

# Taxonomic notes on Anthomedusae (Cnidaria: Hydrozoa: Hydroidomedusa) from the south-central South China Sea, with a new genus and four new species

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## Abstract

This study describes and illustrates four new species *Laticanna nanhaiensis* Xu, Huang and Wang, gen. nov. and sp. nov., *Protiaropsis gemmifera* Xu, Huang and Du, sp. nov., *Merga nanhaiensis* Xu, Huang and Guo, sp. nov. and *Rhabdoon apiciloculus* Xu, Huang and Du, sp. nov. based on specimens from the south-central South China Sea. Additionally, keys to known genera of family Bythotiaridae and species of genera *Protiaropsis*, *Merga*, and *Rhabdoon* are described. All type specimens are deposited in the South China Sea Fisheries Research Institute, Chinese Academy of Fishery Science.

**Key words:** Hydroidomedusae, Bythotiaridae, Pandeidae, Tubulariidae, new genus and species, South China Sea

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## 1 Introduction

This is the second publication in a series of taxonomic revisions of Anthomedusae from the south-central South China Sea, which began with the family Ptilocodiidae (Wang et al., 2017).

This study treats the families Bythotiaridae, Pandeidae and Tubulariidae. Based on collections of the authors, one new genus and four new species under the subclass Anthomedusae were identified from the south-central South China Sea.

## 2 Materials and methods

Specimens of the new species were collected from the region (9°05′–11°26′N, 113°54′–114°36′E) in the south-central South China Sea during May 2014. All planktonic samples were collected using a large-type zooplankton net (80 cm diameter, 0.505 mm mesh size) by vertical hauls from depth 200 m to surface. Specimens were fixed in 5% formalin buffered in seawater. Specimens were examined using stereoscopy and light microscopy, and taxonomic identification were undertaken based on the literatures specified in the references section.

## 3 Taxonomy

### List and taxonomic position of new genus and species

Class Hydroidomedusa Claus, 1877

Subclass Anthomedusae Haeckel, 1879

Order Filifera Kühn, 1913

Family Bythotiaridae Maas, 1905

Genus *Laticanna* Xu, Huang and Du, gen. nov.

*Laticanna nanhaiensis* Xu, Huang and Wang, sp. nov.

Genus *Protiaropsis* Stechow, 1919

*Protiaropsis gemmifera* Xu, Huang and Du, sp. nov.

Family Pandeidae Haeckel, 1879

Genus *Merga* Hartlaub, 1913

*Merga nanhaiensis* Xu, Huang and Guo, sp. nov.

Order Capitata Kühn, 1913

Family Tubulariidae Fleming, 1828

Genus *Rhabdoon* Keferstein and Ehlers, 1861

*Rhabdoon apiciloculus* Xu, Huang and Du, sp. nov.

### Family Bythotiaridae Maas, 1905 (=Calycoptidae Hartlaub, 1913)

*Laticanna* Xu, Huang and Wang, gen. nov.

Type species: *Laticanna nanhaiensis* Xu, Huang and Wang, sp. nov.

**Description.** Bythotiaridae without apical projection, marginal bulbs absent; two kinds of tentacles, long, hollow tentacles with scattering cnidocysts and a small terminal knob, and short, solid ones without a terminal knob, basal portion of tentacles usually adnate to exumbrella; four unbranched radial canals very broad, without centripetal canal; without gastric peduncle, mouth simple, circular; gonads on manubrial wall, simple no transverse folds; no ocelli.

**Etymology.** The generic name *Laticanna*, meaning lati-canal,

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which refers to very broad radial canals.

**Remarks.** The new genus has the key characteristics of the family Bythotiaridae. The family is composed of the following genera: *Bythocellata* Nair, 1951; *Bythotiar*a Günther, 1903; *Calycopsis* Fewkes, 1882; *Eumedusa* Bigelow, 1920; *Gymnogonium* Xu and Huang, 1994; *Meator* Bigelow, 1913; *Protiaropsis* Stechow, 1919; *Pseudotiara* Bouillon, 1980; *Sibogita* Maas, 1905 (Bouillon et al., 2006; Schuchert, 2010). Members of the new genus differ from the other genera of Bythotiaridae, because they have four very broad unbranched radial canals and two kinds of tentacles. Although *Eumedusa* also has two kinds of tentacles, *Laticanna* can be distinguished from *Eumedusa* by the following traits: (1) without centripetal canals; (2) gonads circular, surrounding all manubrium, no transverse folds; (3) mouth simple, circular; and (4) four long marginal tentacles.

**Key to medusa genera of family Bythotiaridae**

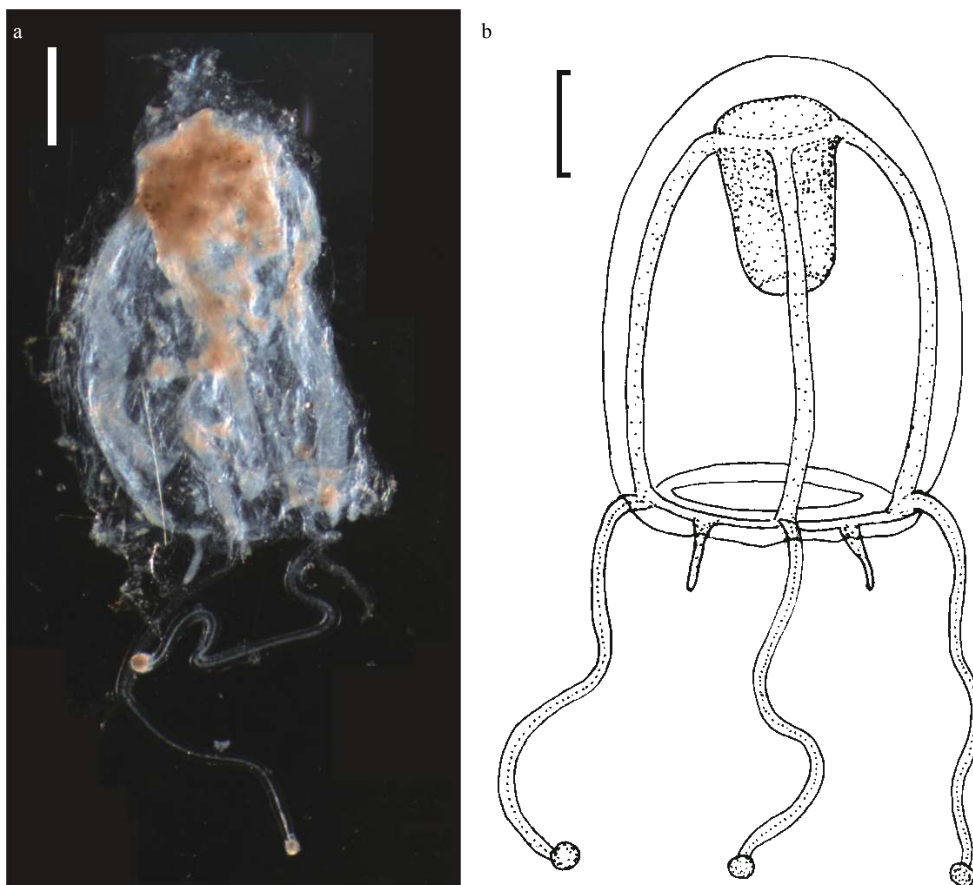
- 1. Centripetal canals, blind or joining base of manubrium.....2
  - No centripetal canals.....4
- 2. All tentacles hollow, cnidocysts only in the terminal knob.....3
  - Two kinds of tentacles.....3
- 3. 8–16 large, hollow tentacles, with rings of cnidocysts and terminal knob; numerous small solid dwarf tentacles without terminal knob.....*Eumedusa* Bigelow, 1920
  - 4 large perradial and numerous small tentacles, all without terminal knob.....*Meator* Bigelow, 1913
- 4. Radial canals simple, unbranched.....5
  - Radial canals branched; gonad folded.....8

- 5. Radial canals very broad; 4 long, hollow tentacles with terminal knob; 4 short, solid tentacles without terminal knob.....*Laticanna* Xu, Huang and Du, gen. nov.
  - Radial canals narrow; all tentacles hollow with terminal knob...6
- 6. Gonads smooth, adradial.....*Pseudotiara* Bouillon, 1980
  - Gonads smooth, interradial.....7
- 7. 8 radial canals; marginal tentacles with abaxial basal ocelli.....*Bythocellata* Nair, 1951
  - 4 radial canals; no ocelli.....*Protiaropsis* Stechow, 1919
- 8. Radial canals branching repeatedly at various levels.....*Sibogita* Maas, 1905
  - Radial canals simple or bifurcated.....9
- 9. 4 radial canals simple or bifurcated; gonads interradial with transverse furrows; marginal bulbs absent.....*Bythotiar*a Günther, 1903
  - 2 simple and 2 bifurcated radial canals; gonads smooth per-radial; marginal tentacles with basal swelling embedded in mesoglea.....*Gymnogonium* Xu and Huang, 1994

***Laticanna nanhaiensis* Xu, Huang and Wang, gen. nov. and sp. nov. (Fig. 1)**

**Material examined.** Holotype (SFI 003) collected from the southern South China Sea, Sta. S38 (7°30'N, 115°30'E), depth 2 927 m, sampling depth 200 to 0 m, 15 September 2013, collector Ning Jiajia.

**Diagnosis.** Umbrella bell-shaped with round dome, apex very thick, without apical projection; manubrium without gastric peduncle; four unbranched radial canals very broad, without centripetal canal; two kinds of tentacles, four long, hollow ones with a



**Fig. 1.** Lateral view of *Laticanna nanhaiensis* Xu, Huang and Wang, gen. nov. and sp. nov.. Scale bars: 1.0 mm.

small terminal cnidocyst knob, and four short, solid ones without terminal knob; all tentacles without base swelling, but their basal part adnate to exumbrella, umbrellar margin without marginal lobe; no ocelli.

**Description.** Umbrella bell-shaped, 4.5 mm high, 3.5 mm wide, with round dome, apex very thick, but thinner toward the bell margin, without apical projection, exumbrella smooth without scattered cnidocyst; manubrium very voluminous, cylindrical without gastric peduncle, about half of the height of bell cavity; mouth simple, circular; four very broad unbranched radial canals and a narrow circular canal, with granular materials, no centripetal canal; gonads encircle the manubrium, extending from near its base almost to the mouth; two kinds of tentacles, four very extendible perradial hollow tentacles with scattering cnidocysts and a small terminal cnidocyst knob, four short, interradial solid tentacles without terminal knob, all tentacles without base swelling, but their basal part adnate to exumbrella; umbrellar margin without marginal lobe; no ocelli; velum narrow.

**Distribution.** The South China Sea.

**Etymology.** From the Latin *nanhaiensis*, meaning the South China Sea, which refers to where the species was first collected.

***Protiaropsis gemmifera* Xu, Huang and Du, sp. nov. (Fig. 2)**

**Material examined.** Holotype (SFI 004) and paratype (SFI 005) collected from the southern South China Sea, Sta. B2ZI19 (14°24'N, 116°57'E), depth 4–100 m, sampling depth 240 m to 0 m, 4 August 2014, collector Wang Lianggen.

**Diagnosis.** Umbrella bell-shaped with round dome, apex very thick, without apical projection; manubrium without gastric peduncle, with several medusa-buds developing interradial region of the manubrium, no transverse folds; umbrella with 8 tentacles, no base swelling, each with a terminal cnidocyst cluster; umbrella margin with 8 marginal lobes; no ocelli and secondary tentacles.

**Description.** Umbrella bell-shaped, 4–6.5 mm high, 3–4 mm wide, with round dome, apex very thick, without apical projec-

tion; exumbrella smooth without scattered cnidocysts; manubrium pyramidal, no gastric peduncle, with a broad base, about 1/3 length of subumbrellar cavity; mouth simple, circular; with 4 radial canals and a circular canal; gonads with several medusa-buds developing interradial region of the manubrium, no transverse folds; 4 perradial and 4 interradial hollow primary marginal tentacles, without base swelling, but their basal part adnate to exumbrella, sunk into a narrow fissure between two marginal lobes; each tentacle with a terminal cnidocyst cluster, usually spherical and always arising abruptly from a very thin portion of the tentacle; no secondary tentacles; without ocelli; velum narrow.

**Distribution.** The southern South China Sea.

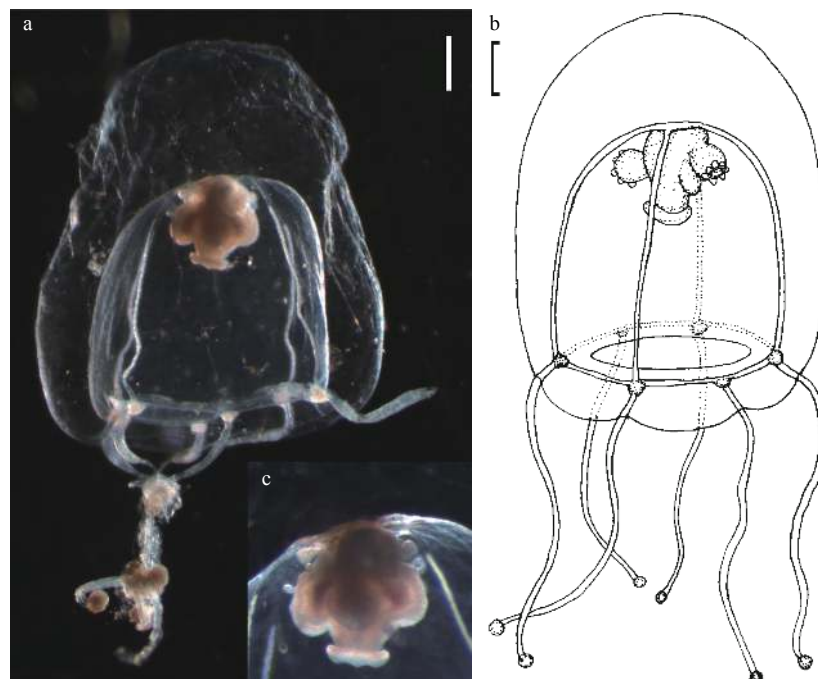
**Etymology.** From the Latin *gemmifera*, meaning gemmifer. The species name refers to the manubrium with medusa-buds.

**Remarks.** The new species has 4 simple radial canals; no centripetal canals; gonad interradial with no transverse folds; without secondary tentacles; no ocelli; with a marginal lobe between successive tentacles; tentacles without basal swelling. These features place this medusa in the genus *Protiaropsis* Stechow, 1919.

Only four valid species of *Protiaropsis* are known (Bouillon et al., 2006; Xu et al., 2016). This new species can be distinguished from other *Protiaropsis* species by its lack of gastric peduncle and presence 8 tentacles. However, similar to *P. minor*, each tentacle terminates with a large cnidocyst cluster. The major differences between them include: 8 tentacles and gonads with medusa buds developing interradial region of manubrium in *P. gemmifera*, and 16–24 tentacles, gonads with irregular transverse folds, and a lack of medusa buds in *P. minor*.

**Key to the known species in genus *Protiaropsis***

1. Manubrium with gastric peduncle; with 4 large mass-like gonads in interradial of manubrium.....*P. pedunculata* Xu, Huang and Guo, 2016
- Manubrium without gastric peduncle.....2
2. With 4 tentacles, with terminal knob of cnidocyst; with 4 perra-



**Fig. 2.** *Protiaropsis gemmifera* Xu, Huang and Du, sp. nov.. a and b. Lateral view, and c. gonad with medusa buds. Scale bars: 1.0 mm.

dial exumbrella cnidocyst tracks clasping the bell margin, reaching 1/3 of exumbrella height; 4 pad-shaped gonads in interradial position on manubrium.....

- .....*P. tetranema* Xu, Huang and Wang, 2016
- With 8 or more tentacles.....3
- 3. With 8 tentacles, with medusa buds developing interradial region of the manubrium...*P. gemmifera* Xu, Huang and Du, sp. nov.
- With more than 8 tentacles.....4
- 4. With 8–12 tentacles, each terminating more elongate, slight swelling.....*P. anonyma* (Maas, 1905)
- With 16–24 tentacles, each terminating in a large cnidocyst cluster.....*P. minor* (Vanhöffen, 1911)

#### Family Pandeidae Haeckel, 1879

##### Genus *Merga* Hartlaub, 1914

*Merga* Hartlaub, 1914: 249; Kramp, 1961: 106; Bouillon et al., 2006: 193; Schuchert, 2007: 347–348; Xu et al., 2014: 318

Synonyms *Tiarula* Hartlaub, 1914 [type species: *Tiarula tergestina* Neppi and Stiasny, 1912]; *Janiopsis* Bouillon, 1980 [type species *Janiopsis costata* Bouillon, 1980]

Type species: *Pandea violacea* Agassiz and Mayer, 1899 by designation of Hartlaub, 1914

**Diagnosis.** Pandeid medusae with or without apical projection; exumbrella with or without longitudinal ridges and ribs; with mesenteries, stomach with cross-shaped base, manubrium not twisted, with simple or faintly folds oral lips; gonads smooth or granulate, covering interradial apical part of manubrium, at maturity extending adradially along mesenteries and radial canals; four, eight or more tentacles; with or without rudimentary bulbs or tentaculae, with or without ocelli.

**Remarks.** Hartlaub (1914) established the genus *Merga* to accommodate pandeid medusae that resemble *Leuckartiara* or *Halitholus* species but have gonads without folds. *Merga* is distinguished from *Leuckartiara* by gonads on interradial walls of manubrium, bipartite but with broad connection in upper half, with wide various degrees of folding, and from *Halitholus* by gonads adradial with or without horizontal interradial connection, gonad folds directed towards perradial.

*Janiopsis* Bouillon, 1980 is preoccupied by *Janiopsis* Rovereto, 1899 [Gastropoda: Buccinidae; fossils]. According to Schuchert (2010), *Janiopsis* Bouillon, 1980 is congeneric with *Merga* Hart-

laub, 1914 and there is no need to introduce a replacement name. *Janiopsis* Bouillon is composed of six species, which are combinations, and include *Merga costata* (Bouillon, 1980) n. comb. (Schuchert, 2010); *Merga apicirubellus* (Xu et al., 2009) n. transl., *Merga apicispottis* (Xu et al., 2009) n. comb., *Merga brevispura* (Xu et al., 2009) n. comb., *Merga nanshaensis* (Xu et al., 2009) n. comb., and *Merga unguiformis* (Xu et al., 2009) n. comb. (Xu et al., 2014), if *Janiopsis* and *Merga* are considered synonyms. The diagnosis in Xu et al. (2014) suits the new scope of the genus *Merga* (as in the genus diagnosis).

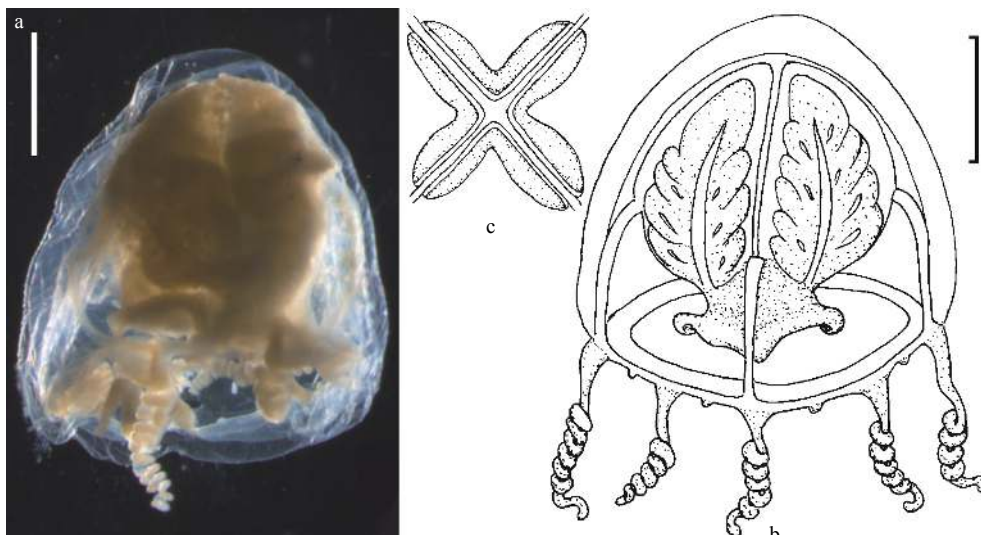
Presently, a total of 16 medusae species (including one new species) of *Merga* is known (Bouillon et al., 2006; Xu et al., 2014), ten of which are reported from the South China Sea and Taiwan Strait.

##### *Merga nanhaiensis* Xu, Huang and Guo, sp. nov. (Fig. 3)

**Material examined.** Holotype (SFI 006) collected from the South China Sea, Sta. 15 (108°11'N, 21°17'E), depth 15.7 m, sampling depth 10 m to 0 m, 10 September 2014, collector Chen Haigang.

**Diagnosis.** *Merga* medusa without apical projection, exumbrella without longitudinal ridges and ribs; 8 tentacles and 8 rudimentary bulbs, no ocelli; without tentaculae; mouth margin not folded much; mesenteries long; gonads smooth.

**Description.** Umbrella of mature medusa rather spherical, jelly moderately thick, thickest at top; bell 3 mm high and 3 mm wide, without apical process; without manubrial peduncle; four moderately broad radial canals, smooth, radial canals attached to manubrium via mesenteries that run along about 1/2 of the manubrium height, circular canal smooth than radial canals; bell margin with eight large, elongated conical bulbs bearing eight tentacles without abaxial spurs, between pairs of tentacles with one rudimentary bulb, all tentacle bases and rudimentary bulbs without ocelli, tentacles very extensible, but often carried rolled up into a thick short spiral; manubrium large and long, almost reaching to velum level, cross-shaped in section, mouth margin with a few folds, four lips without folds; gonads very voluminous, in eight bulging adradial masses with an interradial connection at the top, with deep interradial fold, but gonad may also be covered in the interradial position, surface usually smooth, with up to 3–5 irregular folds (may also depend on state of contraction).



**Fig. 3.** *Merga nanhaiensis* Xu, Huang and Guo, sp. nov.. a and b. Lateral view, and c. dorsal view of the gonads. Scale bars: 1.0 mm.

**Distribution.** The South China Sea.

**Etymology.** From the Latin *nanhaiensis*, meaning South China Sea. The species name refers to where the species was first collected.

**Remarks.** Based on species diagnosis, we attribute new species to the genus *Merga* Hartlaub, 1914. This new species is quite distinct from other *Merga* species, because it lacks an apical process, the exumbrella no longitudinal ridges and ribs, gonads are smooth, 8 tentacles, 8 rudimentary bulbs, and all tentacular bulbs without ocelli and abaxial spur. However, its large and broad mouth and with rudimentary bulbs is similar to *Merga violacea* (Agassiz and Mayer, 1899). This new species differs from the *M. violacea* by the following characteristics: (1) *M. nanhaiensis* has 8 marginal tentacles, between pairs of tentacles with 1 rudimentary bulb, but *M. violacea* with 8–16 tentacles, between pairs of tentacles with 2–3 rudimentary bulbs; (2) *M. nanhaiensis* has all tentacle bases and rudimentary bulbs without ocelli, but *M. violacea* all tentacle bases and rudimentary bulbs with a small ocellus; and (3) *M. nanhaiensis* has tentacle bases that are elongated conical-shaped, tentacles very extensile, but often carried rolled up into a thick short spiral, but *M. violacea* tentacle bases laterally flattened, thinning quite abruptly into round tentacles after some distance.

#### Key to medusae of all known species in genus *Merga*

1. Without apical process.....2
  - With a distinct apical process.....9
2. Gonad rough by warts and groove, red-brown manubrium, with tentaculæ.....*M. reesi* Russell, 1956
  - Gonad smooth.....3
3. Exumbrella with 20 longitudinal ridges and ribs; with 20 marginal tentacles; no abaxial ocelli.....
  - .....*M. nanshaensis* (Xu, Huang and Lin, 2009)\*
  - Exumbrella without longitudinal ridges and ribs.....4
4. With 4 perradial tentacles.....5
  - With 8–16 tentacles.....7
5. With 4 rudimentary bulbs, tentacular bulbs very large, ovaliform base....*M. macrobulbosa* Xu, Huang and Chen, 1991\*
  - Without rudimentary bulbs.....6
6. Without tentaculæ; no ocelli.....*M. tregoubovii* Picard, 1960
  - With 20 tentaculæ; with ocelli.....
    - .....*M. minutum* (Xu, Huang and Chen, 1991)\*
7. With small mouth and the triangular projections at the proximal end of the radial canals; 16 marginal tentacles, no rudimentary bulbs.....*M. treubeli* Schuchert, 1996
  - With large and broad mouth, without triangular projections at the proximal end of the radial canals; with rudimentary bulbs.....8
8. 8–12 tentacles, 24–36 rudimentary bulbs; all with ocelli.....
  - .....*M. violacea* (Agassiz and Mayer, 1899)
  - 8 tentacles, 8 rudimentary bulbs; all without ocelli.....
    - .....*M. nanhaiensis* Xu, Huang and Guo, sp. nov.\*
9. Perradial tentacular bulbs with abaxial spurs.....10
  - Perradial tentacular bulbs without abaxial spurs.....12
10. Exumbrella with 4 longitudinal ridges and ribs; 4 tentacles and 4 rudimentary bulbs; mesenteries long.....
  - .....*M. brevispura* (Xu, Huang and Guo, 2009)\*
  - Exumbrella without longitudinal ridges and ribs.....11
11. 4–8 tentacles, up to 8 rudimentary bulbs; mesenteries short.
  - .....*M. tergestina* (Neppi and Stiasny, 1912)\*
  - 8–16 tentacles, perradial bulbs with band-shaped ocelli; mesenteries long.....*M. galleri* Brinckmann, 1962
12. Exumbrella without longitudinal ridges and ribs, with 4 perradial tentacles, tentacular bulbs elongated cylindrical, with 8 tentaculæ; no ocelli.....*M. bulbosa* Bouillon, 1980\*
  - Exumbrella with longitudinal ridges and ribs.....13
13. With 16 marginal tentacles; exumbrella with 32–48 interradial longitudinal ridges and ribs; with abaxial ocelli.....
  - .....*M. costata* (Bouillon, 1980)
  - With 4 marginal tentacles.....14
14. Apical projection long conical, with a pigmented spot at tip; exumbrella with 12 longitudinal ridges and ribs; tentacular bulbs elongated conical.....
  - .....*M. apicispottis* (Xu, Huang and Lin, 2009)\*
  - Apical projection short; exumbrella with 8 longitudinal ridges and ribs.....15
15. 4–8 rudimentary bulbs with a red ocellus at tip; gonads smooth not folded....*M. apicirubellus* (Xu, Huang and Guo, 2009)\*
  - 4 rudimentary bulbs without red ocelli at tip, but tentacular bulbs with abaxial ocelli; gonads unguulate-shaped.....
    - .....*M. unguiformis* (Xu, Huang and Lin, 2009)\*

\* Recorded in China seas.

#### Order Capitata Kühn, 1913

##### Family Tubulariidae Fleming, 1928

##### Genus *Rhabdoon* Keferstein and Ehlers, 1861

*Rhabdoon* Keferstein and Ehlers, 1861: 86; Bouillon, 1985: 112; Brinckmann-Voss, 1987: 135; Bouillon and Boero, 2000: 150; Bouillon et al., 2004: 108; Stepanjants and Kosobokova, 2006: 392; Bouillon et al., 2006: 253; Schuchert, 2010: 518; Xu et al., 2014: 428  
*Rhysomedusa* Vannucci and Soares Moreira, 1966: 8; Brinckmann-Voss, 1970: 32

*Pararhysomedusa* Shirley and Leung, 1970: 5

*Yokovia* Margulis, 1989: 126

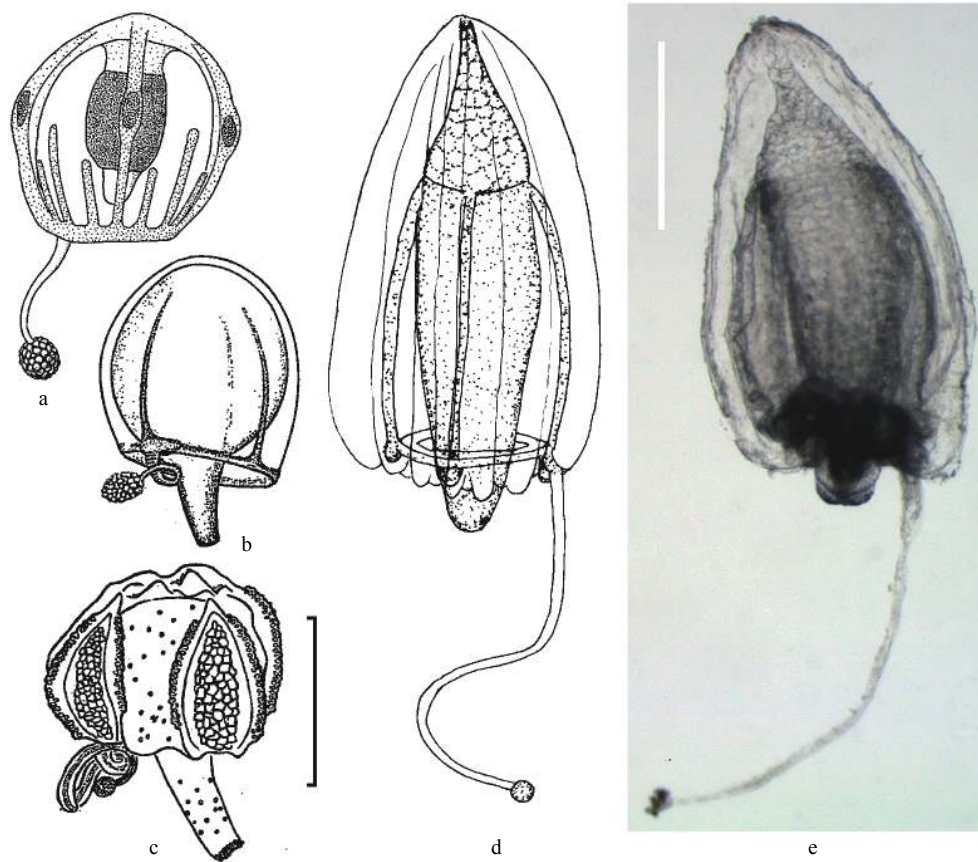
*Eugotoea* Margulis, 1989: 126; Bouillon et al., 2004: 92

Type species: *Rhabdoon singulare* Keferstein and Ehlers, 1861

**Diagnosis.** Medusa with a single hollow tentacle that ends in a sphere of radiating nematophores; exumbrella with meridional cnidocyst bands; vacuolated cells at apex of manubrium, along radial canals, and around the umbrella margin; four radial canals that correspond to four longitudinal mesogleal ribs on the exumbrellar surface; marginal bulbs absent or only one present where tentacle is attached; manubrium occupies most part of the subumbrella cavity or extends slightly beyond the umbrellar margin, gonads surrounded manubrium completely; cnidome includes stenoteles, desmonemes, and microbasic heteronemes.

**Remarks.** Until recently, *Rhabdoon* was assigned to suborder Tubulariida and family Tubulariidae (Bouillon, 1985; Margulis, 1989; Bouillon and Boero, 2000; Bouillon et al., 2006). Stepanjants and Kosobokova (2006) revised this genus. Because the polyp stage of *Rhabdoon* remains unknown, it is also not clear whether this genus belongs to the Tubulariidae or the Corymorphidae. Therefore, it was classified here as *incerta sedi* (Schuchert, 2010). We consider that this genus belongs to family Tubulariidae before an examination of the life cycles, which involve polyp and medusa stages.

Four species are included in this genus: *Rhabdoon singulare* Keferstein and Ehlers, 1861 (= *Rhysomedusa pomponina* Vannucci and Soares Moreira, 1966; *Eugotoea petalina* Margulis, 1989), *Rhabdoon reesi* (Shirley and Leung, 1970) (= *Pararhysomedusa reesi* Shirley and Leung, 1970; *Yakovia polinae* Margulis, 1989), *Rhabdoon armata* (Margulis, 1997) (= *Eugotoea armata* Margulia, 1989) and *Rhabdoon apicoloculus* sp. nov. (Fig. 4). *R. singulare* was collected in the Mediterranean Sea (Vannucci and Soares Moreira, 1966; Brinckmann-Voss, 1970; Goy, 1973, 1983; Benović and Lučić, 1996), south-eastern Atlantic (Pagès et al.,



**Fig. 4.** Comparison of four *Rhabdoon* species. a. *R. singulare* Keferstein and Ehlers, 1861 (after Schuchert, 2010), bell size 1.1 mm; b. *R. reesi* (Shirley and Leung, 1970) (from Shirley and Leung, 1970); c. *R. armata* (Margulis, 1997) (from Margulis, 1997); and d and e. *R. apiciloculus* sp. nov.. Scale bars: 1.0 mm.

1992), Magellan Straits (Pagès and Orejas, 1999), off western Australia (Hamond, 1974), and the south-western Taiwan Strait of China (Xu et al., 2014); type locality: Messina, Italy. *R. reesi* was found at bathy- and meso-pelagic depths of the Arctic Ocean, including the Barents Sea (Stepanjants and Kosobokova, 2006); type locality: central Arctic Ocean. *R. armata* was found in the Southern Ocean, including the Orkeny Islands, the Weddell Sea and at the Cape Norvegia (Margulis, 1997). *R. apiciloculus* was collected in the South China Sea.

At present time, a total of 4 medusae species (including one new species) in *Rhabdoon* is known (Margulis, 1997; Bouillon et al., 2006; Schuchert, 2010; Xu et al., 2014), two of which are reported from the South China Sea and Taiwan Strait.

***Rhabdoon apiciloculus* Xu, Huang and Du, sp. nov. (Figs 4d, e)**

**Material examined.** Holotype (SFI 007) collected from the South China Sea., Sta. B2Z15 (17°30'N, 116°56'E), depth 3 950 m, sampling depth 240 m to 0 m, 29 July 2014, collector Wang Lianggen.

**Diagnosis.** Umbrella near conical-shaped with rounded top; exumbrella with 16 longitudinal ribs of cnidocyst; manubrium with a large pointed apical chamber, entire manubrium and apical chamber covered vacuolated cells, and scattering along 4 radial canals; with a single hollow, long and thin tentacles that ends in a small knob of cnidocyst clusters; no marginal bulbs; without ocelli.

**Description.** Umbrella 2.5 mm high, 1.5 mm wide, near conical-shaped, with rounded top, lateral wall thick; exumbrella with 16 longitudinal ribs of cnidocyst, which includes 4 perradial, 4 interradial and 8 adradial cnidocyst ribs, all extend almost to the

umbrella tip; manubrium very large and long, about as long as bell cavity, cylindrical, occupying almost entire bell cavity, without gastric peduncle, with a large pointed apical chamber; entire manubrium, apical chamber and bell margin covered vacuolated cells, and scattering along 4 radial canals; mouth simple, circular, covered with cnidocysts; 4 broad radial canals and 1 circular canal present; gonads surrounding distal 2/3 of manubrium; with a single hollow, long and thin marginal tentacle ending in a small knob of cnidocyst clusters; no marginal tentacular bulbs; ocelli absent; velum narrow.

**Distribution.** The South China Sea.

**Etymology.** From the Latin *apiciloculus*, meaning apical-locule. The species name refers to a large conical apical chamber at the apex of manubrium.

**Remarks.** This new species has a single hollow, smooth tentacle that ends with a cnidocyst knob; marginal bulbs totally absent; manubrium, apical chamber and umbrella margin covered with highly vacuolated cells, and scattering along broad radial canals; four thick perradial exumbrella cnidocyst ribs, plus four short interradial and eight adradial ones; ocelli absent. Based on these features characterized, we attribute our new species to the genus *Rhabdoon* Keferstein and Ehlers, 1861.

The major differences between *R. reesi* and *R. singulare* include the absence of marginal bulbs in *R. singulare* and the presence of a single well-developed bulb in *R. reesi*. Our new species is similar to *R. singulare*, because of the absence of marginal bulbs. However, the new species differs from *R. singulare* by the following characteristics: (1) *R. apiciloculus* has a manubrium

with a large pointed apical chamber, whereas *R. singulare* lacks an apical chamber; (2) *R. apiciloculus* has a single hollow, long and thin tentacle that ends in a small knob of cnidocyst cluster, but *R. singulare* has a single hollow, short and thick tentacle that ends in a large knob consisting of numerous cnidocysts-containing stalked capitations; and (3) *R. apiciloculus* has umbrella near a conical-shaped, exumbrella with 16 longitudinal ribs of cnidocyst extend almost to the umbrella tip, but *R. singulare* has a nearly spherical bell, exumbrella with 4 long perradial cnidocyst ribs extend almost to the tip of the umbrella, other 4 interradial and 8 adradial shorter and slender cnidocyst ribs that extend only to the 1/3 high of bell.

#### Key to medusae of all known species in genus *Rhabdoon*

1. Marginal bulbs absent.....2
  - With one marginal bulb bearing the single tentacle.....  
.....*R. reesi* (Shirley and Leung, 1970)
2. Manubrium with a large pointed apical chamber.....  
.....*R. apiciloculus* Xu, Huang and Du, sp. nov.
  - Manubrium without apical chamber.....3
3. Exumbrella with 4 exerted, perradial longitudinal ribs, containing cnidocysts and an oblong brown spot in middle of each rib, 4 additional interradial and sometime adradial bands; manubrium with broad gastric peduncle.....  
.....*R. singulare* Keferstein and Ehlers, 1861
  - Exumbrella with 4 not projected perradial facets without brown spots, only 8 adradial longitudinal ribs, containing cnidocysts; manubrium without gastric peduncle.....  
.....*R. armata* (Margulis, 1997)

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