

台湾海峡南部上升流区水螅水母纲

II. 软水母亚纲新属新种记述

许振祖¹, 黄加祺¹, 郭东晖^{1,2}

(1. 厦门大学海洋学系, 2. 近海海洋环境科学国家重点实验室(厦门大学), 福建 厦门 361005)

摘要: 本文材料系 2004 年 7 月至 2006 年 7 月在台湾海峡南部上升流区水域采集的。通过 377 份软水母亚纲样品分析, 报道了一个四管水母新属新种 *Tetracannoides jingzhi* gen. et sp. nov. 和 3 个新种: 多管十盘水母, 新种 *Staurodiscus multicanalis* n. sp.; 漂浮十盘水母, 新种 *Staurodiscus neustona* n. sp.; 薇八拟杯水母, 新种 *Octophialicum huangweiae* n. sp.。对新属新种的形态特征均进行详细描绘, 为今后海洋调查及编写水螅水母动物志提供参考。

关键词: 软水母亚纲; 新属; 新种

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本文材料系“延平”号调查船分别于 2004 年 7 月至 2006 年 7 月在台湾海峡南部上升流区水域采集的 ($21^{\circ}40' \sim 23^{\circ}51' N$, $116^{\circ}47' \sim 118^{\circ}56' E$)。通过 377 份软水母类样品的分析, 发现了一个四管水母新属和 4 个新种: 多管十盘水母、漂浮十盘水母、薇八拟杯水母和景致四管水母等, 其各新种的分类位置详见名录。这样, 包括过去我国已记载的 82 种^[1], 台湾海峡软水母亚纲共有 86 种, 隶属 15 科, 29 属。兹将新属新种形态特征描绘如下, 为今后海洋调查及编写水螅水母动物志提供参考, 模式标本保存在厦门大学海洋学系。

1 新属新种名录及分类位置

水螅水母纲 Hydroidomedusa Claus, 1877

软水母亚纲 Leptomedusae Haeckel, 1866

锥螅水母目 Conida Broch, 1910

柄杯螅水母科 Hæbellidae Fraser, 1912

多管十盘水母, 新种 *Staurodiscus multicanalis* n. sp.

漂浮十盘水母, 新种 *Staurodiscus neustona* n. sp.

玛拉水母科 Malagazzidae Bouillon, 1984

薇八拟杯水母, 新种 *Octophialicum huangweiae* n. sp.

八管水母科 Octocnidae Menon, 1932

景致四管水母, 新属新种 *Tetracannoides jingzhi* gen. et sp. nov.

2 新属和新种形态特征描述

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E-mail: guodh@xmu.edu.cn

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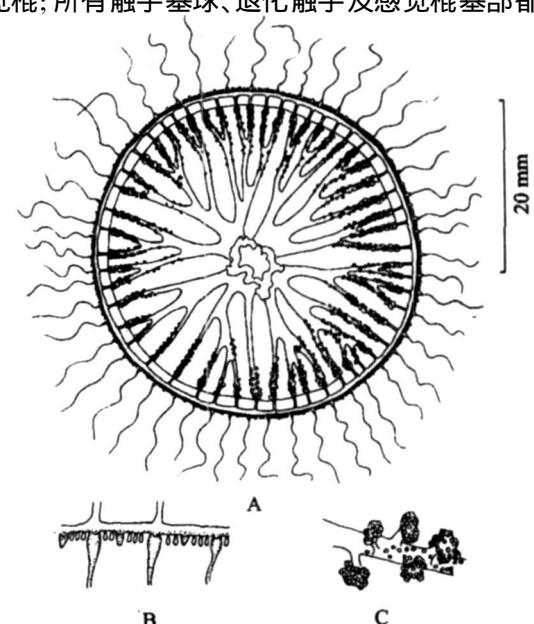


图 1 多管十盘水母, 新种

A. 口面观; B. 部分伞缘放大; C. 生殖腺放大

Fig. 1 *Staurodiscus multicanalis* n. sp.

眼点;触手及环管呈天蓝色;缘膜狭.

本新种水母垂管短而扁,口有不规则口唇;有缘感觉棍;有12条分枝的初级辐管,全部分枝辐管均与环管相连接;生殖腺在叉枝辐管上;有向轴眼点;无平衡囊.故属于柄杯螅水母科 *Hebellidae* Fraser, 1912 十盘水母属 *Staurodiscus* Haeckel, 1879.

Migotto 和 De Andrade(2000)阐述了叉柄杯水螅 (*Hebella furax* Millard, 1957) 的生活史,发现该种水螅体产生出十盘水母属 *Staurodiscus*(毒水母属 *Toxorchis*)的水母型.可能就是凯尔十盘水母 *Staurodiscus kellneri* Mayer, 1910^[4,8].事实上,十盘水母属和毒水母属之间的区别是模棱两可的,主要依据辐管分枝方式来区别.在十盘水母属的初级辐管分侧枝后直接与环管相连接,而毒水母属初级辐管二叉枝,初级辐管本身决不到达环管^[2,6],然而, Migotto 和 De Andrade

(2000)研究了从叉柄杯水螅产生的毒水母属水母体,描述了毒水母辐管的发育和它的分枝与十盘水母属相似,因此,没有理由把毒水母属和十盘水母属两个属分开,应合并为十盘水母属,隶属于柄杯螅水母科^[4].

至今,十盘水母属(=毒水母属)已有12种^[3],本新种主要特征是12条初级辐管,均从胃壁外侧基部伸出,每3条为一组,每条初级辐管分2~3次叉状分枝,所有叉枝辐管均与环管连接;许多生殖乳突密集,呈具柄的不规则皱褶囊,分布整条叉枝辐管上.这些特征与同属其它种不同(详见表1).

模式标本:正模(AOB-HL227),副模(AOB-HL228).2005年7月在台湾海峡南部上升流区海表层采到5个标本.

漂浮十盘水母,新种 *Staurodiscus neustona* n. sp.
(图2)

表1 十盘水母属(=毒水母属)分种检索表

Tab. 1 The key to the species of genus *Staurodiscus*(= Genus *Toxorchis*)

1. 6条或更多条初级辐管	2
4条初级辐管	8
2. 6条初级辐管	3
8条以上初级辐管	4
3. 每条辐管1次叉状分枝	弓状十盘水母 <i>S. arcuatus</i> (Haeckel, 1879)
每条辐管3~4次叉状分枝	海绿十盘水母 <i>S. thalassinus</i> (Peron et Lesueur, 1809)
4. 12条初级辐管,每3条为1组,每条辐管2~3次叉状分枝;生殖乳突密集,呈具柄的皱褶囊;触手40~65条, 每两条触手间有1个短棒状退化触手和5~6个感觉棍	多管十盘水母,新种 <i>S. multicanalis</i> n. sp.
8条初级辐管	5
5. 8条初级辐管均一次叉状分枝;32条触手,50个感觉棍,触手和感觉棍基部有眼点 4条初级辐管不分枝,另4条初级辐管分枝	凯尔十盘水母 <i>S. kellneri</i> (Mayer, 1910) 6
6. 仅4条初级辐管一次叉状分枝;26~32条触手,感觉棍与触手同数,其基部均无眼点 仅4条初级辐管成对分侧枝	漂浮十盘水母,新种 <i>S. neustona</i> n. sp. 7
7. 缘触手16条,感觉棍与触手同数,无眼点 缘触手16条,感觉棍与触手同数,有眼点	布鲁十盘水母 <i>S. brooksi</i> (Mayer, 1910) 米勒十盘水母 <i>S. milleri</i> (Bouillon, 1984)
8. 分枝辐管不与环管连接 分枝辐管与环管连接	9
9. 辐管侧枝一对,不相对排列;8~32条触手;40~80感觉棍 辐管侧枝相对排列	异列十盘水母 <i>S. heterosceles</i> Haeckel, 1879 10
10. 辐管侧枝一对 辐管侧枝2~4对	四十盘水母 <i>S. tetrastaurus</i> Haeckel, 1879 十字盘水母 <i>S. gotoi</i> (Uchida, 1927)
11. 初级辐管不与环管连接,每条初级辐管二次分叉枝,4条叉枝辐管形成一组 初级辐管直接与环管连接	多手十盘水母 <i>S. polynema</i> (Kramp, 1959) 12
12. 辐管侧枝1对 辐管侧枝2对	带黑十盘水母 <i>S. nigricans</i> Ag. & Mayer, 1899 13
13. 8条触手;4个主辐胃囊 16条触手;垂管方形	方胃十盘水母 <i>S. quadrivestoma</i> Bouillon, 1984 越南十盘水母 <i>S. vietnamensis</i> Kramp, 1962

伞扁平, 胶质薄, 伞宽 3~4 mm; 垂管短狭, 8 个披针状皱褶口唇; 8 条宽的初级辐管, 均从胃基部伸出, 其中 4 条初级辐管不分枝, 直接与环管相连, 另 4 条初级辐管一次叉状分枝, 各分枝亦与环管连接; 生殖腺在初级辐管和叉枝辐管上, 但不与环管连接; 有 26~32 条缘触手, 感觉棍与触手同数; 无缘丝和平衡囊; 在触手和感觉棍基部无眼点; 缘膜中等宽。

根据这种水母形态特征, 本新种属于十盘水母属 *Staurodiscus*, 鉴于本种水母有 8 条初级辐管, 其中 4 条辐管不分枝, 另 4 条辐管有分枝, 这与同属其它种不同, 但与布鲁十盘水母 *Staurodiscus brooksi* 和米勒十盘水母 *S. milleri* 较相似。然而, 本新种仅 4 条初级辐管一次叉状分枝, 另 4 条初级辐管不分枝, 所有辐管均与环管相连, 有 26~32 条触手, 感觉棍与触手同数, 触手和感觉棍基部无眼点, 这与两个相似种不同(表 1)。

模式标本: 正模(AOB-HL229), 副模(AOB-HL230)。1988 年 6 月在闽南-台湾浅滩上升流区用 Manta 型漂浮生物网采到 2 个标本。

薇八拟杯水母, 新种 *Octophialucium huangweiae* n. sp. (图 3)

伞高 3.5 mm, 宽 3.0 mm, 伞呈凸镜形, 胶质厚, 向伞缘渐薄; 垂管很宽, 约为伞径 1/4, 横切面呈八角形, 8 个尖端口唇, 唇边缘无皱褶; 8 个生殖腺, 呈椭圆形, 位于辐管基部, 贴近垂管, 有一端与垂管壁相连接; 8 条辐管和 1 条环管, 很狭; 16 条缘触手, 基球大呈近球形, 有排泄乳突; 无退化缘球; 每两条触手间有 1 个平衡囊, 每个平衡囊有 1 个平衡石; 缘膜宽。

本新种水母有 8 条辐管、8 个生殖腺在辐管上和 8 个口唇等特征, 故属于八拟杯水母属 *Octophialucium* Kramp, 1955。至今, 该属已知有 8 种^[4~5,7], 本新种水母生殖腺很短, 位于辐管近基部, 这与同属其它种的生殖腺延伸在整条辐管上, 或在辐管中部, 或仅在辐管远端 1/5~1/2, 近伞缘等 7 个种类不同, 但与克勃八拟杯水母 *Octophialucium krampi* Bouillon, 1984 较相似。然而, 这两种的主要区别是:

克勃八拟杯水母: 有 18 条缘触手; 20 个退化缘球; 40 个平衡囊; 8 个卵圆形生殖腺, 位于辐管近基部, 贴近垂管, 但不与垂管壁相连。薇八拟杯水母, 新种: 有 16 条缘触手; 无退化缘球; 16 个平衡囊; 8 个椭圆形生殖腺, 位于辐管近基部, 一端与垂管壁相连(表 2)。

模式标本: 正模(AOB-HL231), 副模(AOB-HL232~237)。2004 年 8 月在台湾海峡南部上升流区采到 1 个, 2006 年 8 月在福建南部沿海采到 5 个。

四管水母属, 新属 *Tetracanoides* gen. nov.

水母垂管长而宽, 无胃柄, 有 4 个辐叶; 口有 4 个

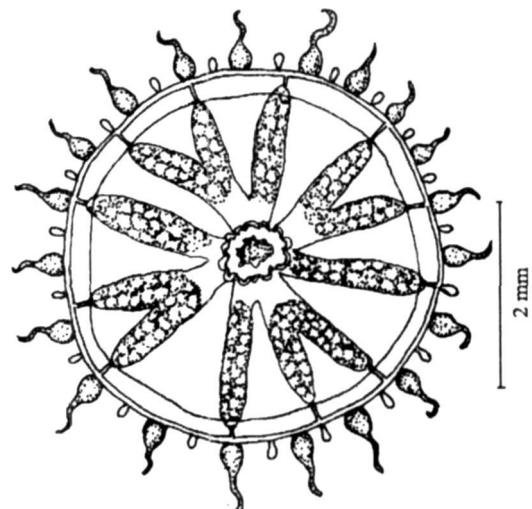


图 2 漂浮十盘水母, 新种

Fig. 2 *Staurodiscus neustona* n. sp.

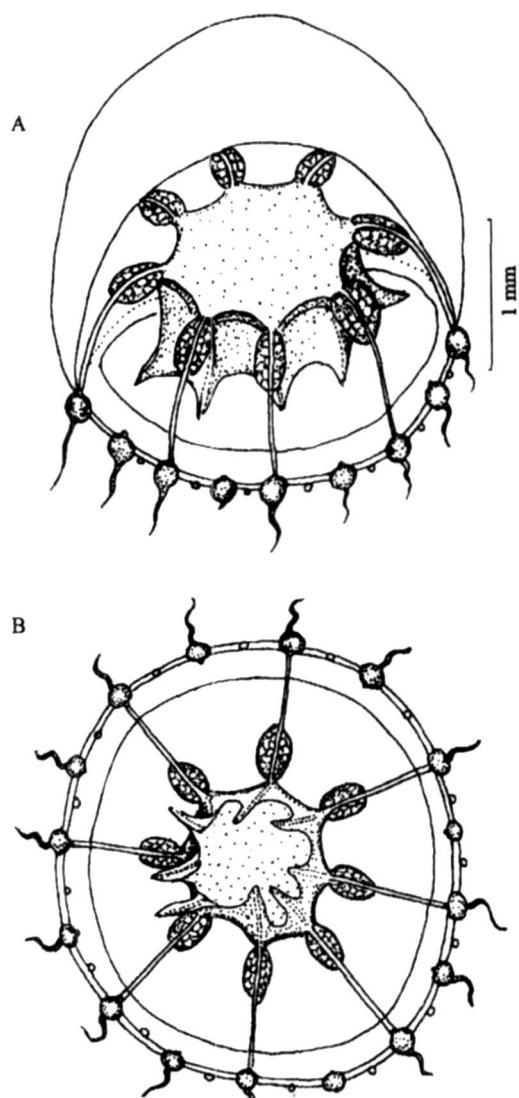


图 3 薇八拟杯水母, 新种

A. 侧面观; B. 口面观

Fig. 3 *Octophialucium huangweiae* n. sp.

表2 八拟杯水母属分种检索表

Tab. 2 The key to the species of genus *Octophialucium*

1. 生殖腺长形, 几乎延伸在整条辐管上.....	2
生殖腺很短	4
2. 4条大的触手, 其基球有排泄乳突向外伞攀; 每两条触手间有5~10个各种小触手, 基部无排泄乳突; 每两条小触手间有1个平衡囊	坚实的八拟杯水母 <i>O. solidum</i> (Menon, 1932)
8~16条发达触手, 基球有排泄乳突	3
3. 伞近球形, 胶质很厚, 8条辐管; 生殖腺膨胀, 延伸在整条辐管上; 8条大的触手; 每两条触手间有1~3退化缘球, 有排泄乳突和3~5个平衡囊	贝氏八拟杯水母 <i>O. bigelowi</i> Kramp, 1955
伞拱形, 胶质不很厚; 6~11条辐管, 通常8条; 生殖腺线形, 延伸辐管远端2/3~3/4; 16条触手; 每两条触手间有3~5个退化缘球和1个平衡囊	中型八拟杯水母 <i>O. medium</i> Kramp, 1955
4. 生殖腺位于辐管中部或远端, 近伞缘.....	5
生殖腺位于辐管近端, 近垂管	8
5. 生殖腺延长, 位于辐管中部; 30条缘触手, 每两条触手间通常有1个退化缘基球和3~6个平衡囊; 大部分触手基球有1条短的向心管; 垂管的间辐位有纵列的黑色斑纹	摩勒八拟杯水母 <i>O. mollis</i> Bouillon, 1984
生殖腺位于辐管远端, 近伞缘	6
6. 两条触手间有3~5个退化缘球; 19~28条触手; 平衡囊与触手加退化缘球之和同数	印度八拟杯水母 <i>O. indicum</i> Kramp, 1958
两条触手间无永久性退化缘球	7
7. 约60条缘触手, 紧密排列	密八拟杯水母 <i>O. aphrodite</i> (Bigelow, 1919)
64~128条缘触手, 疏松排列, 内伞腔浅	宽八拟杯水母 <i>O. funerarium</i> (Quoy et Gaimard, 1827)
8. 18条缘触手; 20个退化缘球; 40个平衡囊; 8个生殖腺呈卵圆形, 位于辐管近端, 贴近垂管, 但不与垂管相连	克勃八拟杯水母 <i>O. krampi</i> Bouillon, 1984
16条缘触手; 无退化缘球; 16个平衡囊; 8个生殖腺呈椭圆形, 位于辐管近端, 一端与垂管相连	薇八拟杯水母, 新种 <i>O. huangweiae</i> n. sp.

简单口唇, 其末端凹陷呈短叉状, 无刺胞球; 4条简单辐管, 在近端开沟, 其长度约为辐管1/2; 4个生殖腺位于辐叶的两侧, 被中沟分成二侧半; 伞缘有4条发达触手和许多短棍棒状小触手, 所有触手都具有黑色素斑点; 无排泄乳突; 有许多关闭型平衡囊, 无眼点。

该新属水母有许多关闭型平衡囊, 无眼点; 无排泄乳突; 垂管无胃柄; 有发达缘触手和短棍棒状小触手, 所有触手具黑色素斑点; 生殖腺被中沟分成二侧半。故属于八管水母科 Octocannidae Bouillon, Boero and Sephers, 1991。至今, 已知该科只有八管水母属 *Octocanoides* Menon, 1932^[3], 该属水母与本新属水母的区别特征是:

八管水母属: 垂管无辐射叶; 有8条简单辐管; 有8条缘触手; 有16~32条短棍棒状小触手; 口有8个简单口唇; 有8个生殖腺被中沟分成二侧半。

四管水母属, 新属: 垂管有辐射叶; 有4条辐管, 每条辐管在近端1/2处开沟; 有4条发达缘触手; 有20条短棍棒状小触手; 口有4个末端短叉状的口唇, 无刺胞球; 有4个生殖腺被中沟分成二侧半。

模式种: 景致四管水母, 新属、新种 *Tetracan-*

景致四管水母, 新属、新种 *Tetracanoides jingzhi* gen. et sp. nov. (图4)

水母伞近半球形, 高2~4 mm, 宽3~6 mm; 伞顶钝圆, 胶质厚, 向侧面胶质渐薄; 垂管长而宽, 横切面呈方形, 无胃柄, 整个垂管长度约为内伞腔深度1/2; 垂管有4个主辐叶, 向辐管延伸, 其长度约为辐管长度的1/2; 口有4个末端短叉状口唇, 无刺胞球; 有4条简单辐管, 从垂管主辐壁伸出, 沿着辐叶到达环管, 在辐管

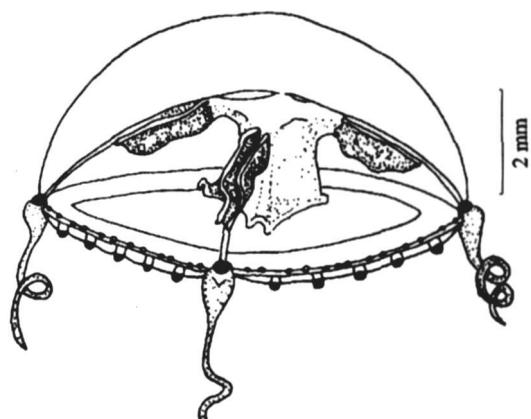


图4 景致四管水母, 新属、新种

Fig. 4 *Tetracanoides jingzhi* gen. et sp. nov.

近端 1/2 处开沟, 构成一条略为弯曲的中沟; 4 个生殖腺在辐射的两侧, 被辐管中沟分成二侧半; 有 4 条发达缘触手, 基球大, 呈长锥状, 有显著背轴黑色素斑点; 每两条触手间有 5 条短棍棒状“小触手”, 无触手基球, 每个小触手顶端有明显的黑色素斑点; 每两条棍棒状小触手之间 2 个关闭型平衡囊(很少 3 个), 每个平衡囊有 2~3 个平衡石; 所有缘触手无排泄乳突。

模式标本: 正模 (AOB-HL238), 副模 (AOB-HL239). 2005 年 7 月在台湾海峡南部上升流区采到 1 个标本; 2006 年 7 月在北部湾采到 1 个标本。

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A Survey on Hydrodomedusae from the Upwelling Region of Southern Part of the Taiwan Strait, China II: On New Genus and Species of Leptomedusae

XU Zhen-zu¹, HUANG Jian-qing¹, GUO Dong-hui^{1,2}

(1. Department of Oceanography, Xiamen University, 2. State Key Laboratory of Marine Environmental Science (Xiamen University), Xiamen 361005, China)

Abstract: This report of the Leptomedusae were collected by research vessels "Yanping" in the upwelling region from the southern part of the Taiwan Strait ($21^{\circ}40' \sim 23^{\circ}51' N$, $116^{\circ}47' \sim 118^{\circ}56' E$) during July 2004~July 2006. Through the analysis of 377 samples of the Leptomedusae, one new genus i.e. *Tetracannoides* n. gen. and four new species i.e. *Staurodiscus multicanalis* n. sp., *Staurodiscus neustona* n. sp., *Octophialicum huangweiae* n. sp. and *Tetracannoides jingzhii* gen. et sp. nov. are described. All type specimens are deposited in the Department of Oceanography, Xiamen University.

Specific Characteristic of New Genus and New Species

Staurodiscus multicanalis n. sp. (Fig. 1)

At present time, only 12 valid species in the *Staurodiscus* Haeckel, 1879 are known^[3]. This new species differs from other species of *Staurodiscus* in having 4 group of primary radial canals, each with 3 primary radial canals, which a rising wall of stomach, each giving rise to 2~3 times of branching dichotomously, all branches reaching circular canal, numerous gonadial papillae thickly crowded, irregularly folded sac shaped, extending outwards from bifurcation of primary radial canals, almost to the umbrella margin, about 40~65 marginal tentacles, with a short club shaped marginal rudimentary bulbs and 5~6 cordyls between successive tentacles, ocelli at the base of each tentacle, rudimentary bulb and cordylus (Tab. 1).

Staurodiscus neustona n. sp. (Fig. 2)

This new species has 8 primary radial canals, four of them unbranched, four with branches. This characters differ from the other species in the *Staurodiscus*, but similar to *Staurodiscus brooksi* (Mayer, 1910) and *S. milleri* (Bouillon, 1984). While this new species specific characters are: only 4 primary radial canals with one time bifurcated branches, other 4 primary radial canals unbranched, all

branches reaching circular canals, with 26~32 marginal tentacles, cordyli in same number as tentacle, without ocelli at base of each tentacle and cordylus, no cirri. These characters differ from the similar species above mention (Tab. 1).

Octophialucium huangweiae n. sp. (Fig. 3)

This new species with normally 8 radial canals, with 8 gonads on radial canals, mouth with 8 lips. So it belongs to *Octophialucium* Kramp, 1955. At present time, only 8 species in *Octophialucium* are known^[4~5,7]. This new species has very short gonads in proximal part of radial canals, these features differ from the other species of *Octophialucium* by having gonads along greater part of radial canals, or in middle of radical canals, or in distal 1/5~1/2 of radial canals, near bell margin etc., but similar to *Octophialucium krampi* Bouillon, 1984. While their main distinctions are:

Octophialucium krampi Bouillon, 1984: with 18 marginal tentacles, with 20 rudimentary bulbs, with 40 statocysts, 8 ovaliform gonads in proximal part of radial canals, near manubrium, but connected not with manubrium, *Octophialucium huangweiae* n. sp.: with 16 marginal tentacles, without rudimentary bulbs, with 16 statocysts, 8 gonads, elliptic like, in proximal part of radial canal, upside connected to manubrium wall (Tab. 2).

Tetracannoides n. gen.

Medusa with long and broad manubrium without gastric peduncle, with four radial lobes, mouth with four simple lips with concavity at their end, forming very short bifurcating, without a terminal knob of cnidocysts, with four simple radial canals, on the proximal with a open grooves, with four gonads on either side of radial lobes and divided into two lateral halves by a median groove, with four marginal tentacles, with numerous short club shaped "tentacae", all marginal structures with black pigmented spots, without excretory papillae, with numerous closed statocysts, no ocelli.

This new genus with numerous closed statocysts, no ocelli, without excretory papillae, manubrium without gastric peduncles, with developed marginal tentacles and short club shaped "tentacae", all marginal structures with black pigmented spots, with gonads divided in two lateral parts separated by a medium groove. So it belongs to Family Octocannidae Bouillon, Boero, and Seghers, 1991. At present time, only one genus in the *Octocannidae* is known^[3]. Their distinguishing characters are:

Octocannoides Menon, 1932: manubrium without radial lobes, with eight simple radial canals, with eight marginal tentacles, with 16~32 short club shaped "tentacae", with 8 simple lips, with 8 gonads consisting of two lateral halves.

Tetracannoides gen. nov.: manubrium with radial lobes, with four radial canals, each in proximal 1/2 of their length with a open grooves, with four lips, very short bifurcating at their end, without knob of cnidocysts, with four gonads divided into two lateral halves by a medium groove, with four marginal tentacles, with 20 short club shaped "tentacae".

Type species: *Tetracannoides jingzhii* gen. et sp. nov.

Tetracannoides jingzhii gen. et sp. nov. (Fig. 4)

Umbrella nearly hemispherical, height 2~4 mm, width 3~6 mm, apex rounded, mesoglea thick at apex, thinning towards the lateral walls, manubrium long and broad, quadrangular in cross section, without gastric peduncle, about 1/2 the length of subumbrella cavity, four perradial lobes extending along the radial canals, about 1/2 the length of the radial canals, four simple lip with concavity at their end, forming very short bifurcating, without a terminal knob of cnidocysts, four simple radial canals arising from corners of manubrium along radial lobes reaching circular canals, which in the proximal 1/2 of their length with a open grooves, forming slight wiring a median groove, four gonads on either side of radial lobes and divided into two lateral halves separated by a medium groove, four marginal tentacles, base bulbs large, long conical shaped, with conspicuous abaxial black pigmented spots, 5 short club shaped "tentacae" between successive tentacles without base bulbs, each with a distinct black pigmented spot on the extreme tip, 2 close statocyst (rarely 3) between successive club shaped tentacae, each with 2~3 concretions, all marginal structures without excretory papillae.

Key words: Leptomedusae; new genus; new species