

中国多管藻属 *Polysiphonia* 一新种*

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提要 近期在对 2007 年和 2008 年两次采自海南岛的多管藻类的标本进行分类研究时, 发现有数号标本, 它们的藻体形态及内部构造特征有些不同于已知的多管藻属 *Polysiphonia* 的种类。经研究鉴定, 结果表明, 这些标本应是目前尚未报道的多管藻属的一个新种, 命名为海南多管藻 *Polysiphonia hainanensis* sp. nov.

关键词 海南多管藻, 四分孢子囊, 新种

中图分类号 Q959.223

多管藻属(*Polysiphonia* Greville, 1824)是广布于世界各海域中种类繁多的一个红藻类群(Greville, 1824), 属于红藻门 Rhodophyta、仙菜目 Ceramiales、松节藻科 Rhodomelaceae。多管藻属的主要特征是多管型, 具节丝状藻体。自基部匍匐枝向上发生辐射对称的枝, 藻体单生、丛生或垫状。藻体由 1 个中轴管及 4 个以上围轴管组成, 有的种类在围轴管外有皮层细胞, 覆盖程度可以是全株外方, 也可以仅在藻体基部, 因种而异。假根通常由围轴细胞向外突出形成, 不被侧壁切隔或被切隔。枝顶端细胞尖或钝圆。通常每节发生单列细胞分叉或不分叉的毛丝体(Trichoblast)螺旋状排列于枝上, 脱落后在枝上留有痕细胞。生活史具有四分孢子体及雌、雄配子体, 三相同形。四分孢子体的孢子囊形成于末位或次末位小枝上, 每节仅具 1 个四分孢子囊, 纵列或螺旋列, 间断或连续排列。果孢枝由 4 个细胞组成。囊果成熟后坛形或卵形。精子囊枝由毛丝体原发育形成, 顶端常具 1—2 个不孕顶细胞。

关于多管藻属海藻的分类研究, 至今为止, 已被承认的有 195 种(Hollenberg, 1968a; Silva et al, 1987, 1996; Womersley, 2003; Yoshida, 1998), 我国已报道的多管藻属有 18 种(项斯端, 2004)。近期在我国海南岛的野外调查采集中, 发现了一些在外形与内部结构上与已知的多管藻属种类有所不同, 经详细研究

后, 确认它属于多管藻属目前尚未报道的新种, 命名为海南多管藻 *Polysiphonia hainanensis* sp. nov.

海南多管藻 *Polysiphonia hainanensis* Xia et Wang sp. nov. 图 1: 1—5, 图 2;

Plantae 2—5 (—7) cm altae, a ramis prostrates et repentibus; ramis prostrates 125—132 μ m crassis, per rhizoidia numerosa unicellularium abscisa et in disco lobato terminanta; ramis erectis 150—310 μ m crassis, ramis lateralibus in collocaione spirale cum plerumque 1/4 declinationibus ortis; cellulis pericentralibus 12 (—14), Omnino ecorticatis; Segmentis in ramis principibus 0.2—0.3 diametros longis; trichoblastis semel aut bis furcatis, exutus cito; tetrasporangiis alquanto torquentibus in ramulis ultimis; plante sexuales ignotae.

Holotype: HBRS2008-114, Tetrasporangia, growing on surf-beaten rocks in the mid-lower littoral region, collected by WANG Yongqiang and DING Lanping at Yinggehai, Hainan Island, Hainan Province, China, April, 5, 2008. Paratypes: HBRS 2008-74, Tetrasporangia.

藻体直立, 丛生, 2—5cm 高, 可达 7cm; 黑褐色。匍匐枝在基部错综繁生, 匍匐枝径 125—132 μ m, 其关节长宽比为 0.5—0.8 倍; 自其节间处向下产生假根, 假根被围轴细胞侧壁隔断, 假根长短不一, 其径 33—46.2 μ m, 先端具不规则盘状附着器, 附着器的底面径 100—282 μ m。匍匐枝向上间隔多节向上发生直立枝, 直立枝径 150—310(—450) μ m, 关节扁短, 主枝关节长宽比为 0.2—0.3 倍, 其周围以 1/4 枝序螺旋排列侧

* 科技部科技基础性工作专项重点项目, 2006FY110500 号。夏邦美, 研究员, E-mail: bmxia@qdio.ac.cn

收稿日期: 2011-06-23, 收修改稿日期: 2011-09-17

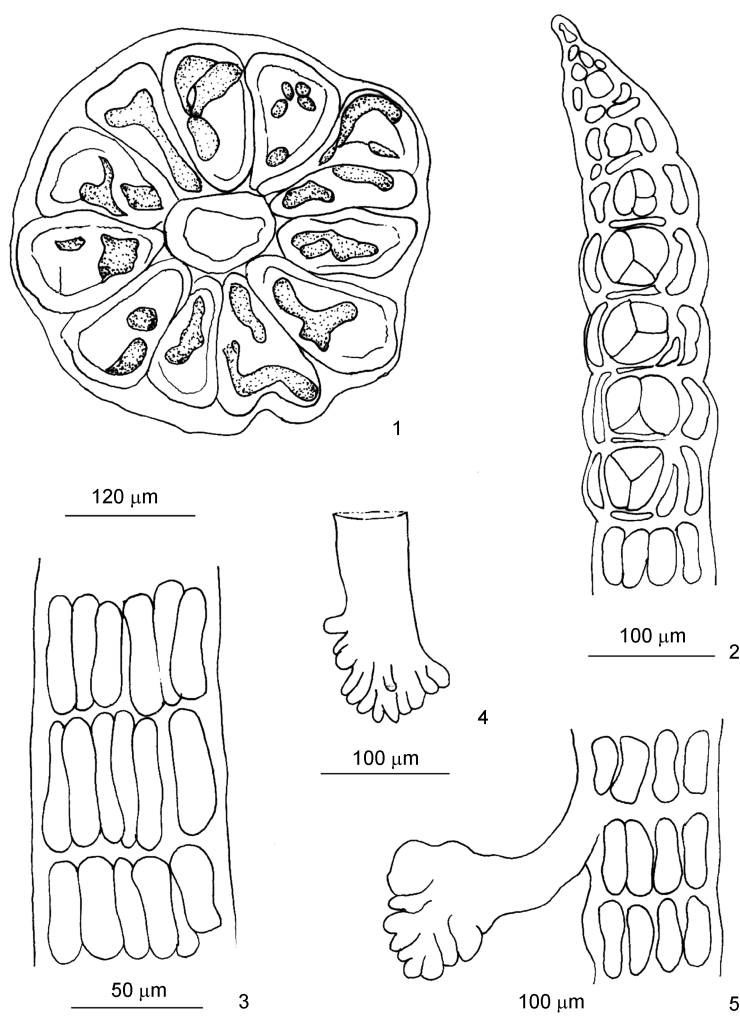


图1 海南多管藻 *Polysiphonia hainanensis* Xia et Wang sp. nov.

Fig.1 *Polysiphonia hainanensis* Xia et Wang sp. nov.

1. 主枝横切面(HBRS 2008-114); 2. 四分孢子囊小枝, 示四分孢子囊微螺旋排列成行(HBRS 2008-114); 3. 部分主轴表面观(HBRS 2008-114);
- 4、5. 单细胞假根及其末端裂瓣状盘(HBRS 2007-71)。

生短枝, 枝间距不等, 常为 2—3 节, 但下部稀疏, 上部密集; 下部短侧枝单出, 向主轴扭曲; 稍上短侧枝呈鹿角状分枝; 再上方短侧枝上螺旋排列次生末位枝; 次生末位枝短渐尖, 径约 33—49.8 μm, 关节长宽比为 0.2—0.5 倍, 常向外反曲状。顶端细胞小, 成无色芒尖状。毛丝体 1—2 回分枝, 早落不见痕细胞。

藻体内部横切面观: 直立枝中央具明显的中轴细胞, 不规则卵圆形, 112 μm × 79.2 μm 大小, 外围有围轴管 12(—14), 围轴细胞不规则长卵形或长柱形, 细胞长 139—158 μm, 径 52.8—72.6 μm。无皮层。

四分孢子囊位于末位小枝上, 微螺旋排列形成孢子囊小枝, 小枝径约 66—86 μm; 四分孢子囊亚球形或卵圆形, (39.6—46.2) μm × (52.8—59.4) μm 大小, 四面锥形分裂。精子囊及囊果未见。

习性: 生长在潮间带中、下部浪击处的礁石上。

模式标本产地: 海南省莺歌海。主模式标本为 HBRS 2008-114, 四分孢子体, 系由王永强、丁兰平 2008 年 4 月 5 日采自中国海南省乐东县莺歌海。副模式标本为 HBRS 2008-10、HBRS 2008-13a、HBRS 2007-352, 均为不育藻体。模式标本均存于中国科学院海洋生物标本馆(青岛)。

新种的主要特征: (1) 藻体直立、丛生, 匍匐枝在基部错综繁生, 向下生假根, 向上生直立枝; (2) 藻体通体无皮层; (3) 围轴管 12—(14)个; (4) 关节扁短, 主枝关节长宽比为 0.2—0.3 倍; (5) 螺旋排列侧生短枝, 上部短侧枝呈鹿角状分枝; (6) 四分孢子囊生长在末位小枝上, 微螺旋排列。

本种与近缘种的比较:

多管藻属 *Polysiphonia* 的分类主要依据其藻体外形、有无皮层、围轴细胞的数量、四分孢子囊的排列方式等特点, 从已知种中排除有皮层的种类, 以及围轴细胞数在 10 个以下的种类, 与本新种近似的种类有 *Polysiphonia howei* Hollenberg in Taylor 和 *Polysiphonia hendryi* var. *luxurians* Hollenberg, 它们都属于全体无皮层类及围轴细胞数在 10 个以上的种类, 其相互间的异同见表 1。



图2 海南多管藻 *Polysiphonia hainanensis* Xia et Wang sp. nov. (HBRS 2008-114)

Fig.2 *Polysiphonia hainanensis* Xia et Wang sp. nov. (HBRS 2008-114)

表 1 近缘种的特征比较表
Tab.1 Comparison of the characteristics of closely related species

特征	<i>Polysiphonia howei</i> (Abbott, 1999; Hollenberg, 1968b)	<i>Polysiphonia hendryi</i> var. <i>luxurians</i> (Hollenberg, 1944)	<i>Polysiphonia hainanensis</i>
藻体	垫状, 丛生, 1—2cm 高	直立, 较大, 可达 10cm 高或更多	直立, 丛生, 2—5(—7)cm 高
基部	匍匐形成大的盘状固着于岩石上	匍匐枝固着	错综繁生的匍匐枝固着
体质	硬	柔弱	粗壮
分枝	不分枝或很少分枝到几个短侧枝, 枝端弯曲	分枝多, 较疏松	主枝周围以 1/4 枝序螺旋侧生小枝, 2—3 次; 稍上短侧枝呈鹿角状
围轴细胞	10—12 个	12(14)个	12(—14)个
四分孢子囊	螺旋排列	轻微螺旋排列	轻微螺旋排列
皮层	无	无	无
关节长宽比	0.5—0.8—1.5 倍	4—5(—7)倍	0.2—0.3 倍
毛丝体	发达	丰富	少见

致谢 浙江大学项斯端教授在物种鉴定上给予大力帮助, 李士玲同志为插图复墨, 谨致谢忱。

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A NEW SPECIES OF *POLYSIPHONIA* (RHODOPHYTA) FROM CHINA

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Abstract Based on the specimens of *Polysiphonia* collected from Hainan Island, South China Sea in 2007 and 2008, we found that the morphology of some specimens differ from other known species. After careful examination, we drew the conclusion that these specimens belong to a new species *Polysiphonia hainanensis* sp. nov.

The description of the new species is given below:

Polysiphonia hainanensis sp. nov. (Fig.1: 1—5; Fig.2)

Description: Thallus erect and caespitose, 2—5cm high, up to 7cm, creeping branches in disorder at base, prostrate branches 125—132 μ m in diameter, of segments about 0.5—0.8 diameter long, attached by numerous unicellular rhizoids, which are cut off from the proximal ends of the pericentral cells and terminate in lobed discs; erect branches arising from creeping branches, segments compressed and short, 150—310 μ m in diameter, segments of main branch about 0.2—0.3 diameter long, every 2—3 segments in a spiral arrangement with 1/4 divergence, lateral brachlets at low a few, upper dense, cervicornis branching at more upper place, ultimate short and attenuated to a point apex, about 33.0—49.8 μ m in diameter, usually to outer turn curve; apical cell small, as a colorless awn point; trichoblasts once or twice forked, soon deciduous leaving, no scar-cells; pericentral cells 12 (—14); ecorticate. Tetrasporangia spiraling somewhat in long continuous series the ultimate, subspherical to ovoid, (39.6—46.2) μ m $\times$ (52.8—59.4) μ m. Antheridial branches and cystocarps were not found.

The present new species is closely related to *Polysiphonia hendriyi* var. *luxurians* Holl. in external appearance, branching, numbers of pericentral cells, ecorticate and color of frond, but this new species can be distinguished from *Polysiphonia hendriyi* var. *luxurians* Holl. by the thickset frond, 2—5 (—7)cm high, and the segments in the main axes commonly 0.2—0.3 diameters long.

Remark: This new species is also closely related to *Polysiphonia howei* Hollenberg in Taylor by the pericentral cells 10—12 and ecorticate, but differing in its frond small, 1—2cm high, prostrate, produced large patches (cushion) on rock, unbranched or with few to several short laterals, and tetrasporangia in spiral series.

Etymology: The specific name *hainanensis* is named after the type locality. Holotype and paratypes are deposited at the Marine Biological Museum, Chinese Academy of Sciences (Qingdao).

Key words *Polysiphonia hainanensis*, Tetrasporangia, New species