

南海蔓足甲壳动物两新种和一新纪录*

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提要 于1986, 1987年在南海珠江口浮标上采到(严文侠采)无柄蔓足甲壳动物标本。经本文作者鉴定, 系两新种——珠江藤壶 *Balanus zhujiangensis* sp. n.、美丽藤壶 *Balanus pulchellus* sp. n. 和一新纪录——皮氏小笠藤壶 *Tetraclitella pilsbryi* (Utinomi, 1962)。新种模式标本保存于中国科学院海洋研究所。

在鉴定1986~1987年南海浮标上的标本(严文侠采集)中, 发现了无柄蔓足甲壳动物的两新种和一新纪录。新种的模式标本保存于中国科学院海洋研究所。

皮氏小笠藤壶 *Tetraclitella pilsbryi* (Utinomi, 1962)图1 (Fig. 1)

Tetraclitella (*Tetraclitella*) *pilsbryi* Utinomi, 1962, p. 234, figs. 11, 12; Utinomi et Kikuchi, 1966, p. 8.
Tetraclitella pilsbryi (Utinomi), Ross, 1971, p. 217; Newman et Ross, 1976, p. 47.

标本采集地 南海珠江口浮标上, 共4个标本。

壳低扁, 圆或卵圆形, 污白色。幅部较宽, 具横管, 内面淡紫色。4壳板几乎同样大小, 具有突出放射脊; 一般吻板具3—4肋, 侧板具2—5肋, 峰板具3—6肋, 肋均突出于基缘。壳表具淡的横生长纹, 幅部具纵的生长纹。内面板壁和幅部稍薄, 具有很多六角形板管。壳口菱形, 基底膜质。

楯板三角形, 高度大于宽度, 外表中间具3—5排洞穴交错横的生长脊。闭壳肌窝不清楚, 开闭缘几乎直。背板亚三角形, 峰缘占楯缘长度的1/2, 外表面平坦, 内表面关节

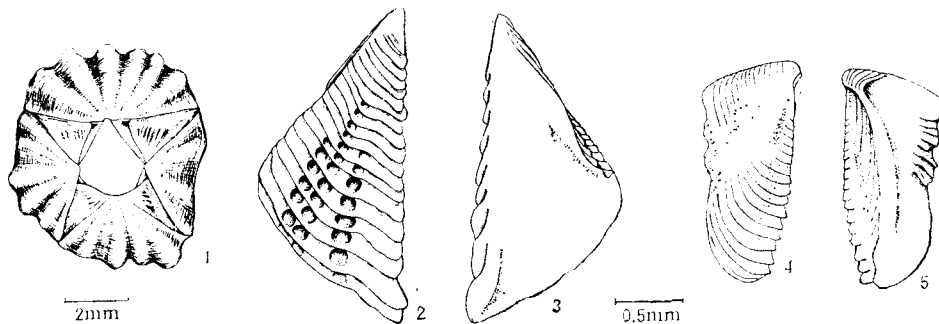


图1 皮氏小笠藤壶 *Tetraclitella pilsbryi* (Utinomi)

1. 外形; 2, 3. 楯板; 4, 5. 背板。

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沟较宽,侧压肌脊 8 条。距短而圆,与基楯角愈合。

最大的标本测量 峰吻径为 7.0mm,侧径为 6.5mm,高为 1.5mm。

标本与 Utinomi (1962) 的描述完全相符,但与模式标本比较,每板的外部肋数和楯板洞穴的列数都有变化。本种为我国的首次纪录。

地理分布 南海,日本。

珠江藤壶 (新种) *Balanus zhujiangensis* sp. n. 图 2 (Fig. 2)

正模式标本 Z3-4-3-(1)。峰吻径为 16.2mm,侧径为 15.0mm,高为 11.5mm。严文侠于 1987 年采自南海珠江口浮标上。

副模式标本 Z3-4-3-(2)。峰吻径为 18.0mm,侧径为 16.3mm,高为 11.0mm。采集时间、地点和采集者同上。

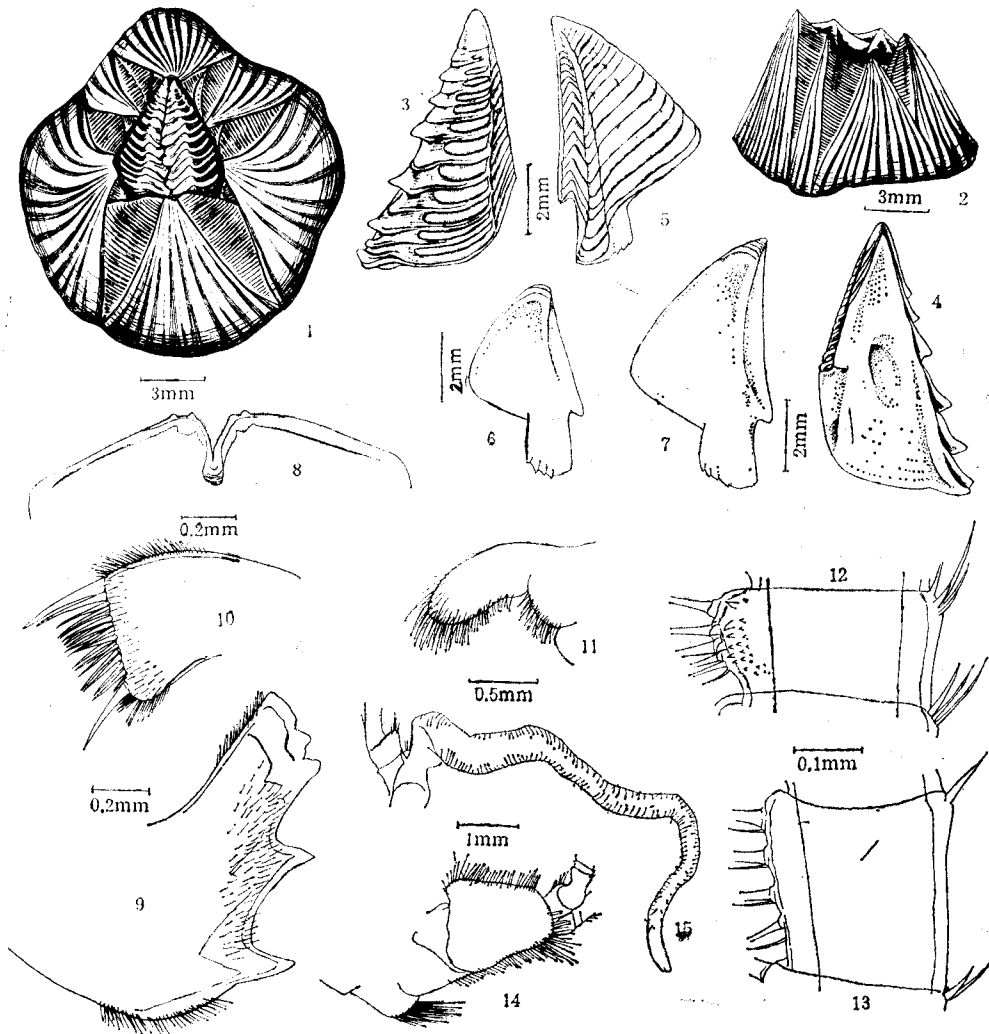


图 2 珠江藤壶(新种) *Balanus zhujiangensis* sp. n.

1,2. 外形; 3,4. 楯板; 5~7. 背板; 8. 上唇; 9. 大颚; 10. 小颚; 11. 第 2 小颚;
12. 第 3 蔓足外肢第 8 节; 13. 第 6 蔓足外肢第 18 节; 14. 第 3 蔓足基部; 15. 交接器。

壳圆锥形,峰板稍高,壳口齿状,呈不规则的三角形。壳表光滑,污白色,具紫红或褐紫色的纵条纹。通常壳顶端和壳板的峰边颜色较深。幅部较宽阔,顶缘稍斜,水平生长纹常常呈紫色,板的峰侧颜色较深。翼部污白色,顶端斜。壳板内面,鞘部占板之上半,常为淡紫色;基缘悬垂。鞘下板面起肋。板具一排板管。基底薄,向周缘加厚,放射管向边缘形成数排。

楯板窄,呈三角形,开闭缘强齿状,基背角斜截,基缘拱弯。表面生长脊强壮发育,常呈淡紫色。板面在开闭边抬高成纵脊状,生长脊间深凹,使中间面成一排凹穴;板的峰半倾斜,内面关节沟窄而浅,关节脊长度超过背缘之半,末端平截;闭壳肌窝较发达,闭壳肌脊较弱,侧压肌窝窄而深。背板平坦,呈三角形,白色,顶端淡紫色;外表面生长脊清楚,中央沟宽;距宽阔,近楯缘,长度约为宽度的 1.5 倍,为基缘宽度的 1/3,峰侧具小齿,常为 4 个;距的峰侧基缘略低于楯侧基缘。背板内面关节脊低,关节沟浅,顶端不成喙状,无侧压肌脊。

上唇中央缺刻较浅,每侧具 2 个小齿,边缘具细毛。大颚具 4 齿,下角钝而平截。小颚切边较直,上对大刺之下无小缺刻,与下一个大刺之间有 16 个细长刺。第 2 小颚和触须为通常形状。

各蔓足分支的节数如下:

$$\begin{array}{cccccc} \underbrace{1} & & \underbrace{2} & & \underbrace{3} & & \underbrace{4} & & \underbrace{5} & & \underbrace{6} \\ 20 & 13 & \times & 12 & 18 & 14 & 29 & 28 & 38 & 34 & 35 & 33 \end{array}$$

第 1 蔓足外肢为内肢长度的 1.5 倍。第 2 蔓足两肢几乎等长。第 3 蔓足基部背角有一丛长刚毛;外肢稍长,6—15 节前缘外表面具有小齿,基部几节的后末角有 1—2 强齿;内肢 5—9 节前侧面也具小齿。第 4—6 对蔓足有几乎等长的分支。

交接器长于第 6 蔓足,基部具小的尾突,有环纹和分散的细短毛。

本新种模式标本外形和背板与 *Balanus concavus* Bronn 相似,特别是背板与 *Balanus concavus indica* Nilsson-Cantell (1932) 的描述特别相似。其主要区别是,新种的楯板表面无与生长脊相似的强纵肋,而有一排横凹穴。本新种楯板上具凹穴和背板的形状特征等与 *Balanus trigonus* Darwin 相似,但壳表面光滑无肋的特点与后者显著不同。

美丽藤壶 *Balanus pulchellus* sp. n. 图 3 (Fig. 3)

正模式标本 Z3-4-3-(3)。峰吻径为 20.0mm,侧径为 21.5mm,高为 10.2mm。严文侠于 1987 年采自南海珠江口浮标上。

副模式标本 Zm1-DB-5, Zm1-BC-9, 2 个破碎标本; Sedeco 602 浮标, 2 个干壳。采集时间、地点和采集者同上。

壳圆锥形,具有白色放射肋,肋间纵条纹为紫红或红褐色,有同色的横斑纹交错。吻板色淡,底色为白色或粉红色,颜色向着峰板加深。壳口菱形,成齿状。幅部较宽,白色或粉红色;幅部近峰侧常具有粉红色纵列斑,顶缘稍斜。翼部顶缘斜。鞘部居壳板内面上半,常呈粉红色;低缘悬垂,其下有低肋和板管 1 排。

楯板较平坦,背基角斜,生长脊清楚,有细而密的纵条纹,常具淡红或淡褐色云斑。板内面光滑,开闭缘具强齿;关节脊不超过背缘,为背缘长度的 2/3,末端平截或略斜;关节沟较深,闭壳肌窝明显,无清楚的闭壳肌脊,侧压肌窝窄而深。背板平坦,白色,常具粉红

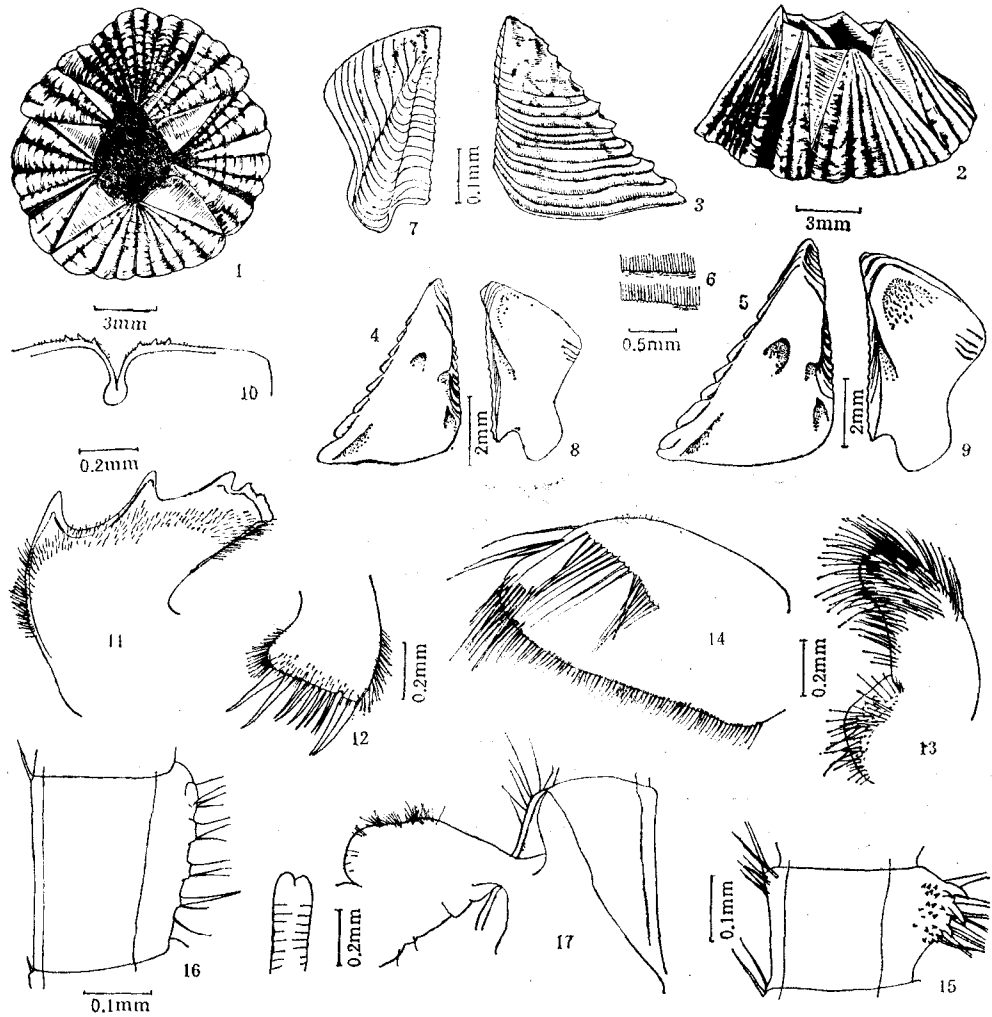


图 3 美丽藤壶(新种) *Balanus pulchellus* sp. n.

1,2. 外形; 3~5. 楯板; 6. 楯板生长脊之细纵纹; 7~9. 背板; 10. 上唇; 11. 大颚; 12. 小颚; 13. 第 2 小颚; 14. 触须; 15. 第 3 蔓足外肢第 9 节; 16. 第 6 蔓足外肢第 18 节; 17. 交接器。

色云斑, 楯缘有细齿, 生长脊清楚, 无纵条纹, 中央沟宽阔开放。距宽阔, 末端圆斜, 约为基缘宽度的 1/3, 距的长度为宽度的 4/5, 基楯角至距的距离约为距宽的 1/2。内面平坦, 关节沟浅, 关节脊低, 4~5 条, 不突出于板的基缘外。基底薄, 具有放射管。

上唇中央缺刻较浅, 其两侧各具 3 齿, 并有细短毛。触须卵圆, 外低表面具 1 斜排长刚毛。大颚有 4 齿, 第 2 齿分叉, 下角平截, 上下缘及侧面都具细毛。小颚切缘较直, 上下两对大刺之间有 7 个较小的细长刺, 下角有 1 组小刺。第 2 小颚为通常形状。

各蔓足分支的节数如下:

1	2	3	4	5	6
18	11	16	26	34	37
13	13	15	29	32	35

第 1 蔓足外肢为内肢长度的 1.5 倍。第 2 蔓足内外肢几乎等长。第 3 蔓足两肢基部

节后末角有 1 直立齿;外肢第 4~12 节前侧面具有小齿;内肢的第 4~8 节有小齿。第 4 蔓足 9~13 节外侧面具有小齿,中部节具 3~4 对刚毛。第 5,6 蔓足内外肢长度几乎相等,中部各节前缘具 4 对刚毛,下部有 1 短刚毛。

交接器较长于第 6 蔓足,背突较发达,但不具细短毛;交接器的基部背面具很多细毛,有环纹。

本新种壳外表具有白色的肋、肋间为紫红色等特征与 *Balanus trigonus* Darwin 相似,与之明显的区别是楯板表面无成排的洞穴。本新种壳板的颜色和具有紫红或褐紫色的斑纹与 *Balanus poecilotheca* Krüger 相似,但壳表具有明显的白色肋,鞘下基缘悬垂,楯板无闭壳肌脊,且压肌脊不突出于基缘之外等特征却均与后者不同。

本新种的楯板和背板形状也与 *Balanus venustus* Darwin 相似;但新种外表具纵肋,楯板无闭壳肌脊,背板侧压肌脊弱,且不突出于基缘之外,小颚切缘具小缺刻,交接器背突无小刺等特征,却均与后者区别明显。

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TWO NEW SPECIES AND ONE NEW RECORD OF CIRRIPEDIA THORACICA FROM SOUTH CHINA SEA

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ABSTRACT

The present paper deals with two new species, *Balanus zhujiangensis* sp. n., *Balanus pulchellus* sp. n., and a new record, *Tetraclitella pilsbryi* (Utinomi), of Cirripedia (Thoracica) from Zhujiang River estuary, South China Sea. Specimens were collected by the South China Sea Institute of Oceanology, Academia Sinica from a buoy in 1986~1987. The type materials of new species are deposited in the Institute of Oceanology, Academia Sinica.

Balanus zhujiangensis sp. n. (Fig. 2)

Holotype: Z3-4-3-(1), Diameter 16.2×15.0mm, height 11.5mm. Zhujiang River estuary, South China Sea. Attached to a buoy, 1987. Yan Wenxia coll.

Paratype: Z3-4-3-(2), Diameter 18.0×16.3mm, height 11.0mm. Same as above.

Shell conical, carina taller; orifice toothed, irregularly triangular. Surface smooth, dirty-white with reddish brown or brownish purple longitudinal stripes. Usually heavily colored near apex and carinal side. Radii wide, summits slightly oblique, growth stripes purple. Alae dirty-white, with oblique summits. Sheath light purple, lower margin overhanging, with lower ribs below it. Parietal tubes in single row. Basis thin, thickened forward outer side, with a few rows of radian tubes.

Scutum narrow-triangular, occludent margin strongly toothed, basi-tergal angle obliquely truncate; basal margin curved. Growth ridges strong and raised, usually light purple, occludent side with a high longitudinal ridge, a row of transversal pits presented between growth ridges on surface of plate; carinal half of plate oblique. Articular furrow shallow; articular ridge over 1/2 length of tergal margin, the end truncate; adductor muscle pit larger; adductor ridge indistinct; lateral depressor muscle pit narrow and deep. Tergum flattened, whitish, light purple on apex; growth ridges distinct; median furrow opened; spur near scutal side, broad, more than 1.5 times as long as wide, 1/3 the length of basal margin, the end with 4 small teeth on carinal side; the basal margin of carinal side of the spur lower than scutal. Articular ridge low, articular furrow shallow; the apex not beaked, without crests for lateral depressor muscle.

Labrum with 2 teeth and fine hairs on crest on each side of shallow notch.

Mandible with 4 teeth and blunt and truncate inferior angle. The cutting edge of maxilla straight, without notch below upper pair of spines, with 16 spines between upper pair spines and a lower spine.

Numbers of segments in cirri are as follows:

I	II	III	IV	V	VI
20 13	× 12	18 14	29 28	38 34	35 33

Anterior ramus of cirrus I 1.5 times as long as posterior. The length of two rami of cirrus II subequal. The dorsal angle of basal part on cirrus III with a group of setae, anterior ramus longer than posterior, outer faces near anterior margins of segments 6~15 with teeth and denticles; postero-distal angle of each basal segment with 1~2 stronger teeth; segments 5~9 of posterior ramus on outer faces also with small teeth. Cirri IV~VI with subequal rami, 4~5 pairs of setae present on anterior margin of each segment in middle portion.

Penis longer than cirrus VI, annulated, with hairs and small basi-dorsal process.

The new species resembles *Balanus concavus* Bronn in external feature and the shape of tergum, especially resembles *Balanus concavus indica* Nilsson-Cantell in the shape of tergum, but differs from them in the scutum of the new species being with a transverse row of pits, and without strong longitudinal striae. The new species is also closely allied to *Balanus trigonus* Darwin in its scutum being with a row of pits and in the shape of tergum, but differs from the latter in its shell being smooth and without longitudinal ribs.

Balanus pulchellus sp. n. (Fig. 3)

Holotype: Z3-4-3-(3), Diameter 20.0×21.5mm, height 10.2mm. Zhujiang River estuary, South China Sea. Attached to buoy, 1987. Yan Wenxia coll.

Paratypes: Zm1-DB-5, Zm1-BC-9, 2 broken specimens; Sedeco Buoy 602, 2 shells. Others same as above.

Shell conical, with white longitudinal ribs, between them are purple or reddish brown longitudinal stripes, crossed by same coloured and irregularly arranged splotches, usually with dark colored carinal and carinal side of parietes. Orifice rhomboid toothed. Raddii broader, white or pink, sometimes near carinal side with pink longitudinal streaks, summits slightly oblique. Alae with oblique summits. Sheath pink, lower margin overhanging, with lower ribs and a row of parietal tubes below it.

Scutum flattened, basitergal angle obliquely truncated; grown ridges distinct, with fine and shorter longitudinal stripes, usually with pink or brown splotches; inner surface of plate smooth, occludent margin with strong teeth, articular ridge not over tergal margin, 2/3 as long as tergal margin, with the end truncated or slightly oblique; articular furrow deeper; adductor muscle pit distinct, without adductor ridge; lateral depressor muscle pits narrow and deep. Tergum flattened, white or with pink splotches; scutal margin with small teeth; grown ridges distinct, without longitudinal

stripes; median furrow broad and opened. Spur broad, with round and slightly oblique end, about $1/3$ as wide as basal margin; spur about $4/5$ as long as wide; distance from basiscutal angle to spur about $1/2$ spur wide; inner surface flat, articular furrow shallow; articular ridge low, crests for depressor muscle lower and 4—5 in number, not projected below basal margin. Basis thin, with radian tubes.

Labrum with 3 teeth and fine hairs on crest on each side of shallow notch. Palpus oval, outer surface with an oblique row of long setae. Mandible with 4 teeth, inferior angle truncate. The cutting edge of maxilla straight, with 7 long spines between upper and lower pairs of spines.

Numbers of segments of cirri are as follows:

I	II	III	IV	V	VI
18 13	11 13	16 15	26 29	34 32	37 35

Anterior ramus of cirrus I 1.5 times as long as posterior. The length of two rami of cirrus II subequal. In cirrus III posterior distal angle of basal segments of two rami each with an erect tooth; outer face near anterior margins of segments 4~12 with teeth and denticles; anterior margins of segments 4~8 of posterior ramus also with small teeth. Segments 9~13 of anterior ramus of cirrus IV with similar teeth. Cirri IV~VI with subequal rami, 4 pairs of setae and a small hair present on anterior margin of each segment in middle portion.

Penis longer than cirrus VI, annulated, basi-dorsal process developed, but without fine hairs, basidorsal surface of penis with many fine hairs.

The new species is similar to *Balanus trigonus* Darwin in outline and colour of the shell, but the scutum being without rows of pits. The new species resembles *Balanus poecilotheca* Krüger in colour and splotches of shell, but it differs from the latter in the surface of shell being with distinct white ribs, the lower margin of sheath being overhanged, the scutum being without adductor ridge, the crests for depressor muscle of tergum not projected below its basal margin. The shapes of scutum and tergum of the present species are similar to *Balanus venustus* Darwin. It differs from the latter in outer surface of the shell being with longitudinal ribs, the scutum without adductor ridge, cutting edge of maxilla with small notch, basi-dorsal process of penis without denticles.