1940:874, fig. 7c—d, figs. 13—17.;
  - ③ ***Gastroclonium pacificum*** (Dawson) C. F. Chang et B. M. Xia, **comb. nov.** Basionym: *Coeloseira pacifica* Dawson, 1950:343, fig. 2. Synonym: *Gastroclonium ovale* (Huds.) Okamura (*non* Kütz.), Okamura, 1907:74—76, pl. 17, figs. 1—10.
- 2) For the Latin diagnosis, see p. 208.

and a more or less acute apex; walls of the ramuli composed of 1 layer of cells. Ramuli segmented; number of segments varying from 7—13 in each. Segments in the middle portion of the ramuli, 0.57—1.24 mm long and 1.14—1.93 mm broad, at the apical portion 0.24—0.41 mm long and 0.64—0.83 mm broad, and at the basal portion 1.35—1.47 mm long and 0.54—0.91 mm broad; secondary ramuli absent or present. Reproduction unknown.

**Habitat** On corallite in the sublittoral region, Jinyindao, Xisha Islands, Guangdong Province, in February, 1976 (AST 76-571, Holotype; AST 76-581, Paratype, deposited in the Herbarium of the Institute of Oceanology, Academia Sinica at Qingdao).

This new species is apparently most closely related to *Gastroclonium compressum* (Hollenberg) C. F. Chang et B. M. Xia of the eastern Pacific coast, with which it agrees in size and in the stalk-like main axis, but differs in its absence of stoloniferous manner and in its cylindrical ramuli rather than compressed ramuli. It is also closely related to *G. parvum* (Hollenberg) C. F. Chang et B. M. Xia, from which, it differs not only in the smaller size, but also in the stalk-like main axis. It differs furthermore from *G. parvum* in the walls of tubular ramuli which are composed for the most part of but a single layer of cells, rather than of 2—3 layers of cells as in *G. parvum*.

This genus, *Gastroclonium*, is recorded here for the first time for the marine flora of China.

### 勘 误 表

本刊1978年1月9卷1期中有几处错误更正如下:

页	行	误	正
1	5	。本文试图通过	, 试图通过
30	倒14	$\Delta B_s = (B_{s_1})_{\text{湖}} - (B_{s_1} - B_{s_2})_{\text{池}}$	$\Delta B_s = (B_{s_1})_{\text{湖}} - (B_{s_1} + B_{s_2})_{\text{池}}$
31	1	$\Delta E = \frac{Q(A_{\text{池}} - A_{\text{湖}}) + 4\sigma T_0^3(t_{\text{湖}} - t_{\text{池}})}{L(1 + b_{\text{池}})}$	$\Delta E = \frac{Q(A_{\text{池}} - A_{\text{湖}}) + 4\sigma T_0^3(t_{\text{池}} - t_{\text{湖}})}{L(1 + b_{\text{池}})}$
49	3	伍焯田	伍焯田
105	图注	图3	图8
117	刊头	图版 (Platcl)	图版 (Plate) I
118			