

Taxonomic notes on Hydroidomedusae (Cnidaria) from the South China Sea V: Families Laodiceidae, Lovenellidae, Malagazziidae, and Mitrocomidae (Leptomedusae)

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Abstract

This study reviews all species belonging to the families Laodiceidae, Lovenellidae, Malagazziidae, and Mitrocomidae in the South China Sea. Two new species, *Eucheilota carinata* sp. nov. and *Halopsis nanhaiensis* sp. nov., are described and illustrated. One genus, *Staurostoma*, and two species, *Staurostoma* sp. and *Octophialucium aphrodite* (Bigelow, 1928), are first recorded in China seas. The key to all medusa genera and species of Lovenellidae and Malagazziidae are presented. Other data are briefly summarized to the list and distribution of species presented on the family Laodiceidae, Lovenellidae, Malagazziidae and Mitrocomidae in the South China Sea. The type specimens are deposited in the Third Institute of Oceanography, State Oceanic Administration, China.

Key words: Leptomedusae, new species, new recorded genus and species, South China Sea

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1 Introduction

This is the fifth paper of the series of taxonomic revision and reviews on Hydroidomedusae from the South China Sea (Lin et al., 2016; Xu et al., 2016; Wang et al., 2016).

The present publication treats the families Laodiceidae, Lovenellidae, Malagazziidae, and Mitrocomidae. Based on previous reports (Xu, 1965; Xu and Zhang, 1964, 1978; Xu and Huang, 1983, 1990a, b, 2004; Zhang and Lin, 1984; Huang, 1987; Lin, 1989; Li and Chen, 1991; Lin and Zhang, 1991; Xu et al., 2007, 2014; Lin et al., 2009, 2010; Huang et al., 2010a, b) and recent records of the authors, a total of 36 medusa species including 2 genera of Laodiceidae, 3 genera of Lovenellidae, 3 genera of Malagazziidae and 2 genera of Mitrocomidae were identified in the South China Sea.

This study describes two new species (*Eucheilota carinata* Xu, Huang and Guo sp. nov. and *Halopsis nanhaiensis* Xu, Huang and Guo, sp. nov.). One genus, *Staurostoma*, and two species, *Staurostoma* sp. and *Octophialucium aphrodite*, are newly recorded in the South China Sea.

2 Materials and methods

The samples were collected from the South China Sea (4°00'–18°30'N, 109°00'–119°00'E) during August to September, 2011. All planktonic samples collected using a large-type zooplankton net (80 cm diameter of net mouth, 0.505 mm mesh size) and WP2 zo-

oplankton net (57 cm diameter, 0.202 mm mesh size) by vertical towing from the near bottom (or 200 m in deeper water) to the surface.

Samples were fixed in 5% formaldehyde buffered in seawater, and stored in this solution, and examined by stereoscopic and light microscopy. All drawings were made from preserved specimens using an attached camera lucida. Microphotographs were taken using either an Axiocam MRes (Zeiss) dissecting microscope or a Micaren DC200 camera mounted on a BH-2 Olympus microscope. Type specimens are deposited in the Third Institute of Oceanography, State Oceanic Administration.

3 Taxonomy

List of species presented on the family of Laodiceidae, Lovenellidae, Malagazziidae and Mitrocomidae in the South China Sea (SCS)

(N: northern SCS, M: middle SCS, S: southern SCS, T: Taiwan Strait)

Class Hydroidomedusa Claus, 1877

Subclass Leptomedusae Haeckel, 1866 (1879)

Order Conica Broch, 1910

Family Laodiceidae L. Agassiz, 1862

Genus *Laodicea* Lesson, 1843

Laodicea indica Browne, 1905

T N M S

Laodicea undulata (Forbes and Goodsir, 1853)

T N M S

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- Genus *Staurostoma* **Haeckel, 1879** new record in China
Staurostoma sp. M S
- Family Lovenellidae **Russell, 1953**
- Genus *Eucheilota* **McCrary, 1859**
- Eucheilota bakeri* (Torrey, 1909) T N
- Eucheilota bitentaculata* **Huang, Li and Zhong, 2010** N
- Eucheilota carinata* Xu, Huang and Guo sp. nov. S
- Eucheilota duodecimalis* A. Agassiz, 1862 N
- Eucheilota hongkongensis* **Xu, Huang and Guo, 2014** N
- Eucheilota macrogona* **Zhang and Lin, 1984** N S
- Eucheilota menoni* Kramp, 1959 T N S
- Eucheilota multicirris* **Xu and Huang, 1990** T N
- Eucheilota paradoxica* Mayer, 1900 T N S
- Eucheilota tropica* Kramp, 1959 T N S
- Eucheilota ventricularis* **McCrary, 1859** T N S
- Eucheilota xiamenensis* **Xu, Huang and Guo, 2014** T
- Genus *Lovenella* Hincks, 1868
- Lovenella assimilis* (Browne, 1905) T N M S
- Lovenella haichangensis* **Xu and Huang, 1983** T N
- Lovenella macrogona* **Lin, Xu Xianzhong, Wang, Xu Zhen-zu and Huang, 2010** T N
- Lovenella sinuosa* **Lin, Xu, Huang and Wang, 2009** T
- Genus *Paralovenia* **Bouillon, 1984**
- Paralovenia bitentaculata* **Bouillon, 1984** T N M
- Paralovenia latigaster* **Xu and Huang, 2004** T S
- Family Malagazziidae **Bouillon, 1984**
- Genus *Malagazzia* **Bouillon, 1984**
- Malagazzia carolinae* (Mayer, 1900) T N M S
- Malagazzia condesum* (Kramp, 1953) T N S
- Malagazzia curviductum* (**Xu and Zhang, 1978**) T N
- Malagazzia taeniogonia* (Chow and Huang, 1958) T N
- Genus *Octophialucium* **Kramp, 1955**
- Octophialucium aphrodite* (**Bigelow, 1928**) new record in China M S
- Octophialucium bigelowi* **Kramp, 1955** N
- Octophialucium funerarium* (Quoy and Gaimard, 1827) T
- Octophialucium huangweiae* **Xu, Huang and Guo, 2007** T
- Octophialucium indicum* Kramp, 1958 T N
- Octophialucium medium* **Kramp, 1955** T N S
- Octophialucium sinensis* **Huang, Xu, Guo and Qiu, 2010** T
- Octophialucium solidum* (Menon, 1932) T
- Genus *Tetracanna* Goy, 1979
- Tetracanna octonema* Goy, 1979 T
- Family Mitrocomidae **Haeckel, 1879**
- Genus *Halopsis* A. Agassiz, 1863 new record in China
- Halopsis nanhaiensis* Xu, Huang and Wang, sp. nov. S
- Genus *Mitrocomella* **Haeckel, 1879**
- Mitrocomella grandis* Kramp, 1965 T

Family Laodiceidae L. Agassiz, 1862

Laodiceidae **Russell, 1953**: 229; **Bouillon et al., 2006**: 342; **Xu et al., 2014**: 597.

Diagnosis. Medusa with marginal cordyli, with or without cnidocysts; with 4 or 8 simple radial canals; marginal tentacles hollow; gonads on radial canals, on radial canals and lobes of manubrium or into manubrial pouches; with or without marginal cirri; with or without adaxial ocelli; without statocysts.

Remarks. The family Laodiceidae L. Agassiz, 1862 comprises six genera: *Guillea* **Bouillon, Pagès, Gili, Palanques, Puig and Heussner, 2000**, *Laodicea* Lesson, 1843, *Melicertissa* **Haeckel, 1879**, *Ptychogena* A. Agassiz, 1865, *Staurophora* **Brandt, 1834** and *Wuwula* **Bouillon, Seghers and Boero, 1988** (**Bouillon et al., 2006**). Unfortunately, the generic name of *Staurophora* **Brandt, 1834**

was already preoccupied by *Staurophora* Reichenbach, 1817 (Insecta: Lepidoptera). **Schuchert (2016)** proposed a replacement name *Staurostoma* **Haeckel, 1879** for *Staurophora* **Brandt, 1834**. Thus, the Laodiceidae are represented in Chinese waters by two genera, *Laodicea* Lesson, 1843 and *Staurostoma* **Haeckel, 1879** (= *Staurophora* **Brandt, 1834**). The two genera are at once distinguishable by the form of the mouth which is of the normal leptomedusan type in *Laodicea*, but which in *Staurostoma* is radial canals as open grooves forming large cruciform mouth.

Genus *Staurostoma* **Haeckel, 1879** new record in China

Staurostoma **Haeckel, 1879**: 130.

Staurophora **Brandt, 1834**: 230; **Haeckel, 1879**: 148; **Kramp, 1961**: 148; **Bouillon et al., 2006**: 345.

Type species: *Staurostoma mertensii* (**Brandt, 1834**)

Diagnosis. Medusa with 4 radial canals which in the greater part of their length are open grooves forming a large, cruciform mouth; gonads on diverticula in lateral wall of cruciform, enlarged, mouth-radial canal complex; no cirri; with adaxial ocelli.

Remarks. This genus is recorded from Chinese waters for the first time.

Staurostoma sp. (Fig. 1)

Material examined. Two specimens (TIO 023–024) collected from the southern South China Sea, 22 August 2011, Sta. NT1-1002 (17°44'N, 111°15'E), depth 1 866 m, collector Xiang Peng.

Description. Umbrella 3.5–4.0 mm in height, 7–8 mm in width, bell almost hemispherical, jelly thick and exumbrella with numerous short centripetal furrows; manubrium, mouth and radial canals combined to form a large perradial cross reaching nearly umbrella margin; mouth opening extending along the 4 radial canals transformed for a long distance into open grooves, only distal parts remaining free and closed; mouth arms slit-like, without folded marginal lips; gonads on lateral walls of the radial canals; 4 open radial canals without lateral branched diverticula; about 100 marginal tentacles short, hollow, with elongate conical marginal bulbs; without cirri.

Remarks. The medusa is placed under the genus *Staurostoma* because of the following characters: 4 radial canals as open grooves forming large cruciform mouth; mouth arm slit-like; gonads on lateral walls of mouth-radial canals.

Only one species, *Staurostoma mertensii* (**Brandt, 1834**), is reported in the genus *Staurostoma*. The unnamed medusa is similar to *S. mertensii*, but it can be separated from the latter by: (1) 4 open radial canals above mouth without lateral branched diverticula; (2) gonads on lateral walls of open radial canals; (3) 4 long slit-like arm of mouth without folded marginal lips; and (4) bell 7–8 mm in wide, about 100 short marginal tentacles.

The unnamed medusa is found in the preserved samples, the medusae from the southern South China Sea probably are a new species. As only two immature animals were found and the adult morphology in *Staurostoma* is considerably different, it seems advisable to deter creation of a new species name until the life cycle is known.

Family Lovenellidae **Russell, 1953**

Lovenellidae **Russell, 1953**: 306; **Kramp, 1961**: 172; **Bouillon et al., 2006**: 347–348; **Xu et al., 2014**: 599–600.

Diagnosis. Medusa with short manubrium; no gastric peduncle; no excretory pores; 4 simple radial canals; marginal tentacles hollow, with lateral cirri; no marginal cirri; gonads on radial canals, not reaching manubrium; without or with 8 (exceptionally 4 or 12) or indefinite number of statocysts, 16 or more when adult; no ocelli.

Remarks. The family Lovenellidae was created by **Russell**

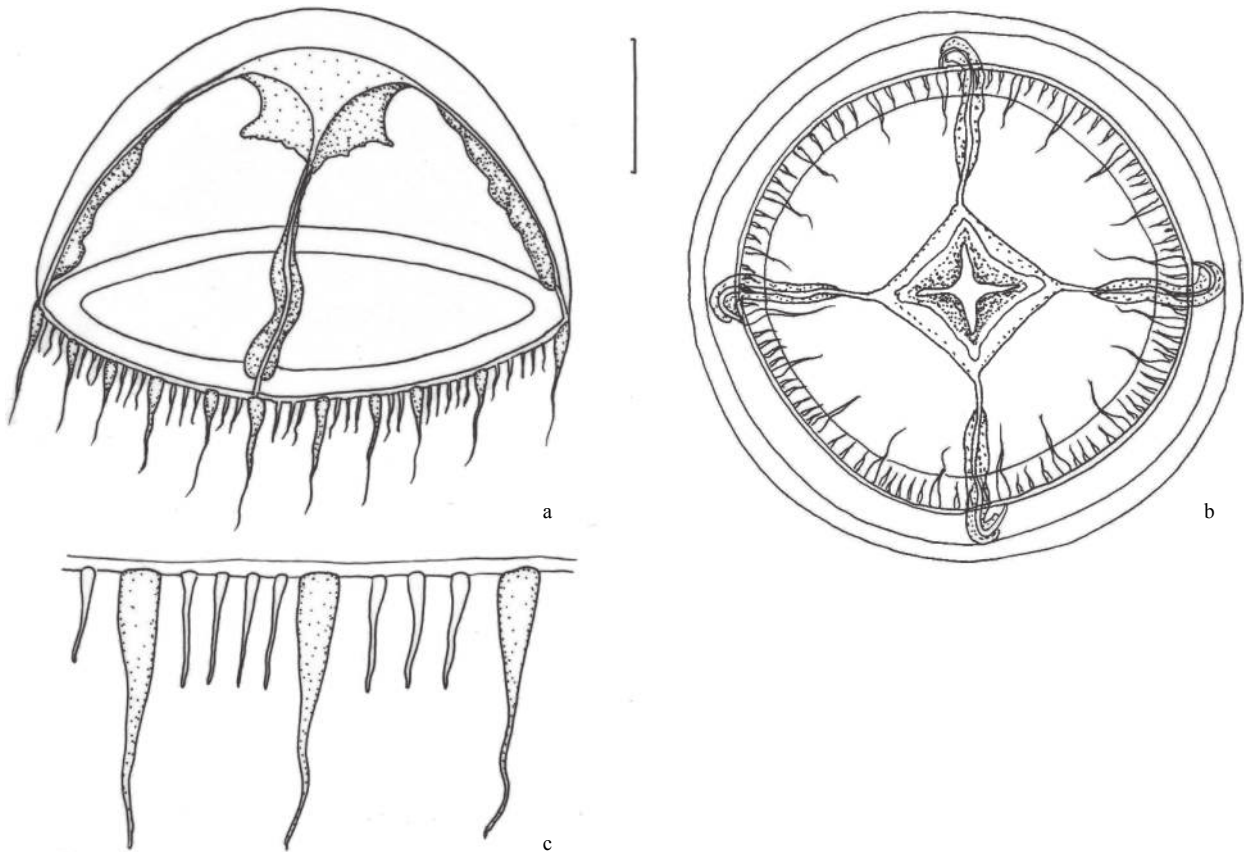


Fig. 1. *Staurostoma* sp.. a. Lateral view, b. oral view, and c. part of bell margin. Scale bar: 2 mm.

(1953) for Leptomedusae with lateral cirri, 4 radial canals, no marginal cirri, peduncle and excretory pores. The family medusa comprises three genera: *Lovenella* Hincks, 1868, *Eucheilota* McCrady, 1859 and *Paralovenia* Bouillon, 1984 (Russell, 1953; Bouillon, 1984).

Genus *Eucheilota* McCrady, 1859

Eucheilota McCrady, 1859: 186–187; Mayer, 1910: 281; Kramp, 1961: 173; Bouillon et al., 2006: 349; Xu et al., 2014: 601.

Type species: *Eucheilota ventricularis* McCrady, 1859

Diagnosis. Medusa with lateral cirri; without marginal cirri; with fixed numbers of statocyst; usually 8, occasionally 12.

Remarks. Members of the genus are easily distinguished from all other genera by medusae with 8 statocysts (exceptionally 12) and with lateral cirri. The genus comprises following species: *Eucheilota bakeri* (Torrey, 1909), *E. birabeni* Tundisi, 1962, *E. bitentaculata* Huang, Li and Zhong, 2010, *E. carinata* Xu, Huang and Guo, sp. nov., *E. comata* (Bigelow, 1909), *E. duodecimalis* Agassiz, 1862, *E. flevensis* Van Kampen, 1922, *E. foresti* Goy, 1979, *E. hongkongensis* Xu, Huang and Guo, 2014, *E. maasi* Neppi and Stiasny, 1911, *E. macrogona* Zhang and Lin, 1984, *E. maculata* Hartlaub, 1894, *E. menoni* Kramp, 1959, *E. minima* Bouillon, 1984, *E. multicirris* Xu and Huang, 1990, *E. paradoxica* Mayer, 1900, *E. tropica* Kramp, 1959, *E. ventricularis* McCrady, 1859 and *E. xiamenensis* Xu, Huang and Guo, 2014 (Bouillon et al., 2006; Xu et al., 2014), of which only twelve species are known in the South China Sea.

***Eucheilota carinata* Xu, Huang and Guo, sp. nov. (Fig. 2)**

Material examined. Holotype (TIO 025) collected from South China Sea, Sta. NNXD12001 (18°15'N, 110°15'E), 24 September 2012, depth 100 m, collector Xiang Peng.

Diagnosis. Umbrella nearly hemispherical; manubrium short, quadratic shape; gonads thick swollen, situated in the near umbrellar margin on radial canals; 4 large perradial tentacles with spindly basal bulbs, clasping umbrella margin, bulge and prominence in abaxial part, forming an abaxial carinate, each flanked by 4–5 pairs of lateral cirri, and in each quadrant with 3 small bulbs, without cirri.

Description. Umbrella nearly hemispherical, 1.5 mm in height, 3.0 mm in width, with slightly thicker jelly at apex, thinning towards the lateral walls; manubrium short, quadratic shape, about 1/4 as long as bell cavity; mouth quadrangular with 4 simple lips; gonads thick swollen, nearly globular, situated in the near umbrellar margin on radial canals; 4 perradial tentacles with a large, spindly basal bulbs, laterally compressed, clasping umbrella margin, each with bulge and prominence in abaxial part, forming an abaxial carinate and with four or five pairs of lateral cirri, and each quadrant three small marginal bulbs without lateral cirri; all tentacular bulbs and marginal bulbs without black pigment; 8 marginal statocysts, each with one concretions; 4 radial canals and a circular canal narrow.

Distribution. The southern South China Sea.

Etymology. The specific name derives from the Latin *carinata* meaning carinate, in reference to the perradial tentacular bulbs with an abaxial carinate.

Remarks. This new species has following characters which are in common with *Eucheilota* McCrady, 1859, medusa with lateral cirri and 8 statocysts.

The new species can be easily distinguished from the other species of *Eucheilota* by: (1) 4 large gonads on the distal end of the radial canals; (2) 4 perradial tentacular bulbs with an abaxial

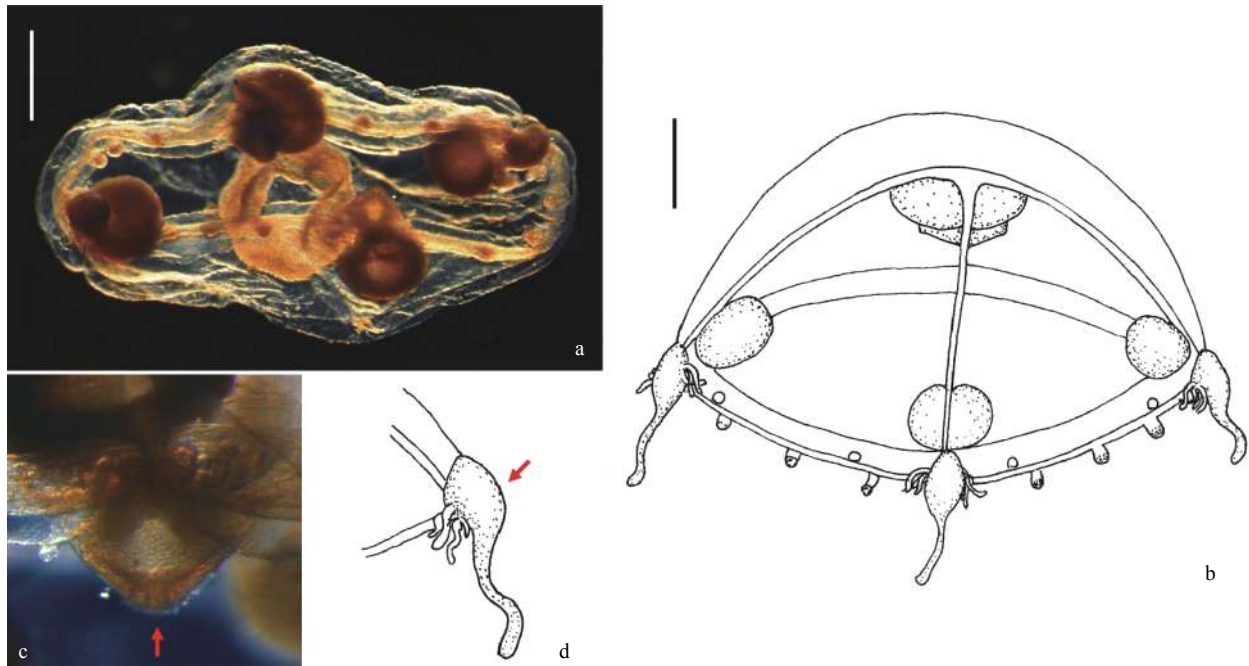


Fig. 2. *Eucheilota carinata* Xu, Huang and Guo, sp. nov.. a. Oral view, b. lateral view, and c and d. enlarged lateral view of tentacular bulbs. Arrows indicate abaxial carinate. Scale bars: 0.5 mm.

carinate, and 4–5 pair lateral cirri; (3) all basal bulbs without black pigment; and (4) umbrella margin in each quadrant with 3 small bulbs without lateral cirri.

Key to medusae of all known species in genus *Eucheilota*

1. With 12 statocysts; no marginal warts; 4 tentacles with one pair of lateral cirri.....*E. duodecimalis* Agassiz, 1862
 - With 8 statocysts.....2
2. With medusa-buds on gonads; 4 large tentacles and 4 or more marginal warts, all with 1–3 pair of lateral cirri.....
 - E. paradoxica* Mayer, 1900 (= *E. taiwanensis* Xu and Huang, 1990)
 - Without medusa-buds.....3
3. 16 or more well developed tentacles.....4
 - No more than 2–8 well developed tentacles.....9
4. 16–46 well developed tentacles.....5
 - 16 well developed tentacles.....8
5. Manubrium with 4 interradial black spots; 1–3 marginal warts between tentacles, all basal bulbs with 1 pair of lateral cirri...
 -*E. maculata* Hartlaub, 1894
 - Manubrium without black spots.....6
6. Gonads elongated sinuous, along entire length of radial canals; 15–46 marginal tentacles with 1 pair of lateral cirri, 17–65 marginal warts without lateral cirri.....
 -*E. birabeni* Tundisi, 1962
 - Gonads elongated linear, along middle 1/3 of radial canals.....7
7. 16 well developed tentacles and 16 marginal warts with 1 pair of lateral cirri, about 24 minute marginal knobs without lateral cirri.....*E. ventricularis* McCrady, 1859
 - 17 well developed tentacles and 23 marginal warts with 1–3 pairs of lateral cirri.....*E. comata* (Bigelow, 1909)
8. 16 well developed tentacles with 2 pairs of lateral cirri; without marginal warts.....*E. flevensis* Van Kampen, 1922
 - 16 well developed tentacles with 2 pairs of lateral cirri, and 16 large marginal warts and 32 small marginal warts without lateral cirri*E. foresti* Goy, 1979
9. 2 perradial tentacles and 2 perradial marginal warts with 3 pairs of lateral cirri, 4 interradial marginal warts without cirri; all marginal warts without black spots.....
 -*E. bitentaculata* Huang, Li and Zhang, 2010
 - 4–8 well developed tentacles.....10
10. 8 well developed tentacles.....11
 - 4 well developed tentacles.....13
11. Gonads elongated, linear-shaped, along entire length of radial canals; 8 tentacular bulbs with 2–5 pairs of lateral cirri; 1–2 marginal warts between tentacles with 2–3 pairs of lateral cirri.....*E. tropica* Kramp, 1959
 - Gonads elliptical-shaped.....12
12. Gonads on the nearly middle of radial canals; tentacular bulbs with 2–3 pairs of lateral cirri; marginal wart without lateral cirri.....*E. xiamenensis* Xu, Huang and Guo, 2014
 - Gonads hanging on the nearly manubrium; tentacular bulbs with 2 pair of lateral cirri; marginal wart with 1 pair lateral cirri.....*E. bakeri* (Torrey, 1909)
13. Tentacular bulbs with black pigment.....14
 - Tentacular bulbs without black pigment.....15
14. Each tentacular bulbs with 2–3 pairs of lateral cirri; 20 marginal warts without lateral cirri; all tentacular bulbs, marginal warts and manubrium wall with black pigment.....
 -*E. menoni* Kramp, 1959
 - Each tentacular bulbs with 6–7 pairs of lateral cirri; 12 marginal warts without lateral cirri; only tentacular bulbs with black pigment.....*E. multicirris* Xu and Huang, 1990
15. Gonads on nearly middle of radial canals.....16
 - Gonads on nearly umbrella margin of radial canals.....18
16. Manubrium short, about 1/5–1/4 as long as bell cavity; tentacles with 1–2 pairs of lateral cirri, marginal warts without lateral cirri.....*E. macrogona* Zhang and Lin, 1984
 - Manubrium narrow elongated, about 1/2 as long as bell cavity.....17
17. 4 long tentacles with 2–3 pairs of lateral cirri, with conical base; 4 marginal warts without lateral cirri.....

-*E. minima* Bouillon, 1984
- 4 short tentacles with 1 pair of lateral cirri, with thick, round bulbs; a number of marginal warts also with lateral cirri.....
-*E. maasi* Neppi and Stiasny, 1911
18. Gonads sausage-shaped, hanging on nearly radial canals of umbrella margin; each tentacle with 3 pairs of lateral cirri; tentacles with conical base, without abaxial carinate.....
-*E. hongkongensis* Xu, Huang and Guo, 2014
- Gonads globular-like, closely on nearly radial canals of umbrella margin; each tentacle with 4–5 pair of lateral cirri; tentacles with spindly basal bulbs, with an abaxial carinate....
-*E. carinata* Xu, Huang and Guo sp. nov.

Family Malagazziidae Bouillon, 1984

Malagazziidae Bouillon, 1984: 77; Bouillon and Boero, 2000: 190; Bouillon et al., 2006: 352; Xu et al., 2014: 216.

Diagnosis. Medusae with small manubrium; without gastric peduncle; with 4–8, sometimes up to 12 radial canals; gonads completely surrounding radial canals, separated from manubrium; with adaxial excretory papillae; no permanent rudimentary marginal bulbs; closed statocysts; without ocelli and cirri.

Remarks. The family Malagazziidae was created by Bouillon (1984) for Leptomedusae with 4–8 radial canals (exceptionally 12), tentacular bulbs with excretory pores, without lateral cirri and marginal cirri. This family medusa comprises four genera: *Malagazzia* Bouillon, 1984, *Octocanna* Haeckel, 1879, *Octophialucium* Kramp, 1955 and *Tetracanna* Goy, 1979 (Bouillon et al., 2006).

Genus *Octophialucium* Kramp, 1955

Octophialucium Kramp, 1955: 256; 1961: 183; Bouillon et al., 2006: 354; Xu et al., 2014: 621.

Type species: *Octophialucium medium* Kramp, 1955

Diagnosis. Normally medusa with 8 radial canals; 8 gonads on radial canals; mouth with 8 lips.

Remarks. The genus *Octophialucium* was erected by Kramp (1955) for the type species *Octophialucium medium* Kramp, 1955, and to comprise several species previously referred to *Octocanna*. The genus comprises following species: *O. aphrodite* (Bigelow, 1928), *O. bigelowi* Kramp, 1955, *O. funerarium* (Quoy

and Gaimard, 1827), *O. huangweiae* Xu, Huang and Guo, 2007, *O. indicum* Kramp, 1958, *O. krampi* Bouillon, 1984, *O. medium* Kramp, 1955, *O. mollis* Bouillon, 1984, *O. sinensis* Huang, Xu, Guo and Qiu, 2010 and *O. solidum* (Menon, 1932). In China seas, only eight species are known.

***Octophialucium aphrodite* (Bigelow, 1928) new record in China (Fig. 3)**

Octocanna polynema Maas, 1905: 95, Pl. 3, Fig. 10.

Octocanna aphrodite nom. nov. Bigelow, 1928: 307, Pl. 42, Figs 1–2.

Octophialucium aphrodite Kramp, 1955: 259; 1961: 183; 1968: 87–89, 156, Fig. 239; Bouillon et al., 2006: 354.

Material examined. Four specimens (TIO 026–029) collected from the South China Sea, Sta. ND11027 (10°59'N, 114°59'E), depth 653 m, 6 September 2011, and Sta. NNXW12022 (7°40'N, 113°20'E), depth 2 000 m, 19 September 2012, collector Xiang Peng.

Description. Umbrella 21–24 mm diameter; bell flatter than a hemisphere; jelly thick except at umbrella margin; subumbrellar cavity extremely shallow; stomach large, with base in form of eight-rayed star; mouth with eight short and slender lips, with slightly wavy margin; usually with 8 straight radial canals and ring canal narrow; gonads short, spindle-shaped, about 1/2 or 1/3 length of radial canals, one at distal end of each radial canal, not quite reaching ring canal; about 72–128 tentacles with well developed tentacular bulbs and excretory papillae, with large basal bulbs closely crowded on the bell margin, without permanent rudimentary bulb; one or two, usually one statocyst between every two tentacles, each with one to four concretions.

Distribution. The species is an offshore neritic species, it occurs in the southern South China Sea from September, which is recorded here for the first time in China seas. It also has been recorded in Amboina, Indonesia (Maas, 1906), Philippines (Bigelow, 1928), Java Sea (Stiasny, 1928), east Mozambique Channel (Kramp, 1957) and Indian Ocean (Kramp, 1968).

Remarks. The synonymy and taxonomic history of this *Octophialucium aphrodite* see Bigelow (1928) and Kramp (1955).

The medusa *Octophialucium aphrodite* can be difficult to distinguish from *O. funerarium*. The following differences help to

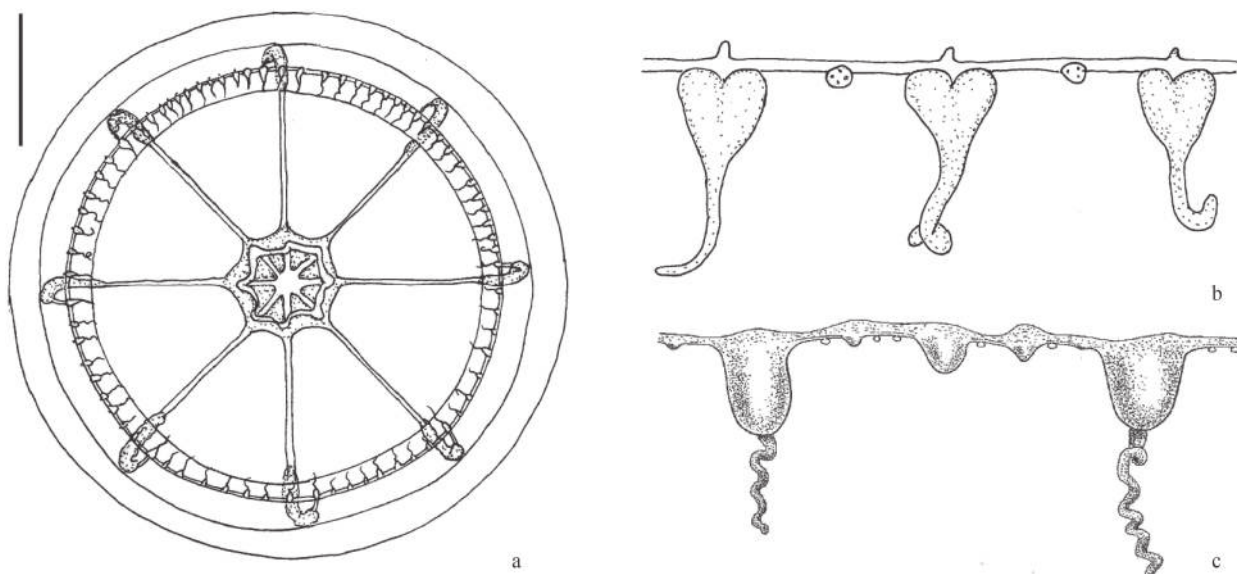


Fig. 3. *Octophialucium* spp.. a and b. *O. aphrodite* (Bigelow, 1928) and c. *O. funerarium* (Quoy and Gaimard, 1827). a. Aboral view of mature medusa, b. portion of umbrella margin, and c. part of bell margin of *O. funerarium* (after Russell, 1953). Scale bar: 5 mm.

differentiate them. The marginal tentacular bulb is elongated conically in *O. aphrodite* whereas in *O. funerarium* there is almost rectangular (Figs 3b, c). The excretory papilla of tentacular bulb is large in *O. aphrodite* whereas in *O. funerarium* is very small. The number of statocysts between adjacent marginal tentacles is one in *O. aphrodite* whereas in *O. funerarium* is two.

Key to medusae of all known species in genus *Octophialucium*

1. Gonads long, along greater part of radial canals.....2
 - Gonads short, no more than half as long as radial canals.....4
2. 4 tentacles with excretory papillae, about 5–10 rudimentary bulbs between successive tentacles without excretory papillae*O. solidum* (Menon, 1932)
 - 8–16 tentacles with excretory papillae.....3
3. 8 tentacles; 1–3 rudimentary bulbs between successive tentacles*O. bigelowi* Kramp, 1955
 - 16 tentacles; 3–5 rudimentary bulbs between successive tentacles.....*O. medium* Kramp, 1955
4. Gonads nearly manubrium on radial canals.....5
 - Gonads in the middle or distal on radial canals.....6
5. 16 tentacles; no rudimentary bulbs; 16 statocysts; gonads up-side connected to manubrium.....
 -*O. huangweiae* Xu, Huang and Guo, 2007
 - 18 tentacles; 20 rudimentary bulbs; 40 statocysts; gonads connected not with manubrium.....*O. krampi* Bouillon, 1984
6. Gonads in the middle on radial canals.....7
 - Gonads in distal on radial canals.....8
7. 4 large, 4 middle and 24 small tentacles; no rudimentary bulbs; 1 statocyst between successive tentacles.....
 -*O. sinensis* Huang, Xu, Guo and Qiu, 2010
 - 30 tentacles; 1 rudimentary bulb and 3–6 statocysts between successive tentacles.....*O. mollis* Bouillon, 1984
8. 18–30 tentacles; 3–5 rudimentary bulbs between successive tentacles; all basal bulbs with excretory papillae; 1–2 statocysts between tentacles.....*O. indicum* Kramp, 1958
 - 50–128 tentacles; without rudimentary bulbs.....9
9. 64–128 tentacles with well developed bases almost rectangular, with excretory papillae small, usually 2 statocysts between adjacent tentacles....*O. funerarium* (Quoy and Gaimard, 1827)
 - 72–128 tentacles with well developed excretory papillae, tentacular bulbs large, elongate conical; usually 1 statocyst between adjacent tentacles.....*O. aphrodite* (Bigelow, 1928)

Family Mitrocomidae Haeckel, 1879

Mitrocomidae Haeckel, 1879: 163; Russell, 1953: 256; Kramp, 1961: 150; Bouillon et al., 2006: 357; Xu et al., 2014: 630.

Type genus: *Mitrocomella* Haeckel, 1879

Diagnosis. Medusa with base of manubrium attached to sub-umbrella along continuation of radial canals; 4 or more simple radial canals; marginal tentacles hollow; with or without marginal cirri; gonads on radial canals, oval or linear, separated from manubrium; with open marginal statocysts; no ocelli.

Remarks. The family Mitrocomidae comprises seven genera: *Cosmetira* Forbes, 1848, *Cosmetirella* Browne, 1910, *Cyclocanna* Bigelow, 1918, *Foersteria* Arai and Brinckmann-Voss, 1980, *Halopsis* A. Agassiz, 1863, *Mitrocoma* Haeckel, 1864 and *Mitrocomella* Haeckel, 1879 (Bouillon et al., 2006). However, *Foersteria* Arai and Brinckmann-Voss, 1980 is a junior homonym of *Foersteria* Szépligeti, 1896 (Insecta), Collins et al. (2006) proposed *Earleria* Genzano and Mianzan, 2006 to replace *Foersteria* Arai and Brinckmann-Voss, 1980. From the Chinese waters, two genera *Halopsis* and *Mitrocomella* are known.

Key to medusa genera in family Mitrocomidae

1. Radial canals “S” shaped.....*Cyclocanna* Bigelow, 1918
 - Radial canals straight.....2
2. 4 radial canals.....3
 - 12–16 radial canals.....*Halopsis* A. Agassiz, 1863
3. Marginal cirri.....5
 - No marginal cirri.....4
4. Numerous open statocysts.....*Earleria* Genzano and Mianzan, 2006
 - Only 8 open statocysts.....*Cosmetirella* Browne, 1910
5. Flexile cirri, with cnidocysts throughout their length, 8 marginal statocysts.....*Cosmetira* Forbes, 1848
 - Spiral marginal cirri with terminal cnidocyst cluster.....6
6. 8–16 open statocysts.....*Mitrocomella* Haeckel, 1879
 - Numerous (20–160) open statocysts.....*Mitrocoma* Haeckel, 1864

Genus *Halopsis* A. Agassiz, 1863 new record in China

Halopsis A. Agassiz, 1863: 219; Kramp, 1961: 153; Russell, 1953: 273; Bouillon et al., 2006: 359.

Type species: *Halopsis ocellata* A. Agassiz, 1863

Diagnosis. Medusae with more than 8 radial canals; with or without marginal cirri spirally coiled; with linear gonads; numerous open statocysts.

Remarks. The *Halopsis* is immediately distinguishable from other genera in the family by its variable number of radial canals, twelve to sixteen. The genus comprises the following two species: *Halopsis ocellata* A. Agassiz, 1863 and *Halopsis nanhaiensis* Xu, Huang and Guo, sp. nov.. In China seas, only one species is known.

Halopsis nanhaiensis Xu, Huang and Guo, sp. nov. (Fig. 4)

Material examined. Two specimens collected from the southern South China Sea: Holotype (TIO 030) Sta. NT11003 (17°24'N, 111°59'E), depth 975.5 m, 23 August 2011; paratype (TIO 031) Sta. ND11022 (7°20'N, 115°09'E), depth 2 833 m, 2 September 2011, collector Xiang Peng

Diagnosis. Umbrella shallow bell-shaped; manubrium short and mouth with 4 simple short lips; branching of radial canals occurring without periphery of manubrium; with 46 large open statocysts; 7 to 12 between each successive pair of radial canals, about an equal number of marginal tentacles, and with broad conical basal bulb; gonad elongated linear, along nearly umbrella margin of radial canals; without marginal cirri.

Description. Medusa 2–9 mm in diameter, shallow bell-shaped, about four times as broad as high; jelly fairly thick, especially in centre of bell, diminishing in thickness evenly towards margin; base of stomach attached to subumbrella, nearly cruciform and only 1/4 as wide as the bell-diameter; manubrium short and mouth with 4 simple short lips, somewhat folded; radial canals arise from the periphery of manubrium in 4 radially situated clusters, usually 12 radial canals, with 2 to 4 canals in each cluster, some branch canals may end blindly, not having reached the ring canal; gonads elongated linear, along nearly umbrella margin of radial canals; about 46 marginal tentacles (diameter of umbrella 9 mm), with broad conical basal bulb, without marginal cirri; about 46 large open statocysts, 7 to 12 between each successive pair of radial canals, and about an equal number of marginal tentacles, each statocyst contains 12 concretions arranged in two rows; velum very well developed.

Distribution. The southern South China Sea.

Etymology. The species name is from the Latin *nanhaiensis*, meaning Nanhai. The species name refers to the type locality of Nanhai (the South China Sea).

Remarks. This new species has following characters which

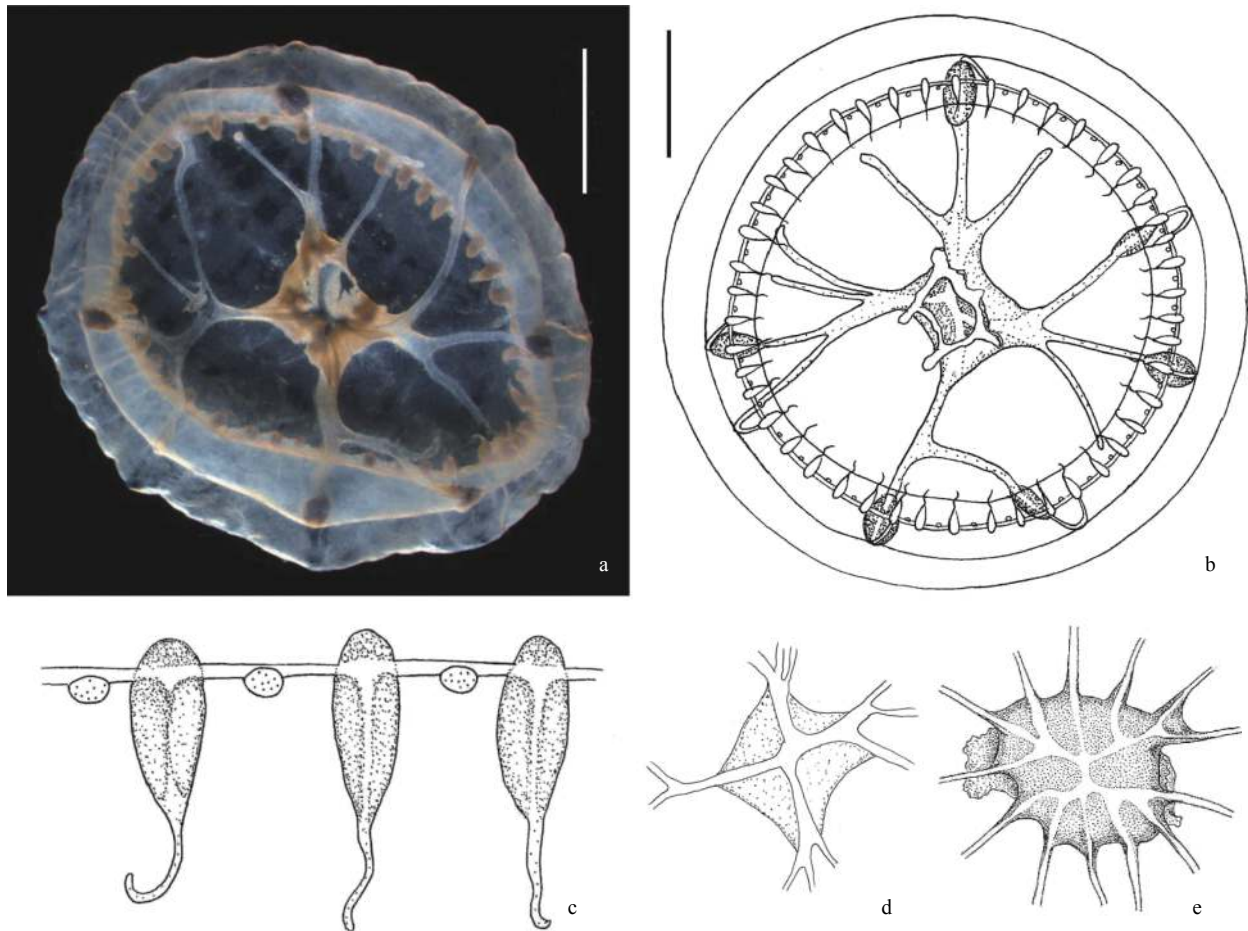


Fig. 4. *Halopsis* spp.. a–d. *H. nanhaiensis* Xu, Huang and Guo, sp. nov., and e. *H. ocellata* A. Agassiz, 1863. a–b. Aboral view of mature medusa, c. portion of umbrella margin, d. branching of radial canals without periphery of manubrium, and e. branching of radial canals occurring within periphery of manubrium (after Russell, 1953). Scale bars: 2 mm.

are in common with *Halopsis* A. Agassiz, 1863: medusae with numerous open marginal statocysts; no ocelli; with 12 radial canals straight; with linear gonads on radial canals; without marginal cirri.

At present time, only one species in the *Halopsis* is known. This new species differs from the *Halopsis ocellata* by following: (1) the former branching of radial canals occurring without periphery of manubrium (Fig. 4d), but later branching of radial canals occurring within periphery of manubrium (Fig. 4e); (2) the former with 46 large open statocysts, 7 to 12 between each successive pair of radial canals, about an equal number of marginal tentacles, but latter with 40–80 large open statocysts, 3–6 between each successive pair of radial canals, not more than number of marginal tentacles; (3) the former gonad elongated linear, along nearly umbrella margin of radial canals, but latter gonad elongated folded, along entire length of radial canals; and (4) the former a number of hollow marginal tentacles with 46 in number, about diameter of umbrella in length, but latter a large number of hollow marginal tentacles, up to at least 450 in number, about 1/3 to 1/2 diameter of number in length.

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