INFORMATION SYSTEM ON SCYPHOZOA, CUBOZOA AND STAUROZOA



Identifica dall'inizio		211 specie rimanenti	Chiave testuale alle specie rimanenti	Chiave testuale a tutte le specie selezionate	Informazioni sulla chiave
1	Medusa sessile				2
1	Medusa swimming				34
2	Medusa without aboral peduncle				

Lucernariopsis vanhoeffeni, (Browne 1910)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Amyostaurida
Familia Kishinouyeidae Uchida, 1929
Genus *Calvadosia* James-Clark, 1863
Calvadosia vanhoeffeni (Browne, 1910)

Synonims: *Lucernaria vanhoeffeni* Browne, 1910

Morpho-anatomical characteristics
Genus *Calvadosia* James-Clark, 1863:

- Peduncle single or 4-chambered without muscle fibers in the taeniola;
- 8 adradial clusters of knobbed tentacles;
- No adhesive anchors;
- 8 adradial gonads.

Calvadosia vanhoeffeni (Browne, 1910):

- Calyx 20 to 25 mm. high and 20 to 30 mm. wide, funnel-shaped;
- Aboral surface papillated, giving the calyx a granular or grainy appearance;
- Absence of a true peduncle: only a narrow constriction separates the calyx from the pedal disk;
- Pedal disk symmetrically octagonal, very broad and flat;
- Arms long, equidistant;
- Angular distance between arms: 45° apart, with equally developed perradii and interradii;
- Each arm terminates with a cluster of 40 to 45 secondary tentacles;
- Gonads extending from point of juncture between calyx and peduncle to tips of arms;
- Colour of live specimens: very variable, being yellowish, red, brownish, greenish, orange.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Antarctic Sea.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843194&lvl=0

2	Medusa with aboral peduncle				3
3	Medusa with sense organs: rhopalioids (anchors)				4
3	Medusa without sense organs				15
4	Coronal muscle unbroken				5
4	Coronal muscle divided				10
5	Peduncle single-chambered				

Manania hexaradiata, (Broch 1907)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae

Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Manania* James-Clark, 1863
Manania hexaradiata (Broch, 1907)

Synonims: *Brochiella hexaradiata* Broch, 1907

Morpho-anatomical characteristics
Genus *Manania* James-Clark, 1863:

- 8 marginal anchors;
- Peduncle well developed with 4 interradial muscles in the septa; chambers 1 or 4 throughout or in part;
- Tentacles capitate;
- Primary and outermost secondary tentacles with abaxial glandular pads;
- With an entire mesogleal coronal muscle passing on exumbrellar sides of primary and secondary tentacles.

Manania hexaradiata (Broch, 1907):

- Calyx bell-shaped, about 6 mm. wide and 10 mm. high (including the peduncle);
- Peduncle cylindrical, somewhat longer than calyx, with one chamber throughout;
- 12 adradial groups of tentacle clusters, each composed of 7 to 10 tentacles which arise in several rows from the calyx margin;
- 12 marginal anchors, 6 radial and 6 interradial;
- Anchors shaped very much as ordinary tentacles, but bent in the middle in a knee-like form and each provided with an abaxial cushion;
- 6 horse-shoe shaped, folded gonads with their convex sides abaxial;
- Colour of live specimens: variable.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Arctic Ocean and North Atlantic Ocean.

5 Peduncle with 4 perradial chambers 6

6 Gonads not united by a transverse circumferential membrane (claustrum) which divide each of the 4 perradial stomach pouches into an outer and an inner space

Stenoscyphus inabai, (Kishinouye 1893)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Haliclystus* James-Clark, 1863
Haliclystus inabai (Kishinouye, 1863)

Synonims: *Depastrum inabai* Kishinouyea, 1893; *Stenoscyphus inabai* (Kishinouye, 1893)

Morpho-anatomical characteristics
Genus *Haliclystus* James-Clark, 1863:

- 8 perradial and interradial marginal anchors;
- Peduncle aboral, 4-chambered;
- 8 clusters of hollow, terminally knobbed adradial tentacles;
- 8 adradial gonads.

Haliclystus inabai (Kishinouye, 1863):

- Calyx about 25 mm. long, elongate and nearly quadropyramidal;
- Exumbrella granulated with nematocysts;
- Subumbrella smooth but bearing numerous white spots only in the perradii;
- Neither arms nor lobes to the subumbrella;
- Secondary tentacles short and knobbed and arranged in 8 adradial clusters of 10 to 25 each;
- Anchors kidney shaped, situated one in each perradius and interradius and the perradial ones lying at a lower level than the interradial;
- 4 pairs of gonads in longitudinal rows, one in each interradius, extending from near calyx margin to the base of the stomach cavity;
- 4 long, deep, interradial gastrogenital pits extending to the aboral end of the calyx;
- Colour of live specimens: dark brown flecked with white, subumbrella pale green and manubrium yellowish.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North West Pacific Ocean.

GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843197&lvl=0

6 Gonads united by a transverse circumferential membrane (claustrum) which divide each of the 4 perradial stomach pouches into an outer and an inner space 7

7 Calyx as long as wide

Manania gwilliami, Larson & Fautin 1989

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Manania* James-Clark, 1863
Manania gwilliami Larson & Fautin, 1989

Morpho-anatomical characteristics
Genus *Manania* James-Clark, 1863:

- 8 marginal anchors;
- Peduncle well developed with 4 interradial muscles in the septa; chambers 1 or 4 throughout or in part;
- Tentacles capitate;
- Primary and outermost secondary tentacles with abaxial glandular pads;
- With an entire mesogleal coronal muscle passing on exumbrellar sides of primary and secondary tentacles.



Manania gwilliami Larson & Fautin, 1989:

- Calyx goblet-shaped, as long as wide, clearly demarcated from the peduncle;
- Nematocysts warts along the subumbrellar margin;
- Peduncle with 4 chambers throughout; circular to quadrangular in cross section and 3 to 4 times calyx length;
- 4 pairs of short arms and each arm terminates with a cluster of 15- 30 secondary tentacles;
- Secondary tentacles short, capitate, outermost ones with enlarged adaxial glandular pads;
- 8 anchors similar to the secondary tentacles but smaller;
- 4 perradial pairs of gonads and each pair with obliquely oriented folds;
- Mouth quadrate with frilled lips;
- Colour of live specimens: variable, ranging from tan to magenta.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North East Pacific Ocean, in particular along the coasts of British Columbia, and from Northern Californis to Baja California.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843204&lvl=0

7 Calyx longer than wide 8

8 Calyx with dark herringbone pattern

Manania distincta, (Kishinouye 1910)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Manania* James-Clark, 1863
Manania distincta (Kishinouye, 1910)

Synonims: *Thaumatoscyphus distinctus* Kishinouyea, 1910

Morpho-anatomical characteristics
Genus *Manania* James-Clark, 1863:

- 8 marginal anchors;
- Peduncle well developed with 4 interradial muscles in the septa; chambers 1 or 4 throughout or in part;
- Tentacles capitate;
- Primary and outermost secondary tentacles with abaxial glandular pads;
- With an entire mesogleal coronal muscle passing on exumbrellar sides of primary and secondary tentacles.

Manania distincta (Kishinouye, 1910):

- Calyx goblet-shaped, about 15 mm. wide and half as high as height of entire body;

- Calyx with dark herringbone pattern
- Subumbrella with large, spherical, wart-like clusters of nematocysts;
- 4 deep interradial infundibula in the subumbrella;
- Peduncle with 4 chambers throughout, about as long as the calyx and 4 time as long as wide;
- 8 adradial arms and each arm terminates with a cluster of about 40 short, capitate tentacles growing in a lanceolate tract on the aboral side of each arm;
- 8 perradial and interradial primary tentacles small, cylindrical and without well developed distal knobs;
- 8 adradial lanceolate gonads, each consisting of 7 or 8 oblong follicles;
- Aesophagus short, somewhat quadrangular, and with deep longitudinal folds;
- Stomach cavity long and prismatic and there are 8 adradial rows of simple, long gastric cirri;
- Colour of live specimens: variable.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Pacific Ocean.

8 Calyx without dark herringbone pattern 9

9 Arms twice as long as broad

Halimocyathus platypus, Clark 1863

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Halimocyathus* James-Clark, 1863
Halimocyathus platypus James-Clark, 1863

Morpho-anatomical characteristics
Genus *Halimocyathus* James-Clark, 1863:
- 4 perradial gastrogenital pockets in the subumbrella wall of the 4 stomach-pouches;
- 8 adradial arms;
- 8 adradial clusters of terminally knobbed tentacles;
- 8 marginal anchors (4 perradial and 4 interradial);
- 8 horseshoe-shaped gonads.

Halimocyathus platypus James-Clark, 1863:
- Calyx deep funnel-shaped, 6 mm. wide and 10 mm. height (with the peduncle);
- Marginal lobes about twice as long as broad;
- Peduncle about half as high as the disk; 4-chambered;
- Arms nearly twice as long as broad and one-third as long as bell-height from peduncle to margin;
- Each arm terminates with a cluster of 17-26 thick, pistilliform tentacles, about as long as greatest breadth of arms;
- Tentacles arranged in 5 rows, there being about 7 tentacles in the middle row, 4 in each row on either side of the latter and one in each of the outermost positions;
- The anchors are small and reverted, being only one-third as long as shortest tentacles; their length is a little less than 3 times their radial diameter;
- Gonads horseshoe shaped and the centripetal parts of each horseshoe are united across the inner ends of the interradial parts while the free, outer parts extend to the neighbourhood of the marginal anchors;
- Each arm of the horseshoe contains 15 to 17 genital sacs;
- 4 perradial stomach puches;
- Colour of live specimens: variable.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Gulf of Maine, North Atlantic Ocean.
Notes: *H. platypus* lives attach to algae, sea grass (*Zostera*) and other substrates in shallow areas which have adequate water circulation.

9 Arms short

Manania handi, Larson & Fautin 1989

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879

Genus *Manania* James-Clark, 1863
Manania handi Larson & Fautin, 1989



Morpho-anatomical characteristics
Genus *Manania* James-Clark, 1863:

- 8 marginal anchors;
- Peduncle well developed with 4 interradial muscles in the septa; chambers 1 or 4 throughout or in part;
- Tentacles capitate;
- Primary and outermost secondary tentacles with abaxial glandular pads;
- With an entire mesogleal coronal muscle passing on exumbrellar sides of primary and secondary tentacles.

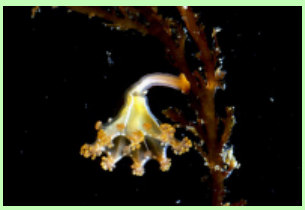
Manania handi Larson & Fautin, 1989:

- Calyx trumpet-shaped, longer than wide and indistinctly demarcated from peduncle;
- Nematocysts warts along the subumbrellar calyx, most numerous in the perradii where they extend toward gonads;
- Peduncle short, narrow, contractile, with 4 chambers throughout, circular to quadrangular in cross section and from one half to equal to the entire calyx in length;
- 4 perradial pairs of arms and each arm terminates with a cluster of 15-25 secondary capitate tentacles;
- Outermost secondary tentacles with enlarged basal glandular adhesive pads;
- 8 anchors similar to abaxial secondary tentacles but smaller;
- 4 perradial pairs of gonads and each pair with obliquely oriented folds;
- Mouth quadrate with frilled lips;
- Colour of live specimens: translucent yellowish green.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North East Pacific Ocean.

10	Calyx not conical	11
10	Calyx conical	12
11	Calyx quadro-pyramidal	

Haliclystus borealis, Uchida 1933



Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Haliclystus* James-Clark, 1863
Haliclystus borealis Uchida, 1933

Morpho-anatomical characteristics
Genus *Haliclystus* James-Clark, 1863:

- 8 perradial and interradial marginal anchors;
- Peduncle aboral, 4-chambered;
- 8 clusters of hollow, terminally knobbed adradial tentacles;
- 8 adradial gonads.

Haliclystus borealis Uchida, 1933:

- Calyx quadropyramidal, somewhat higher than wide;
- Exumbrella finely granulated with nematocysts;
- Subumbrella smooth;
- White spots of nematocysts clusters in the subumbrellar bell margin, in the perradii and interradii;
- Peduncle less than one-third long as height of calyx;
- Margin of the bell produced into 8 adradial arms, each with a cluster of 20-30 tentacles, with globular head, at the tip;
- Internal base of tentacular cluster: U-shaped, without intertentacular lobules;
- Perradial marginal notches deeper and wider tha interradial;
- 8 marginal anchors, perradial and interradial, provided each with around cushion-like disks, each of which is provided with a longitudinal furrow in the central position;
- Height of anchors x diameter of peduncle: two-thirds as wide as the diameter of peduncle;
- 8 gonads, arranged in 4 interradial pairs, extending from just below the bell margin barely to the point of the junction of the bell with the peduncle, consisting of about 30-100 (usually 50) gonadal sacs;
- 3-4 rows of sacs per gonad;

- Manubrium 4-sided;
- 4 interradial white stripes or white flecks of various shapes and sizes generally prominent;
- Gastric cirri and in 8 rows on the medial opening of radial pockets;
- Colour of live specimens: variable.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Pacific Ocean.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843196&lvl=0
Notes: Some individuals of *H. borealis* do not have the 4 interradial white stripes, or these stripes are sometimes deformed to white flecks which are radially arranged as 4 interradial rows or scattered here and there.

11 Calyx pyramidal, octangular

Haliclystus salpinx, Clark 1863

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Haliclystus* James-Clark, 1863
Haliclystus salpinx James-Clark, 1863

Morpho-anatomical characteristics
Genus *Haliclystus* James-Clark, 1863:
- 8 perradial and interradial marginal anchors;
- Peduncle aboral, 4-chambered;
- 8 clusters of hollow, terminally knobbed adradial tentacles;
- 8 adradial gonads.

Haliclystus salpinx James-Clark, 1863:
- Calyx pyramidal, octangular, much broader than high;
- White spots of nematocysts along the subumbrellar bell margin and along the perradial margin of the gonads;
- Peduncle quadrangular, prismatic, as long or longer than the height of the calyx;
- 8 adradial arms 45° apart with their ends rounded;
- Each arm terminates with a cluster of 60-70 very slender tentacles, may be up 250;
- Internal base of tentacular cluster: U-shaped, without intertentacular lobules;
- Perradial marginal notches equally as wide and deep as interradial;
- 8 marginal anchors as long as the arms, slender and obliquely trumpet-shaped; the edge of the trumpet is considerably thickened except at a narrow space on the proximal side, by the development of adhesive cells;
- Height of anchors x diameter of peduncle: about as long and wide as the diameter of the peduncle;
- Each gonad with 40-120 gonadal sacs, with 6-8 abreast at the widest;
- The genital sacs of each gonad are arranged in 4 radiating rows, the marginal rows being shorter than the 2 middle rows;
- Colour of live specimens: variable.



Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Atlantic Ocean, in particular in the Bay of Fundy and in the Gulf of Saint Lawrence; North Pacific Ocean.
Notes: Graeffe appears to have found this species at Trieste, Adriatic Sea, in June and July 1884.

12 Marginal anchors kidney-shaped, with a short, cylindric stalk

Haliclystus auricula, (Rathke 1806)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Haliclystus* James-Clark, 1863
Haliclystus auricula James-Clark, 1863

Synonims: *Haliclystus auricula* (Rathke, 1806); *Lucernaria octoradiata* Lamarck, 1816
Vernacular name: Kaleidoscope Jellyfish

Morpho-anatomical characteristics

Genus *Haliclystus* James-Clark, 1863:

- 8 perradial and interradial marginal anchors;
- Peduncle aboral, 4-chambered;
- 8 clusters of hollow, terminally knobbed adradial tentacles;
- 8 adradial gonads.

Haliclystus auricula James-Clark, 1863:

- Calyx pyramidal, octangular, almost as broad as high;
- Calyx margin 8-sided;
- Peduncle about as long as calyx-height, cruciform in cross-section, with 4 deep longitudinal grooves;
- 8 arms united in pairs; each arm terminates usually in a large cluster of 100-120 tentacles, but as little as 30;
- Tentacles about quarter as long as bell diameter, they are hollow and terminate in a globular tip thickly covered with nematocysts;
- Internal base of tentacular cluster: shallow internal space, with intertentacular lobules;
- Perradial marginal notches equally as wide and deep as interradial;
- 8 perradial and interradial marginal anchors which are coffee-bean shaped, longer than wide, as long as breadth of peduncle;
- Height of anchors x diameter of peduncle: one-third to one-fourth as wide as the diameter of peduncle;
- Gonads broad, adradial, grouped into 4 interradial pairs;
- Each gonad is wide and triangular and contains 30 to 200 gonadal sacs arranged in 6 to 8 radial rows;
- Gastric cirri numerous;
- Colour of live specimens: very variable, individuals are blue, green, yellow, olive, orange, red, pink, violet, brownish and purple.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Atlantic Ocean, Arctic Ocean and Wimereux (France).
Notes: The character “perradial marginal notches equally as wide and deep as interradial” appears to be variable in *H. auricula*. There may be a slight difference between perradial clefts and interradial clefts of *H. auricula*, but the difference is probably not obvious enough to diagnose this species.

12	Not as above	13
13	Calyx funnel-shaped	

Haliclystus steinegeri, Kishinouye 1899



Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Haliclystus* James-Clark, 1863
Haliclystus stejnegeri Kishinouye, 1899

Morpho-anatomical characteristics
Genus *Haliclystus* James-Clark, 1863:

- 8 perradial and interradial marginal anchors;
- Peduncle aboral, 4-chambered;
- 8 clusters of hollow, terminally knobbed adradial tentacles;
- 8 adradial gonads.

Haliclystus stejnegeri Kishinouye, 1899:

- Calyx conical, funnel-shaped, a little broader than high;
- White spots of nematocysts along the subumbrellar bell margin, in perradii, and along the edge of the gonads;
- Exumbrella surface smooth;
- The line of demarcation between the calyx and the peduncle is distinct, although there is no constriction at this point;
- Peduncle nearly quadrate in cross-section, half as long as the height of the calyx;
- 8 equally spaced, adradial arms, all of the same size, 45° apart;
- Each arm terminates commonly with a cluster of 70-100 (possibly 200) secondary knobbed tentacles;
- Internal base of tentacular cluster: shallow internal space, with intertentacular lobules;
- Perradial marginal notches equally as wide and deep as interradial;

- 8 large, egg-shaped, perradial and interradial anchors;
- Height of anchors x diameter of peduncle: half as wide as the diameter of the peduncle;
- 8 gonads broad, leaf-shaped, tapering at both ends, and touch each other along their proximal halves, so that the surface of the subumbrella is almost entirely occupied by them;
- 100 to 250 gonadal sacs in each gonad;
- 6-8 rows of sacs per gonad, irregularly arranged (not in rows), abreast in the widest portion of the gonad;
- Manubrium short and quadrangular, the lips reflected outward;
- Colour of live specimens: grayish or pale-brown, semi-transparent, with a dark-brown or nearly black streak at calyx margin.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Pacific Ocean.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=756009&lvl=0

13 Calyx flat 14

14 Marginal anchors very large, biscuit-shaped

Haliclystus antarcticus, Pfeffer 1889

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Haliclystus* James-Clark, 1863
Haliclystus antarcticus Pfeffer, 1889

Synonims: *Microhydrula limopsicola* Jarms & Tiemann, 1996

Morpho-anatomical characteristics
Genus *Haliclystus* James-Clark, 1863:

- 8 perradial and interradial marginal anchors;
- Peduncle aboral, 4-chambered;
- 8 clusters of hollow, terminally knobbed adradial tentacles;
- 8 adradial gonads.

Haliclystus antarcticus Pfeffer, 1889:

- Calyx flat, conical, twice as wide as high;
- Peduncle long, flexible, one third as long as bell diameter, when expanded it is about two-thirds as long as calyx-height; it has 4 interradial, longitudinal muscles and it is 4-sided in cross-section;
- 8 adradial arms 45° apart with 8 clefts all of equal depth;
- Each arm has more than 100 tentacles, with up to roughly 200;
- Internal base of tentacular cluster: shallow internal space, with intertentacular lobules;
- 8 marginal anchors, large, biscuit-shaped, about as long as width of peduncle;
- Height of anchors x diameter of peduncle: half to two-thirds as wide as the diameter of peduncle;
- 8 gonads,organized in 4 pairs, widely separated one from another;
- 50 to 150 circular to hexagonal gonadal sacs in 6 to 12 radial rows in each gonad;
- Manubrium and mouth 4-sided;
- 4 perradial pouches at the gastrovascular cavity, extending from the manubrium to the perradial anchors, separated from each other by four interradial septa;
- 2 types of nematocysts: isorhiza and microbasic heterotrichous;
- Colour of live specimens: red-orange with light-red gonads; some individuals present calyx and peduncle green while tentacles are red.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Shetland Islands (Antarctica), Chubut and Santa Cruz (Argentina) and Valdivia (Chile).
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=654955&lvl=0

14 Marginal anchors small, oval

Haliclystus kerguelensis, Vanhöffen 1908

Systematic position:
Classis Staurozoa

Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Haliclystus* James-Clark, 1863
Haliclystus kerguelensis Vanhöffen, 1908

Morpho-anatomical characteristics

Genus *Haliclystus* James-Clark, 1863:

- 8 perradial and interradial marginal anchors;
- Peduncle aboral, 4-chambered;
- 8 clusters of hollow, terminally knobbed adradial tentacles;
- 8 adradial gonads.

Haliclystus kerguelensis Vanhöffen, 1908:

- Calyx flat, twice as wide as high, conical;
- Peduncle prismatic, 4-sided, twice as high as umbrella;
- 8 arms 45° apart similar each to each;
- Up to 50 tentacles on each arm;
- 8 marginal anchors small, oval, each anchor with tentacular knob;
- Height of anchors x diameter of peduncle: one-third as wide as the diameter of the peduncle;
- 8 gonads widely separated, broad, lancet-shaped;
- Colour of live specimens: calyx and peduncle sandy-brown with a play of green over the surface; gonads dark olive-brown and painly visible through the walls of the lighter colored calyx; terminal knobs of the tentacles rose-red.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Kerguelen Islands (South Indian Ocean).

15	Peduncle with 4 perradial chambers	16
15	Peduncle single-chambered	22
16	Peduncle with muscle in the septa	17
16	Peduncle without muscle in the septa	18
17	On each arm about 9 tentacles	

Depastrum cyathiforme, (M. Sars 1846)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Depastrum* (M. Sars, 1846)
Depastrum cyathiforme (M. Sars, 1846)

Synonims: *Depastrella allmani* Haeckel, 1880; *Depastrella carduella* Haeckel, 1880; *Depastrum carduella* (Haeckel, 1880); *Depastrum polare* Haeckel, 1880; *Depastrum stellifrons* Gosse, 1860; *Lucernaria cyathiforme* M. Sars, 1846

Morpho-anatomical characteristics

Genus *Depastum* (M. Sars, 1846):

- Whitout marginal lobes;
- Adradial tentacles terminally knobbed arranged in one or more rows around the bell margin;
- Perradial and interradial tentacles similar to adradial or papilliform;
- Peduncle 4-chambered, with muscles;
- Without glandular cushions around tentacles;
- Unbroken coronal muscle outside the primary tentacles;
- 8 gonads.

Depastrum cyathiforme (M. Sars, 1846):

- Bell urn-shaped, about 6-10 mm. wide and somewhat more in height;
- Peduncle about as long as calyx, flexible, contractile;
- Bell margin sinuous;
- Subumbrella deeply concave;
- 36 to 100 tentacles arranged in 4 perradial and 4 interradial clusters of 1 to 3 tentacles each;
- 8 adradial clusters each consisting of about 9 tentacles;
- Mouth 4-sided, cruciform, with 4 perradial buttresses, between which there are 4 interradial

- funnel-like pits in the floor of the subumbrella extending down-ward into the tissue of the 4 septa;
- The 4 pairs of gonads form each an interradial horse-shoe, the outer points of which do not extend to the bell-margin;
- Gonads united by a transverse circumferential membrane (claustrum);
- Colour of live specimens: variable.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Arctic Ocean, Coasts of Bretagne, North Atlantic Ocean and South Coasts of England.

17 On each arm about 25 tentacles

Depastromorpha africana, Carlgren 1935

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Haliclystidae Haeckel, 1879
Genus *Depastromorpha* Carlgren, 1935
Depastromorpha africana Carlgren, 1935

Vernacular name: Stalked Trumpet Jelly

Morpho-anatomical characteristics
Genus *Depastromorpha* Carlgren, 1935:
- With faintly indicated marginal lobes;
- Adradial tentacles terminally knobbed arranged in one or more rows around the bell margin;
- Perradial and interradial tentacles similar to adradial or papilliform;
- Peduncle 4-chambered, with muscles;
- Glandular cushions surround bases of the eight primary tentacles in the adradial groups;
- Unbroken coronal muscle inside the primary tentacles.
- 8 gonads

Depastromorpha africana Carlgren, 1935:
- Bell urn-shaped, about 10 mm. in height;
- Peduncle very short, contractile;
- Bell margin faintly lobate;
- 8 primary and some of the secondary, adradial tentacles partly metamorphosed, with glandular cushions;
- About 25 tentacles in each adradial group;
- Gonads united by a transverse circumferential membrane (claustrum);
- Colour of live specimens: reddish-brownish

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Africa, Australia and New Zealand coasts.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=313503&lvl=0

18 Gonads united by a transverse circumferential membrane (claustrum) which divide each of the 4 perradial stomach pouches into an outer and an inner space 19

18 Gonads not united by a transverse circumferential membrane (claustrum) which divide each of the 4 perradial stomach pouches into an outer and an inner space 20

19 On each arm 60-80 tentacles

Craterolophus convolvulus, (Johnston 1835)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Amyostaurida
Familia Craterolophidae Uchida, 1929
Genus *Craterolophus* James-Clark, 1863
Craterolophus convolvulus (Johnston, 1835)



Synonims: *Craterolophus tethys* James-Clark, 1863; *Lucernaria convolvulus* Johnston, 1835; *Lucernaria helgolandica* Leuckart, 1867; *Lucernaria Leuckarti* Taschenberg, 1877
Vernacular name: Goblet Stalked Jellyfish

Morpho-anatomical characteristics

Genus *Craterolophus* James-Clark, 1863:

- 8 adradial lobes;
- 4 perradial gastrogenital pouches in the subumbrella wall of the 4 perradial stomach-pouches;
- No perradial or interradial marginal anchors or marginal papillae;
- Peduncle 4-chambered;
- 8 gonads.

Craterolophus convolvulus (Johnston, 1835):

- Bell deep goblet-shaped, higher than wide, 15 to 25 mm. wide and 25 to 30 mm. high, including peduncle;
- Peduncle short, 4-sided, prismatic and 4-chambered, one-fourth to one-third as long as bell-height; without longitudinal muscles;
- 8 adradial arms are short, wide, and 45° apart;
- 60 to 80 knobbed tentacles upon each arm;
- 8 gonads paired, nearly touching proximally, feathery;
- Gonads united by a transverse circumferential membrane (claustrum);
- Arms of the gonads have 10 to 16 feathery sinuosities and very numerous saccules;
- Colour of live specimens: olive-green, yellowish, reddish-brown or dark brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Sea, in particular in the Helgoland archipelago.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=37531&lvl=0
Notes: The perradial and interradial tentacles or anchors are commonly absent, but occasionally they appear as an abnormality.

19 On each arm about 30 tentacles

Craterolophus macrocystis, Von Lendenfeld 1884

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Amyostaurida
Familia Craterolophidae Uchida, 1929
Genus *Craterolophus* James-Clark, 1863
Craterolophus macrocystis von Lendenfeld, 1884

Morpho-anatomical characteristics
Genus *Craterolophus* James-Clark, 1863:

- 8 adradial lobes;
- 4 perradial gastrogenital pouches in the subumbrella wall of the 4 perradial stomach-pouches;
- No perradial or interradial marginal anchors or marginal papillae;
- Peduncle 4-chambered;
- 8 gonads.

Craterolophus macrocystis von Lendenfeld, 1884:

- Bell deep and bell-shaped, 12 mm. high, 6 mm. wide;
- Peduncle 8 mm. high and 3 mm. wide when extended, without muscle in the septa;
- 8 short arms 45° apart;
- About 30 hollow tentacles on each arm;
- 8 Gonads feathery;
- Gonads united by a transverse circumferential membrane (claustrum);
- Colour of live specimens: dark olive-green.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: East coast of New Zealand.
Notes: distinguished from *C. convolvulus* by the longer stalk.

20 Arms adradial

Kishinouyea nagatensis, (Oka 1897)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Amyostaurida
Familia Kishinouyeidae Uchida, 1929
Genus *Calvadosia* James-Clark, 1863
Calvadosia nagatensis (Oka, 1897)

Synonims: *Kishinouyea nagatensis* (Oka, 1897), *Lucernaria nagatensis* Oka, 1897

Morpho-anatomical characteristics

Genus *Calvadosia* James-Clark, 1863:

- Peduncle single or 4-chambered without muscle fibers in the taeniola;
- 8 adradial clusters of knobbed tentacles;
- No adhesive anchors;
- 8 adradial gonads.

Calvadosia nagatensis (Oka, 1897):

- Calyx deeply notched with 8 adradial lobes;
- Adradial lobes united in pairs and they are bent at right angles to the oral side;
- Interradial longitudinal muscles in the subumbrella well developed;
- Marginal muscle divided into 8 U-shaped pieces;
- Disk has a Greek cross shape;
- No primary tentacles;
- Adradial tentacles short, adhesive, in clusters of 5;
- Gonads broad and arranged in adradial bands of laterally oblong sacs;
- Gastric filaments branched, few in numbers;
- Colour of live specimens: variable.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North West Pacific Ocean and along the coasts of New Zealand.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843506&lvl=0
Notes: In young medusae of the *C. nagatensis*, the peduncle is single-chambered, but the 4 interradial septa unite near the pyloric region as growth proceeds, and the peduncle comes to have 4 perradial, separate chambers.

20	Arms interradial	21
21	Arms larger at base than S. tsingtaoensis	

Sasakiella cruciformis, Okubo 1917

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Amyostaurida
Familia Kishinouyeidae Uchida, 1929
Genus *Calvadosia* James-Clark, 1863
Calvadosia cruciformis (Okubo, 1917)

Synonims: *Sasakiella cruciformis* Okubo, 1917

Morpho-anatomical characteristics

Genus *Calvadosia* James-Clark, 1863:

- Peduncle single or 4-chambered without muscle fibers in the taeniola;
- 8 adradial clusters of knobbed tentacles;
- No adhesive anchors;
- 8 adradial gonads.

Calvadosia cruciformis (Okubo, 1917):

- Calyx cruciform, about 10 mm. wide;
- Exumbrella with nematocyst clusters of various sizes;
- Subumbrella smooth with 4 interradial broad furrows extending from the base of the manubrium to the tip of the interradial ridges;
- Manubrium 4-sided and its perradial ridges being continous with those of the subumbrella;
- 4 interradial arms, each subdivided at the tip into 2, bringing about a nearly cruciform shape;
- Interradial arms divided each into 2 short arms with 10-20 secondary tentacles with globular knob;
- 8 primary tentacles, 4 in the perradii and 4 in the interradii and each tentacle terminates with a flat disc;
- Gonads in 8 adradial rows of 9-12 vesicles, each extending from the base of the manubrium to the tip of the arms;
- Gastric filaments forming groups in each interradius;
- Colour of live specimens: variable, but often the individuals are yellowish, reddish and brownish.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North West Pacific Ocean.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843195&lvl=0
Notes: the 4 arms are larger at base than *Calvadosia tsingtaoensis*.

21 Arms narrower at base than S. cruciformis

Sasakiella tsingtaoensis, Ling 1937

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Amyostaurida
Familia Kishinouyeidae Uchida, 1929
Genus *Calvadosia* James-Clark, 1863
Calvadosia tsingtaoensis (Ling, 1937)

Synonims: *Sasakiella tsingtaoensis* Ling, 1937

Morpho-anatomical characteristics
Genus *Calvadosia* James-Clark, 1863:

- Peduncle single or 4-chambered without muscle fibers in the taeniola;
- 8 adradial clusters of knobbed tentacles;
- No adhesive anchors;
- 8 adradial gonads.

Calvadosia tsingtaoensis (Ling, 1937):

- Calyx cruciform;
- Exumbrella with nematocyst clusters of various sizes;
- Subumbrella smooth with 4 interradial broad furrows extending from the base of the manubrium to the tip of the interradial ridges;
- Manubrium 4-sided and its perradial ridges being continous with those of the subumbrella;
- 4 interradial arms, each subdivided at the tip into 2, bringing about a nearly cruciform shape;
- Interradial arms divided each into 2 short arms with 10-20 secondary tentacles with globular knob;
- 4 primary tentacles only in the perradii and each tentacle terminates with a flat disc;
- Gonads in 8 adradial rows of 9-12 vesicles, each extending from the base of the manubrium to the tip of the arms;
- Gastric filaments forming groups in each interradius;
- Colour of live specimens: the shades ranging from yellow to brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North West Pacific Ocean.
Notes: This species is very similar to *Calvadosia cruciformis* and the main difference between these 2 species is that *C. tsingtaoensis* has 4 primary tentacles only in the perraddi (and not in the interradii) and the 4 arms are narrower at base than *C. cruciformis*.

22 Peduncle without muscle in the septa

Lucernariopsis campanulata, (Lamouroux 1815)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Amyostaurida
Familia Kishinouyeidae Uchida, 1929
Genus *Calvadosia* James-Clark, 1863
Calvadosia campanulata (Lamouroux, 1815)

Synonims: *Lucernaria campanulata* Lamouroux, 1815; *Lucernaria discoidea* Eales, 1938; *Lucernariopsis campanulata* (Lamouroux, 1815)

Morpho-anatomical characteristics
Genus *Calvadosia* James-Clark, 1863:

- Peduncle single or 4-chambered without muscle fibers in the taeniola;
- 8 adradial clusters of knobbed tentacles;
- No adhesive anchors;
- 8 adradial gonads.

Calvadosia campanulata (Lamouroux, 1815):

- Calyx 20 to 25 mm. high and 20 to 30 mm. wide, funnel-shaped;
- Aboral surface papillated, giving the calyx a granular or grainy appearance;
- Peduncle 10 to 15 mm. in length;
- Pedal disk symmetrically octagonal;
- Arms long, equidistant;
- Angular distance between arms: 45° apart, with equally developed perradii and interradii;
- Each arm terminates with a cluster of 40 to 45 secondary tentacles;
- Gonads extending from point of juncture between calyx and peduncle to tips of arms;
- Colour of live specimens: very variable, being yellowish, red, brownish, greenish, orange.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: along European coasts from the Black Sea and Mediterranean to Southern England, Ireland and Wales.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843190&lvl=0
Notes: Hornell, 1893, states that 8 marginal anchors are found in the young medusa, but they soon disappear and are not found in the adult.

22	Peduncle with muscle in the septa	23
23	Marginal lobes (arms) faintly developed	24
23	Marginal lobes (arms) well developed	26
24	Tentacles not true	

Lipkea ruspoliana, Vogt 1886

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lipkeidae Vogt, 1887
Genus *Lipkea* Vogt, 1886
Lipkea ruspoliana Vogt, 1886

Morpho-anatomical characteristics
Genus *Lipkea* Vogt, 1886:
- Reduced tentacles;
- Peduncle single-chambered, with muscles;
- Without perradial and interradial marginal anchors;
- Coronal muscle unbroken;
- 8 gonads.

Lipkea ruspoliana Vogt, 1886:
- Calyx flat and soup-tureen shaped, 7 to 8 mm. wide and 4 mm. high;
- The calyx is attached by a sucker;
- Subumbrella concave but the central mouth is elevated and bordered by 4 cruciform lips;
- Peduncle about 1.5 mm. long and 4 mm. wide;
- Rhopaliods absent;
- 8 short, blunt, hollow marginal lappets, 4 perradial and 4 interradial;
- With not “true” tentacles;
- 4 lappets are in the radii of the lips and 4 others are in the radii of the ostia;
- 15 to 20 large, oval mucous glands, the openings of which are scattered over the inner surface of each lappet;
- 4 deep, interradial conical ostia alternate with the lips of the mouth in the position;
- Ring-muscle entire and extends around margin of subumbrella at bases of the 8 lappets;
- Present conspicuous clusters of gland cells in the ectoderm of the subumbrella; 4 large clusters are perradial in position and lie at the base of the 4 angles of the cruciform mouth-tube;
- 8 linear clusters of gland cells at the bases of the 8 lappets on the inner side of the ring-muscle;
- Central stomach divided by 4 interradial septa into 4 perradial chambers; these septa do not extend into the cavities of the 4 interradial lappets so that the perradial chambers of the stomach communicate one with another through the cavities of these lappets;
- 4 pairs of branched, gastric filaments arise from the edges of the 4 interradial septa at base of aesophagus;

- Colour of live specimens: translucent to milky with the clusters of nematocysts on the subumbrella yellow.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Mediterranean Sea, in particular along the North-East coasts of Sardinia.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843202&lvl=0
Notes: Uchida (1929) explains this lack of rhopaliods with the life of *L. ruspoliana* in the deep waters. The species of the *Lipkea* genus are very similar and to distinguish them usually makes references to the tentacles.

24 Not as above 25

25 Tentacles reduced

Lipkea stephensoni, Carlgren 1933

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lipkeidae Vogt, 1887
Genus *Lipkea* Vogt, 1886
Lipkea stephensoni Carlgren, 1933

Vernacular name: Bell Trumpet Jelly

Morpho-anatomical characteristics
Genus *Lipkea* Vogt, 1886:

- Reduced tentacles;
- Peduncle single-chambered, with muscles;
- Without perradial and interradial marginal anchors;
- Coronal muscle unbroken;
- 8 gonads.

Lipkea stephensoni Carlgren, 1933:

- Calyx 16 mm. high and half as wide;
- Calyx with white spots;
- Peduncle very short and broad;
- 8 adradial lobes short but distinct, with 30-40 much reduced tentacles in one row along their margin;
- Stomach with 4 perradial puches;
- Colour of live specimens: pale and transparent.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Africa coasts.
Notes: The species of the *Lipkea* genus are very similar and to distinguish them usually makes references to the tentacles.

25 Tentacles rudimentary

Lipkea sturdzi, (Antipa 1893)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lipkeidae Vogt, 1887
Genus *Lipkea* Vogt, 1886
Lipkea sturdzi (Antipa, 1893)

Synonims: *Capria sturdzi* Antipa, 1893

Morpho-anatomical characteristics
Genus *Lipkea* Vogt, 1886:

- Reduced tentacles;
- Peduncle single-chambered, with muscles;
- Without perradial and interradial marginal anchors;
- Coronal muscle unbroken;
- 8 gonads.

Lipkea sturdzi (Antipa, 1893):

- Calyx globular 9 mm. long and 5.5 to 6 mm. wide;
- Mouth tube long, prismatic, 4-sided, with 4 interradial and longitudinal furrows;

- Mouth-opening cruciform and quadratic;
- Peduncle broad and flat, resembling a suctorial disk;
- 8 short, thick, adradial paddle-like arms;
- Arms hollow and provided with a row of 16 to 20 tooth-like or finger-shaped rudimentary tentacles which are fused one to another by a web;
- 5 to 8 large clusters of nematocysts on the subumbrella side of each of the 8 arms;
- Radial muscle funnel-shaped and spreads over the entire surface of the subumbrella;
- 8 adradial, band-shaped gonads;
- Stomach with 4 simple perradial pouches;
- The 4 septal edges of the perradial stomach-pouches extend nearly to the calyx-margin, where they are pierced by the ring-canal;
- 4 rows of gastric filaments along the 4 interradial taeniole from the middle of the central stomach nearly to the foot-plate;
- Colour of live specimens: yellowish-white.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Mediterranean Sea.
Notes: The species of the *Lipkea* genus are very similar and to distinguish them usually makes references to the tentacles.

26	Tentacles up to 60 on each arm	27
26	Tentacles more than 60 on each arm	28
27	Subumbrellar margin with 4 perradial pigment spots	

Stylocoronella riedli, Salvini-Plawen 1966

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lucernariidae Johnston, 1847
Genus *Stylocoronella* Salvini-Plawen, 1966
Stylocoronella riedli Salvini-Plawen, 1966

Morpho-anatomical characteristics
Genus *Stylocoronella* Salvini-Plawen, 1966:
- Peduncle single-chambered;
- 4 pairs of gonads;
- No anchors;
- 4 longitudinal muscles extending to pedal disc.



Stylocoronella riedli Salvini-Plawen, 1966:
- Calyx about 5 mm. diameter;
- Subumbrella with nematocyst batteries;
- Subumbrellar margin with 4 perradial pigment spots;
- Peduncle vermiform about 20 mm . length;
- Manubrium quadrate;
- 8 equidistant adradial arms and each arm terminates with a cluster of 10-15 capitate tentacles;
- 8 primary tentacles persist and are clustered together with the secondary and tertiary tentacles;
- Numerous tiny pigment spots in the basal area of the capitate tentacles and 4 larger perradial ones at the subumbrellar margin;
- Gonads V-shaped;
- Gastric filaments well developed;
- Colour of live specimens: translucently pale.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Adriatic Sea, Mediterranean Sea and North East Atlantic Ocean.

27	Subumbrellar margin without 4 perradial pigment spots	

Stylocoronella variabilis, Salvini-Plawen 1987

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lucernariidae Johnston, 1847
Genus *Stylocoronella* Salvini-Plawen, 1966
Stylocoronella variabilis Salvini-Plawen, 1987

Morpho-anatomical characteristics

Genus *Stylocoronella* Salvini-Plawen, 1966:

- Peduncle single-chambered;
- 4 pairs of gonads;
- No anchors;
- 4 longitudinal muscles extending to pedal disc.

Stylocoronella variabilis Salvini-Plawen, 1987:

- Calyx about one-third of the total length of the body;
- Subumbrella with nematocyst batteries;
- Subumbrellar margin without 4 perradial pigment spots;
- Peduncle vermiform about 20 mm . length;
- Manubrium quadrate;
- 8 equidistant adradial arms and each arm terminates with a cluster of 10-15 capitate tentacles;
- 8 primary tentacles persist and are clustered together with the secondary tentacles;
- Gonads V-shaped;
- Gastric filaments well developed;
- Colour of live specimens: translucently pale.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North East Atlantic Ocean.

28 Peduncle rudimentary

Lucernaria australis, Vanhöffen 1908

Systematic position:

Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lucernariidae Johnston, 1847
Genus *Lucernaria* O. F. Müller, 1776
Lucernaria australis Vanhöffen, 1908

Morpho-anatomical characteristics

Genus *Lucernaria* O. F. Müller, 1776:

- Peduncle single chambered with 4 separate taeniola or partial septa, with muscles;
- 8 adradial arms which bear tentacles;
- 8 gonads;
- Without marginal anchors or marginal papillae;
- 4 simple perradial stomach pouches.

Lucernaria australis Vanhöffen, 1908:

- Calyx 10 mm. high and 9 mm. wide, thimble-shaped, with sloping sides;
- Mouth cruciform, with 4 perradial lips folded and about half the distance between the depth of bell-cavity and margin;
- Peduncle undeveloped, almost rudimentary;
- Arms 2 to 2.5 mm. long, grouped in pairs;
- Angular distance between arms: the 4 perradial notches twice as wide and deep as the interradial;
- Each arm terminates with 25 to 30 short tentacles with small terminal knobs;
- Wide ring muscle at margin of subumbrella and 8 strands of radial muscles extending outward to the tentacles;
- Radial strands one-third wider than the ring muscle; they inclose 4 narrow, triangular areas in the interradii and 4 wider, rectangular areas in the perradii;
- About 12 simple unbranched gastric filaments in each of the 8 rows;
- Colour of live specimens: variable.

Life cycle:the development of *Lucernaria* has been studied by Kowalevsky, 1884. The segmentation is total and equal and the entoderm is apparently formed by delamination. However a single, central entoderm cell is seen with a slender prolongation extending from between the ectoderm cells, and thus it is possible that the entoderm may originate from one of the ectoderm cells which withdraws into the interior. The larva elongates, the entoderm becoming a single linear row of cells, and the ectoderm becoming very thin at the ends. The ectoderm is not ciliated, but the larva creeps about. On the fourth day the larvae attach themselves and become flat and rounded and the entoderm forms a mass of a single layer. The larvae then encyst themselves in a secreted covering within which they remain for about 2 weeks. Fol, 1873, found also that in *Lucernaria* the segmentation is complete and results in the formation of a single-layered blastosphere, which

elongates, becomes ciliated and 2-layered. After this it becomes attached. 8 small, tentacle-like, marginal bodies, 4 perradial and 4 interradial, appear, but soon degenerate and disappear. Hornell, 1893, states that 8 marginal anchors are found in the young medusa, but disappear in the adult.
Geographical and seasonal distribution: Southern Oceans, Antarctic Continent.

28	Peduncle true	29
29	Peduncle as long or longer than height of calyx	30
29	Peduncle shorter than height of calyx	31
30	Tentacles 100-140 on each arm	

Lucernaria quadricornis, O.F.Müller 1776

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lucernariidae Johnston, 1847
Genus *Lucernaria* O. F. Müller, 1776
Lucernaria quadricornis O. F. Müller, 1776

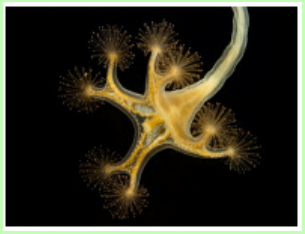
Synonims: *Lucernaria fascicularis* Fleming, 1814; *Lucernaria pyramidalis* Haeckel, 1880

Morpho-anatomical characteristics
Genus *Lucernaria* O. F. Müller, 1776:

- Peduncle single chambered with 4 separate taeniola or partial septa, with muscles;
- 8 adradial arms which bear tentacles;
- 8 gonads;
- Without marginal anchors or marginal papillae;
- 4 simple perradial stomach pouches.

Lucernaria quadricornis O. F. Müller, 1776:

- Calyx 25 to 30 mm. high and 50 to 60 mm. wide with a shape of a 4-sided funnel and about twice as wide as high;
- Peduncle 25 to 50 mm. in length with 4 longitudinal interradial strands of muscle fibers;
- Arms arranged in 4 separate pairs;
- Angular distance between arms: the 4 perradial notches twice as wide and deep as the interradial;
- Each arm terminates with a cluster of 100 to 140 secondary tentacles;
- Gonads extending from beginning of peduncle to ends of arms;
- Stomach gives rise to 4 wide perradial pouches which are lined on their edges by the gonads;
- Colour of live specimens: variable, being either gray, green, yellow-brown, red-brown or very dark brown.



Life cycle:the development of *Lucernaria* has been studied by Kowalevsky, 1884. The segmentation is total and equal and the entoderm is apparently formed by delamination. However a single, central entoderm cell is seen with a slender prolongation extending from between the ectoderm cells, and thus it is possible that the entoderm may originate from one of the ectoderm cells which withdraws into the interior. The larva elongates, the entoderm becoming a single linear row of cells, and the ectoderm becoming very thin at the ends. The ectoderm is not ciliated, but the larva creeps about. On the fourth day the larvae attach themselves and become flat and rounded and the entoderm forms a mass of a single layer. The larvae then encyst themselves in a secreted covering within which they remain for about 2 weeks. Fol, 1873, found also that in *Lucernaria* the segmentation is complete and results in the formation of a single-layered blastosphere, which elongates, becomes ciliated and 2-layered. After this it becomes attached. 8 small, tentacle-like, marginal bodies, 4 perradial and 4 interradial, appear, but soon degenerate and disappear. Hornell, 1893, states that 8 marginal anchors are found in the young medusa, but disappear in the adult.
Geographical and seasonal distribution: North Atlantic Ocean and Arctic Ocean.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843199&lvl=0

30	Tentacles 700-850 on each arm	

Lucernaria walteri, (Antipa 1892)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lucernariidae Johnston, 1847
Genus *Lucernaria* O. F. Müller, 1776

Lucernaria walteri (Antipa, 1892)

Synonims: *Lucernosa kuekenthali* Antipa, 1891; *Lucernosa walteri* Antipa, 1892

Morpho-anatomical characteristics

Genus *Lucernaria* O. F. Müller, 1776:

- Peduncle single chambered with 4 separate taeniola or partial septa, with muscles;
- 8 adradial arms which bear tentacles;
- 8 gonads;
- Without marginal anchors or marginal papillae;
- 4 simple perradial stomach pouches.

Lucernaria walteri (Antipa, 1892):

- Calyx 150 to 160 mm. high and 55 to 60 mm. wide, goblet-shaped;
- Peduncle about 70 to 80 mm. long with 4 well-developed, linear, interradial longitudinal muscles;
- Cavity of the peduncle extends directly into that of the calyx, without a pyloric stricture;
- Arms grouped in pairs;
- Angular distance between arms: the 4 perradial notches between arms twice or three times wide and deep as the 4 interradial;
- Each arm terminates with a cluster of 700 to 850 secondary, short, knobbed tentacles;
- Gonads adradial, lancet-shaped, extending to ends of the arms;
- Colour of live specimens: light brown.

Life cycle:the development of *Lucernaria* has been studied by Kowalevsky, 1884. The segmentation is total and equal and the entoderm is apparently formed by delamination. However a single, central entoderm cell is seen with a slender prolongation extending from between the ectoderm cells, and thus it is possible that the entoderm may originate from one of the ectoderm cells which withdraws into the interior. The larva elongates, the entoderm becoming a single linear row of cells, and the ectoderm becoming very thin at the ends. The ectoderm is not ciliated, but the larva creeps about. On the fourth day the larvae attach themselves and become flat and rounded and the entoderm forms a mass of a single layer. The larvae then encyst themselves in a secreted covering within which they remain for about 2 weeks. Fol, 1873, found also that in *Lucernaria* the segmentation is complete and results in the formation of a single-layered blastosphere, which elongates, becomes ciliated and 2-layered. After this it becomes attached. 8 small, tentacle-like, marginal bodies, 4 perradial and 4 interradial, appear, but soon degenerate and disappear. Hornell, 1893, states that 8 marginal anchors are found in the young medusa, but disappear in the adult.

Geographical and seasonal distribution: Spitzbergen Island (Arctic Ocean).

31 Tentacles 80 or less on each arm

Lucernaria infundibulum, Haeckel 1880

Systematic position:

Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lucernariidae Johnston, 1847
Genus *Lucernaria* O. F. Müller, 1776
Lucernaria infundibulum Haeckel, 1880

Morpho-anatomical characteristics

Genus *Lucernaria* O. F. Müller, 1776:

- Peduncle single chambered with 4 separate taeniola or partial septa, with muscles;
- 8 adradial arms which bear tentacles;
- 8 gonads;
- Without marginal anchors or marginal papillae;
- 4 simple perradial stomach pouches.

Lucernaria infundibulum Haeckel, 1880:

- Calyx 13 mm. high and 24 mm wide, flat, funnel shaped and not quite twice as wide as high;
- Peduncle about 7 mm. in length, 4-sided and pyramidal;
- 4 hollow interradial taeniole each with a funnel-like central cavity extending to lower end of peduncle;
- Arms arranged in 4 pairs;
- Angular distance between arms: the 4 perradial notches only little wider and deeper than the 4 interradial;
- Each arm terminates with a cluster of 60 to 80 secondary tentacles;

- Gonads extending from middle of peduncle to base of arm;
- Colour of live specimens: variable.

Life cycle:the development of *Lucernaria* has been studied by Kowalevsky, 1884. The segmentation is total and equal and the entoderm is apparently formed by delamination. However a single, central entoderm cell is seen with a slender prolongation extending from between the ectoderm cells, and thus it is possible that the entoderm may originate from one of the ectoderm cells which withdraws into the interior. The larva elongates, the entoderm becoming a single linear row of cells, and the ectoderm becoming very thin at the ends. The ectoderm is not ciliated, but the larva creeps about. On the fourth day the larvae attach themselves and become flat and rounded and the entoderm forms a mass of a single layer. The larvae then encyst themselves in a secreted covering within which they remain for about 2 weeks. Fol, 1873, found also that in *Lucernaria* the segmentation is complete and results in the formation of a single-layered blastosphere, which elongates, becomes ciliated and 2-layered. After this it becomes attached. 8 small, tentacle-like, marginal bodies, 4 perradial and 4 interradial, appear, but soon degenerate and disappear. Hornell, 1893, states that 8 marginal anchors are found in the young medusa, but disappear in the adult.
Geographical and seasonal distribution: Spitzbergen Island (Arctic Ocean).

31 Tentacles more than 80 on each arm 32

32 Peduncle about half as long as height of calyx

Lucernaria saint-hilarei, (Radicorzew)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lucernariidae Johnston, 1847
Genus *Lucernaria* O. F. Müller, 1776
Lucernaria sainthilairei (Redikorzev, 1925)

Synonims: *Lucernosa sainthilairei* Redikorzev, 1925

Morpho-anatomical characteristics
Genus *Lucernaria* O. F. Müller, 1776:

- Peduncle single chambered with 4 separate taeniola or partial septa, with muscles;
- 8 adradial arms which bear tentacles;
- 8 gonads;
- Without marginal anchors or marginal papillae;
- 4 simple perradial stomach pouches.

Lucernaria sainthilairei (Redikorzev, 1925):

- Calyx 90 mm. high and up to 85 mm. wide;
- Peduncle about half as long as height of calyx;
- Angular distance between arms: the 4 perradial notches between arms about twice as wide and deep as the 4 interradial;
- Each terminates with a cluster of 150 to 200 secondary tentacles;
- Gonads very broad with about 300 separate sac-like pouches;
- Colour of live specimens: body transparent with pink gonads and violet tentacles.

Life cycle:the development of *Lucernaria* has been studied by Kowalevsky, 1884. The segmentation is total and equal and the entoderm is apparently formed by delamination. However a single, central entoderm cell is seen with a slender prolongation extending from between the ectoderm cells, and thus it is possible that the entoderm may originate from one of the ectoderm cells which withdraws into the interior. The larva elongates, the entoderm becoming a single linear row of cells, and the ectoderm becoming very thin at the ends. The ectoderm is not ciliated, but the larva creeps about. On the fourth day the larvae attach themselves and become flat and rounded and the entoderm forms a mass of a single layer. The larvae then encyst themselves in a secreted covering within which they remain for about 2 weeks. Fol, 1873, found also that in *Lucernaria* the segmentation is complete and results in the formation of a single-layered blastosphere, which elongates, becomes ciliated and 2-layered. After this it becomes attached. 8 small, tentacle-like, marginal bodies, 4 perradial and 4 interradial, appear, but soon degenerate and disappear. Hornell, 1893, states that 8 marginal anchors are found in the young medusa, but disappear in the adult.
Geographical and seasonal distribution: North Atlantic Ocean and Arctic Ocean.
GENBANK: https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843705&lvl=0

32 Not as above 33

33 Peduncle 1/3 as long as height of calyx

Lucernaria haeckeli, (Antipa 1892)

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lucernariidae Johnston, 1847
Genus *Lucernaria* O. F. Müller, 1776
Lucernaria haeckeli (Antipa, 1892)

Synonims: *Lucernosa haeckeli* Antipa, 1892

Morpho-anatomical characteristics
Genus *Lucernaria* O. F. Müller, 1776:

- Peduncle single chambered with 4 separate taeniola or partial septa, with muscles;
- 8 adradial arms which bear tentacles;
- 8 gonads;
- Without marginal anchors or marginal papillae;
- 4 simple perradial stomach pouches.

Lucernaria haeckeli (Antipa, 1892):

- Calyx 45 to 50 mm. high and 27 mm. wide, oval, goblet-shaped and widest near middle;
- Peduncle 15 mm in length, conical, wide and one-third as long as calyx;
- Arms short and arranged in pairs;
- Angular distance between arms: the 4 perradial notches only little wider and deeper than the 4 interradial;
- Each arms terminates in a ball-like cluster of 80 to 90 knobbed secondary tentacles;
- Gonads so wide that they overlap one another;
- The gonads extend not quite to bases of arms and quite fill the lower parts of the radial chambers of the calyx;
- Colour of live specimens: variable.

Life cycle:the development of *Lucernaria* has been studied by Kowalevsky, 1884. The segmentation is total and equal and the entoderm is apparently formed by delamination. However a single, central entoderm cell is seen with a slender prolongation extending from between the ectoderm cells, and thus it is possible that the entoderm may originate from one of the ectoderm cells which withdraws into the interior. The larva elongates, the entoderm becoming a single linear row of cells, and the ectoderm becoming very thin at the ends. The ectoderm is not ciliated, but the larva creeps about. On the fourth day the larvae attach themselves and become flat and rounded and the entoderm forms a mass of a single layer. The larvae then encyst themselves in a secreted covering within which they remain for about 2 weeks. Fol, 1873, found also that in *Lucernaria* the segmentation is complete and results in the formation of a single-layered blastosphere, which elongates, becomes ciliated and 2-layered. After this it becomes attached. 8 small, tentacle-like, marginal bodies, 4 perradial and 4 interradial, appear, but soon degenerate and disappear. Hornell, 1893, states that 8 marginal anchors are found in the young medusa, but disappear in the adult.
Geographical and seasonal distribution: Spitzbergen Island (Arctic Ocean).

33 Peduncle less than 1/3 of the height of calyx

Lucernaria bathyphila, Haeckel 1880

Systematic position:
Classis Staurozoa
Ordo Stauromedusae
Subordo Myostaurida
Familia Lucernariidae Johnston, 1847
Genus *Lucernaria* O. F. Müller, 1776
Lucernaria bathyphila Haeckel, 1880

Morpho-anatomical characteristics
Genus *Lucernaria* O. F. Müller, 1776:

- Peduncle single chambered with 4 separate taeniola or partial septa, with muscles;
- 8 adradial arms which bear tentacles;
- 8 gonads;
- Without marginal anchors or marginal papillae;
- 4 simple perradial stomach pouches.

Lucernaria bathyphila Haeckel, 1880:

- Calyx 55 to 70 mm. high and 50 to 60 wide;
- Peduncle short, 5 to 10 mm. in length;
- Arms very short, each with 80-120 secondary tentacles;
-

- Angular distance between arms: Perradial notches between the arms are only slightly wider and deeper than the interradial notches;
- Gonads broad and short, neither reaching to base of peduncle nor ends of arms;
- Each gonad has 200 sac-like foldings;
- Colour of live specimens: pinkish-white.

Life cycle:the development of *Lucernaria* has been studied by Kowalevsky, 1884. The segmentation is total and equal and the entoderm is apparently formed by delamination. However a single, central entoderm cell is seen with a slender prolongation extending from between the ectoderm cells, and thus it is possible that the entoderm may originate from one of the ectoderm cells which withdraws into the interior. The larva elongates, the entoderm becoming a single linear row of cells, and the ectoderm becoming very thin at the ends. The ectoderm is not ciliated, but the larva creeps about. On the fourth day the larvae attach themselves and become flat and rounded and the entoderm forms a mass of a single layer. The larvae then encyst themselves in a secreted covering within which they remain for about 2 weeks. Fol, 1873, found also that in *Lucernaria* the segmentation is complete and results in the formation of a single-layered blastosphere, which elongates, becomes ciliated and 2-layered. After this it becomes attached. 8 small, tentacle-like, marginal bodies, 4 perradial and 4 interradial, appear, but soon degenerate and disappear. Hornell, 1893, states that 8 marginal anchors are found in the young medusa, but disappear in the adult.
Geographical and seasonal distribution: North East Atlantic Ocean, between Fær Øer and Shetland Islands. **GENBANK:** https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1843198&lvl=0
Notes: according to Mayer (1910), the angular distance between arms is: the 4 perradial notches 3 times as wide and deep as the 4 interradial.

34	Medusa with calix	
		Tesserantha connectens, Haeckel 1880
34	Medusa with umbrella	35
35	Exumbrella divided by a circular and deep coronal groove	36
35	Exumbrella not divided by a circular and deep coronal groove	64
36	Tentacles from 4 to 6	37
36	Tentacles 8 or more	42
37	Rhopalia 4	38
37	Rhopalia 6	39
38	Gonads almost equidistant	
		Pericolpa campana, (Haeckel 1880)

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Periphyllidae (Haeckel, 1880)
Genus *Pericolpa* (Haeckel, 1880)
Pericolpa campana (Haeckel, 1880)

Synonims: *Pericrypta campana* (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Pericolpa* (Haeckel, 1880):
- Bell flat;
- Exumbrella with coronal furrow;
- 8 marginal lappets;
- 4 tentacles;
- 4 rhopalia with ocelli;
- 8 gonads.

Pericolpa campana (Haeckel, 1880):
- Bell 15mm wide, 15mm high. Dome shaped, apex evenly rounded.Thick mesoglea;
- Exumbrella with deep coronal furrow;
- Tentacles shorter than bell radius, tapering, solid;
- Marginal lappets (pedalia) semicircular, all alike;
- Stomach connected with gastrovascular cavity by 4 ostia;
- A wide ring sinus gives rise to 8 radiating canals. These fork and communicate one with another at their outer ends, forming a marginal ring canal;
- Gonads oval;
-

- Subumbrellar circular musculature well developed. With radial muscle strands near base of tentacles.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: New Zealand, South Pacific Ocean.
Notes: According to Mayer (1910), this genus includes the simplest and most primitive Periphyllidae.

38 Gonads in 4 pairs

Pericolpa quadrigata, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Periphyllidae (Haeckel, 1880)
Genus *Pericolpa* (Haeckel, 1880)
Pericolpa quadrigata (Haeckel, 1880)

Synonims: *Pericolpa tetralina* (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Pericolpa* (Haeckel, 1880):

- Bell flat;
- Exumbrella with coronal furrow;
- 8 marginal lappets;
- 4 tentacles;
- 4 rhopalia with ocelli;
- 8 gonads.

Pericolpa quadrigata (Haeckel, 1880):

- Bell 30mm wide, 40mm high. Dome shaped, apex pointed;
- Tentacles as long as bell diameter;
- Tentacular marginal lappets (pedalia) wider and longer than the rhopalar ones.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Southern Ocean, South Pacific Ocean.
Notes: According to Mayer (1910), this genus includes the simplest and most primitive Periphyllidae.

39 Gonads 6

Atorella arcturi, Bigelow 1928

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Atorellidae (Vanhöffen, 1902)
Genus *Atorella* (Vanhöffen, 1902)
Atorella arcturi (Bigelow, 1928)

Vernacular name: Mutsuashikamuri-Kurage (Japan), Six-legged Coronate medusa

Morpho-anatomical characteristics
Genus *Atorella* (Vanhöffen, 1902):

- Exumbrella with coronal furrow;
- 12 marginal lappets, alternating with 12 pedalia;
- 6 tentacles;
- Central mouth with 4 lips;
- 6 rhopalia;
- 6-8 gonads;
- Subumbrellar circular musculature poorly developed.

Atorella arcturi (Bigelow, 1928):

- Central part of bell 15mm wide, marginal zone 7-8mm wide, including marginal lappets;
- Tentacles, long, without terminal knob;
- Marginal lappets longer than broad, rounded at the tip;
- Stomach 4-sided;
- 6 gonads;
- Colour of live specimens: colourless.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Pacific Ocean.

39 Not as above 40

40 Gonads 8

Atorella octogonus, Mills, Larson & Young 1987

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Atorellidae (Vanhöffen, 1902)
Genus *Atorella* (Vanhöffen, 1902)
Atorella octogonus (Mills, Larson & Young, 1987)

Vernacular name: Mutsuashikamuri-Kurage (Japan), Six-legged Coronate medusa

Morpho-anatomical characteristics
Genus *Atorella* (Vanhöffen, 1902):

- Exumbrella with coronal furrow;
- 12 marginal lappets, alternating with 12 pedalia;
- 6 tentacles;
- Central mouth with 4 lips;
- 6 rhopalia;
- 6-8 gonads;
- Subumbrellar circular musculature poorly developed.

Atorella octogonus (Mills, Larson & Young, 1987):

- 8 gonads;
- Colour of live specimens: heavily pigmented stomach.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Atlantic Ocean.

40 Gonads 4 41

41 Gonads sac-like, swollen

Atorella subglobosa, Vanhöffen 1902

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Atorellidae (Vanhöffen, 1902)
Genus *Atorella* (Vanhöffen, 1902)
Atorella subglobosa (Vanhöffen, 1902)

Vernacular name: Mutsuashikamuri-Kurage (Japan), Six-legged Coronate medusa

Morpho-anatomical characteristics
Genus *Atorella* (Vanhöffen, 1902):

- Exumbrella with coronal furrow;
- 12 marginal lappets, alternating with 12 pedalia;
- 6 tentacles;
- Central mouth with 4 lips;
- 6 rhopalia;
- 6-8 gonads;
- Subumbrellar circular musculature poorly developed.

Atorella subglobosa (Vanhöffen, 1902):

- Bell 15-17mm wide, globular. Central part of bell more than twice as wide as zone of pedalia.
- Exumbrella smooth. Coronal furrow not very deep;
- Marginal lappets shallow, slightly cleft;
- Stomach 4-sided;
- 6 rhopalia, arising from very shallow niches in bell margin;
- Gastrovascular system with 12 pouches and a ring canal;
- 4gonads, sac-like;
- Colour of live specimens: stomach brown, gonads yellowish brown, subumbrellar musculature white, all other parts translucent.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Atlantic Ocean, South Pacific Ocean.

41 Gonads leaf-shaped

Atorella vanhoeffeni, Bigelow 1909

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Atorellidae (Vanhöffen, 1902)
Genus *Atorella* (Vanhöffen, 1902)
Atorella vanhoeffeni (Bigelow, 1909)

Vernacular name: Mutsuashikamuri-Kurage (Japan), Six-legged Coronate medusa

Morpho-anatomical characteristics
Genus *Atorella* (Vanhöffen, 1902):

- Exumbrella with coronal furrow;
- 12 marginal lappets, alternating with 12 pedalia;
- 6 tentacles;
- Central mouth with 4 lips;
- 6 rhopalia;
- 6-8 gonads;
- Subumbrellar circular musculature poorly developed.

Atorella vanhoeffeni (Bigelow, 1909):

- Bell 6-7mm wide, 3-5mm high;
- Exumbrella with deep coronal furrow. Besprinkled with nematocyst warts;
- Marginal lappets long, oval;
- Tentacles as long as bell diameter, tapering outwardly and with a terminal knob;
- Stomach flat, shallow. Its 4 ostia lead into a wide ring sinus, which gives rise to 12 broad radial canals, that branch at their ends and unite to form a marginal ring canal;
- 6 rhopalia without ocelli. Exumbrellar sensory pit covered by a thickened membrane;
- Gastrovascular system with 12 pouches and a ring canal;
- 4 gonads, leaf-shaped;
- Colour of live specimens: gonads orange yellow, all other parts translucent.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Eastern Central Ocean, Indian Ocean (polyp).

42 Rhopalia more than 6 43

42 Rhopalia up to 6 45

43 Gastric ostia with two pigmented spots

Atolla vanhoeffeni, Russell 1957

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Atollidae (Bigelow, 1913)
Genus *Atolla* (Haeckel, 1880)
Atolla vanhoeffeni (Russell, 1957)

Synonims: *Atolla bairdii* (Fewkes, 1886), *Atolla valdiviae* (Vanhoeffen, 1902)
Vernacular name: Cross Coronate Medusa, Batsukamuri-Kurage (Japan)

Morpho-anatomical characteristics
Genus *Atolla* (Haeckel, 1880):

- Bell flat, disc-shaped, often heavily pigmented;
- Exumbrella with a deep coronal furrow;
- Marginal lappets double the number of tentacles;
- 16-18, up to 20 tentacles, alternating to rhopalia. One single, very long, hypertrophied tentacle dragged behind bell while swimming;
- 8 gonads. 4 subgenital ostia;
- Subumbrellar circular musculature well developed.

Atolla vanhoeffeni (Russell, 1957):

- Bell 30mm wide, occasionally larger;
- 20 tentacles. The single hypertrophied tentacle located in the same radius as septum between lobes of stomach;

- Marginal lappets without papillae;
- Stomach cruciform, with a pair of dark spots at each end of the cross;
- Colour of live specimens: transparent besides the dark spots at stomach edges.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Pacific Ocean, North Atlantic Ocean, Gulf of Mexico.

43 Gastric ostia without pigmented spots 44

44 Species with 20-24 tentacles

Atolla parva, Russell 1958

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Atollidae (Bigelow, 1913)
Genus *Atolla* (Haeckel, 1880)
Atolla parva (Russell, 1958)

Morpho-anatomical characteristics
Genus *Atolla* (Haeckel, 1880):
- Bell flat, disc-shaped, often heavily pigmented;
- Exumbrella with a deep coronal furrow;
- Marginal lappets double the number of tentacles;
- 16-18, up to 20 tentacles, alternating to rhopalia. One single, very long, hypertrophied tentacle dragged behind bell while swimming;
- 8 gonads. 4 subgenital ostia;
- Subumbrellar circular musculature well developed.

Atolla parva (Russell, 1958):
- Bell 10-30mm wide. Very small;
- Marginal lappets without papillae;
- 20-26 tentacles. The single hypertrophied tentacle located in the same radius as septum between lobes of stomach;
- Outline of stomach resembling Ace of Clubs, with the 4 lobes equal in size;
- Gastric canals almost completely covered to their peripheral end by the inner edge of circular musculature;
- Colour of live specimens: reddish brown. Thin, coloured epidermis often lost, revealing a transparent mesoglea.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Atlantic Ocean.

44 Species with usually 22, sometimes up to 32 tentacles

Atolla wyvillei, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Atollidae (Bigelow, 1913)
Genus *Atolla* (Haeckel, 1880)
Atolla wyvillei (Haeckel, 1880)

Synonims: *Colaspis achillis* (Fewkes, 1885), *Atolla bairdii* (Maas, 1897), *Atolla tenella* (Hartlaub, 1909), *Atolla alexandri* (Maas, 1897), *Atolla verrilli* (Verrill, 1885)
Vernacular name: Wyville's Crown Jelly, Purple Coronate Medusa, Murasakikamuri-Kurage (Japan)

Morpho-anatomical characteristics
Genus *Atolla* (Haeckel, 1880):
- Bell flat, disc-shaped, often heavily pigmented;
- Exumbrella with a deep coronal furrow;
- Marginal lappets double the number of tentacles;
- 16-18, up to 20 tentacles, alternating to rhopalia. One single, very long, hypertrophied tentacle dragged behind bell while swimming;
- 8 gonads. 4 subgenital ostia;
- Subumbrellar circular musculature well developed.

Atolla wyvillei (Haeckel, 1880):
-

- 22-36 tentacles. Short, stout and sharply tapered. Each tentacles inserted onto a prominent basal pedalium. The single hypertrophied tentacle located in the same radius as septum between lobes of stomach;
- 44 marginal lappets, shortly elongated, rounded. Without papillae;
- Stomach 4 leaf clover shaped. Peripheral walls of gastrovascular canals with nematocyst patches;
- Gonads elongated-oval with rounded edges, forming a broken ring just internal to tentacles bases;
- Colour of live specimens: reddish brown. Central part of exumbrella pale to dark. Tentacles colourless. Thin coloured epidermis often lost, revealing transparent mesoglea.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Japan Trench, below 500m.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=645345&lvl=0

45	Rhopalia 4	46
45	Rhopalia 6	51
46	Rhopalia perradial, 4	47
46	Rhopalia interradial, 4	48
47	Coronal muscle divided	

Paraphyllina intermedia, Maas 1903

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Paraphyllinidae (Maas, 1903)
Genus *Paraphyllina* (Maas, 1903)
Paraphyllina intermedia (Maas, 1903)

Synonims: *Periphylla dodecabostrycha* (Lobianco, 1903)

Morpho-anatomical characteristics
Genus *Paraphyllina* (Maas, 1903):
- Bell dome shaped;
- Exumbrella with coronal furrow;
- 16 marginal lappets;
- 12 tentacles alternating to rhopalia;
- Central mouth with 4 undivided lips;
- 4 rhopalia;
- 4 gonads, W-shaped.

Paraphyllina intermedia (Maas, 1903):
- Bell 15mm wide, 8mm high, flatly rounded with pointed apex;
- Exumbrella smooth, with deep coronal furrow;
- Marginal lappets (pedalia) rectangular with rounded edges, separated by deep radiating furrows. The 12 tentacular pedalia are of uniform width, the 4 rhopalial ones are half as wide as the former ones;
- Tentacles as long as bell diameter, tapering;
- A coronal ring canal gives rise to 16 pouches, and these are put in communication one with another by a ring sinus;
- Rhopalia with ocelli, covered by a hood-like fold of exumbrella;
- Gonads bean or egg shaped;
- Subumbrella circular musculature well developed;
- Colour of live specimens: colourless besides rhopalia and 4 masses of red/brown pigment in the central stomach.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean.

47	Coronal muscle unbroken	

Paraphyllina ransoni, Russel 1956

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Paraphyllinidae (Maas, 1903)

Genus *Paraphyllina* (Maas, 1903)
Paraphyllina ransoni (Russell, 1956)

Morpho-anatomical characteristics
Genus *Paraphyllina* (Maas, 1903):

- Bell dome shaped;
- Exumbrella with coronal furrow;
- 16 marginal lappets;
- 12 tentacles alternating to rhopalia;
- Central mouth with 4 undivided lips;
- 4 rhopalia;
- 4 gonads, W-shaped.

Paraphyllina ransoni (Russell, 1956):

- Bell up to 75mm wide. Dome shaped. Mesoglea thick;
- Exumbrella covered with nematocyst warts, with prominent coronal furrow;
- Marginal lappets (pedalia) The 12 tentacular pedalia are larger than the 4 rhopalial ones;
- Tentacles as long as 2/3 bell diameter;
- A coronal ring canal gives rise to 16 pouches, and these are put in communication one with another by a ring sinus;
- Rhopalia without ocelli;
- Gonads W-shaped;
- Subumbrella circular musculature continuos and prominent;
- Colour of live specimens: colourless besides a chocolate/red stomach. Some specimens brownish red all over.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Mediterranean Sea, North Atlantic Sea. In deep waters.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880237&lvl=0

48 Marginal lappets 16

Periphylla periphylla (Péron & Lesueur, 1809)



Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Periphyllidae (Haeckel, 1880)
Genus *Periphylla* (F. Müller, 1861)
Periphylla periphylla (Peron & Lesuer, 1810)

Synonims: *Periphylla hyacinthina* (Steenstrup, 1817)
Vernacular name: Merchant Cap

Morpho-anatomical characteristics
Genus *Periphylla* (F. Müller, 1861):

- Bell with cone to dome shaped central disc. Mesoglea thick and rigid;
- Exumbrella with deep coronal furrow. Peripheral zone with 16 radial furrows extending to lappets;
- 16 marginal lappets;
- 12 tentacles in 4 groups of 3, alternating to rhopalia;
- 4 rhopalia;
- 8 gonads, U-shaped.

Periphylla periphylla (Peron & Lesuer, 1810):

- Bell 250mm wide. Steeply conical to domed, apex pointed;
- Exumbrella smooth with prominent coronal furrow;
- Tentacles thick, tapering. In life held pointing either aborally or orally, but all in the same direction;
- Stomach large, occupying whole upper part of central dome, communicating with peripheral gastrovascular sinus through 4 ostia;
- Rhopalia in deep clefts between lappets;
- Subumbrellar circular musculature broad, longitudinally folded;
- Colour of live specimens: stomach reddish brown to brown, other parts colourless.

Life cycle: *Periphylla periphylla* (Peron & Lesuer, 1810) has direct development, characteristic elements of the complete cnidarian metagenesis as planula, polyp, ephyra

don't exist. Development passes through a series of stages: Stage 1: spherical embryo, without external structures, very rich in yolk. Stage 2: anterior end of embryos is somewhat flattened. Stage 3: the anterior end shows a pit with a first sign of a mouth. 4 gastric septa are visible as hollow entodermal structures. Stage 4: the shape of this stage resembles a thimble, the later exumbrella is smooth and neither cilia nor nematocysts are present. Stage 5: 16 short rounded lappets have been formed, 4 rhopalia buds appear, coronal furrow divides central disc from margin, mouth is still closed. Stage 6: first appearance of a thickened opaque jelly in the region of the central disc. Marginal lappets well developed and tentacle buds begin to appear. The mouth is now open. Stage 7: this stage shows all morphological details of a medusa, with its 12 elongated tentacles and 4 interradial rhopalia, plus ciclia on the marginal lappets close to rhopalia. Stage 8: young medusa with structures like the previous stage, but with purple pigment in stomach and mouth.

Geographical and seasonal distribution: Atlantic and Pacific Southern Ocean, Japan Trench. Wide spread mesopelagic and bahypelagic species.

GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880221&lvl=0

48 Not as above 49

49 Marginal lappets 32

Nauphantopsis diomedeae, Fewkes 1885

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Periphyllidae (Haeckel, 1880)
Genus *Nauphantopsis* (Fewkes, 1885)
Nauphantopsis diomedeae (Fewkes, 1885)

Morpho-anatomical characteristics
Genus *Nauphantopsis* (Fewkes, 1885):

- Bell flat;
- Exumbrella with coronal furrow;
- 32 marginal lappets;
- 28 tentacles;
- Central mouth with 4 undivided lips;
- 4 rhopalia.

Nauphantopsis diomedeae (Fewkes, 1885):

- Bell 70mm wide;
- Centrifugal from coronal furrow there is a zone with 32 radial ridges separated by 32 deep radial furrows. Each ridge is bifurcated at its outer end by a deep median cleft;
- Marginal lappets (pedalia) long and rectangular;
- Tentacles slender and flexible.

Life cycle: reproductive strategies unknown.

Geographical and seasonal distribution: North Atlantic Ocean.

Notes: According to Mayer (1910), *Nauphantopsis diomedeae* (Fewkes, 1885) is lacking of a complete description, as Fewkes examined a poorly preserved specimen. There is uncertainty though there are 4 or 8 rhopalia, 24 or 28 tentacles and no informations about subumbrella, mouth, gonads and colour in life.

49 Marginal lappets 24 50

50 Gonads 8

Periphyllopsis braueri, Vanhöffen 1902

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Periphyllidae (Haeckel, 1880)
Genus *Periphyllopsis* (Vanhöffen, 1900)
Periphyllopsis braueri (Vanhöffen, 1900)

Morpho-anatomical characteristics
Genus *Periphyllopsis* (Vanhöffen, 1900):

- Bell flat;
- 24 marginal lappets;
- 20 tentacles in 4 groups of 5;
- 4 rhopalia;
- 4-8 gonads.

Periphyllopsis braueri (Vanhöffen, 1900):

- Bell 60mm wide. Central disc about 50mm wide;
- Exumbrella with deep coronal furrow;
- Marginal lappets oval;
- Tentacles as long as bell diameter, tapering;
- Stomach communicating with peripheral gastrovascular sinus through 4 ostia;
- Rhopalia in deep clefts between lappets;
- 8 gonads, oval;
- Subumbrellar circular musculature very weak;
- Colour of live specimens: the entire entodermal system is chocolate red.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Pacific Ocean.

50 Gonads 4

Periphyllopsis galatheae, Kramp 1959

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Periphyllidae (Haeckel, 1880)
Genus *Periphyllopsis* (Vanhöffen, 1900)
Periphyllopsis galatheae (Kramp, 1959)

Morpho-anatomical characteristics
Genus *Periphyllopsis* (Vanhöffen, 1900):

- Bell flat;
- 24 marginal lappets;
- 20 tentacles in 4 groups of 5;
- 4 rhopalia;
- 4-8 gonads.

Periphyllopsis galatheae (Kramp, 1959):

- Bell up to 380mm wide. Flattened;
- Gonads very large, lobate, horseshoe shaped;
- Colour of live specimens: central disc and 24 radiating lines on peripheral part of bell chocolate brown.

Life cycle: reproductive strategies unknown.
Notes: According to www.marinespecies.org, possibly a synonym of *Periphyllopsis braueri* (Vanhöffen, 1900), but yet to be proven definitively.

51 Stomach pouches break up into numerous ragged-edged branches in the marginal lappets 52

51 Stomach pouches simple, radiating 53

52 Subumbrellar protuberances in 2 circles

Linuche aquila, Mayer 1910

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Linuchidae (Haeckel, 1880)
Genus *Linuche* (Eschscholtz, 1829)
Linuche aquila (Mayer, 1910)

Synonims: *Linerges aquila* (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Linuche* (Eschscholtz, 1829):

- Bell thimble shaped, apex flat
- Exumbrella with coronal furrow. Subumbrella with 2-3 circles of hollow protuberances which arise from the stomach pouches;
- 16 marginal lappets, bluntly oval;
- 8 tentacles, short and inconspicuos, alternating with rhopalia;
- The central stomach opens by 4 ostia into a ring sinus which in turn breaks up into 16 branching, radiating pouches into marginal lappets;
- Central mouth with 4 undivided lips;
- 8 rhopalia;
- 8 gonads, in 4 crescentic shaped pairs;

- With symbiotic zooxanthellae.

Linuche aquila (Mayer, 1910):

- Bell 16mm wide, 13mm high;
- Subumbrella without 48 wart like protuberances.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Pacific Ocean.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880232&lvl=0
Notes: According to WORMS, often regarded as conspecific with *Linuche unguicolata* (Schwartz, 1788) despite living in different oceans.

52 Subumbrellar protuberances in 3 circles

Linuche unguiculata, (Schwartz)

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Linuchidae (Haeckel, 1880)
Genus *Linuche* (Eschscholtz, 1829)
Linuche unguicolata (Schwartz, 1788)

Synonims: *Linuche draco* (Haeckel, 1880)
Vernacular name: Thimble Jelly, Button Jelly, Sea Thimble

Morpho-anatomical characteristics
Genus *Linuche* (Eschscholtz, 1829):

- Bell thimble shaped, apex flat
- Exumbrella with coronal furrow. Subumbrella with 2-3 circles of hollow protuberances which arise from the stomach pouches;
- 16 marginal lappets, bluntly oval;
- 8 tentacles, short and inconspicuos, alternating with rhopalia;
- The central stomach opens by 4 ostia into a ring sinus which in turn breaks up into 16 branching, radiating pouches into marginal lappets;
- Central mouth with 4 undivided lips;
- 8 rhopalia;
- 8 gonads, in 4 crescentic shaped pairs;
- With symbiotic zooxanthellae.

Linuche unguicolata (Schwartz, 1788):

- Bell 16mm wide, 10mm high;
- Exumbrella with distinct but shallow coronal furrow. Sides of bell composed of 16 vertical pedalia, all alike;
- Marginal lappets very short, bluntly oval, inclined as the vanes of a wind-mill causing a peculiar spinning on its axis as the medusa progresses along with the bell pulsating rapidly;
- Tentacles small, 1,5 times as long as marginal lappets, neither very flexible nor contractile;
- Subumbrella without 48 wart like protuberances, arranged in an outer ring of 32 ones and 2 concentric inner rings of 8;
- Rhopalia small, simple, without ocelli, arising from clefts between marginal lappets and not protected by covering scales;
- Gonads grescentic shaped
- Colour of live specimens: gonads, subumbrellar warts and polygonal areas in gastric pouches brown. Rest transparent, colourless.

Life cycle: When mature, the medusae rise in vast swarms to the surface and the eggs are discharged and fertilized at evening. When the gonads have been emptied the medusae sink down to the bottom and die. Each egg is closely invested by a very thin transparent membrane which persists to the gastrula stage. The eggs are laid near the surface but gradually sink downward. Up to the 64-cell state the divisions are wholly mitotic. When the embryo consists of about 1,000 cells protoplasmic processes appear over the entire periphery, and these push off the egg membrane and form the vibratile cilia. Gastrulation usually takes place by invagination of the small, rounded cells of the vegetative pole of the embryo. The blastopore closes so that the entoderm becomes entirely incased within the ectoderm, and the larva elongates and becomes a free-swimming planula. When the ephyra is 1.5 mm. in diameter, it has 16 lappets and 8 sense-organs, but neither tentacles nor gonads. 4 gastric cirri, one in each interradial side of stomach. Disk very flat, brown in colour. When 3 mm wide the tentacles begin to develop, and the gonads appear when the medusa is about 5 mm wide. The polygonal areas of pigmented digestive cells then develop in an inner ring of 16 large areas

centrifugal to the gonads, and still farther out an outer annulus of 32 areas. There are also irregularly shaped and arranged areas of brown cells in the lappets. The subumbrella saccules do not develop until later.
Geographical and seasonal distribution: Central Atlantic Ocean.
Toxicity: sting mildly toxic.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880233&lvl=0
Notes: Can swarm.

53	Gonads interradial	54
53	Gonads adradial	56
54	Gonads bean-shaped	

Palephyra indica, Vanhöffen 1902

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Palephyra* (Haeckel, 1880)
Palephyra indica (Vanhöffen, 1902)

Morpho-anatomical characteristics
Genus *Palephyra* (Haeckel, 1880):

- Exumbrella with coronal furrow;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 4 gonads.

Palephyra indica (Vanhöffen, 1902):

- Bell 12-16mm wide;
- Gonads bean shaped;
- Colour of live specimens: bell white with brown radial punctations in the radii of rhopalia and axial lines of marginal lappets. Stomach brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: New Zealand, South Pacific Ocean.

54	Gonads crescent-shaped	55
55	Gonads with horns recurved	

Palephyra antiqua, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Palephyra* (Haeckel, 1880)
Palephyra antiqua (Haeckel, 1880)

Synonims: *Ephyra prometor* (Haeckel, 1880), *Palephyra primigenia* (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Palephyra* (Haeckel, 1880):

- Exumbrella with coronal furrow;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 4 gonads.

Palephyra antiqua (Haeckel, 1880):

- Bell 20mm wide, 8mm high;
- Tentacles as long as bell radius;
- Marginal lappets sharply pointed;
- Gonads crescentic shaped with recurved horns;
- Colour of live specimens: tentacles and gonads reddish, all other parts colourless.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Red Sea, South Pacific Ocean.

55 Gonads consisting of 3 swellings

Palephyra pelagica, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Palephyra* (Haeckel, 1880)
Palephyra pelagica (Haeckel, 1880)

Synonims: *Zonephyra zonaria* (Haeckel, 1880), *Zonephyra pelagica* (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Palephyra* (Haeckel, 1880):

- Exumbrella with coronal furrow;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 4 gonads.

Palephyra pelagica (Haeckel, 1880):

- Bell 12mm wide, 2mm high;
- Marginal lappets pointed;
- Tentacles half as long as bell radius;
- Gonads halfmoon shaped;
- Colour of live specimens: bell white with brown radial punctations in the radii of rhopalia and axial lines of marginal lappets. Stomach brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Pacific Ocean.

56 Central disk with large pits 57

56 Central disk without pits 58

57 Central disk with radiating furrows

Nausithoe rubra, Vanhöffen 1902

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Nausithoe* (Koelliker, 1853)
Nausithoe rubra (Vanhöffen, 1902)

Morpho-anatomical characteristics
Genus *Nausithoe* (Koelliker, 1853):

- Exumbrella with a coronal furrow dividing it into a dome shaped to flattened central disc and a peripheral margin;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 8 gonads.

Nausithoe rubra (Vanhöffen, 1902):

- Bell up to 15mm wide. Flatter than a hemisphere, small. Mesoglea thick;
- Exumbrella with central disc smooth;
- Marginal lappets short pointed;
- Tentacles longer than bell radius;
- Gonads U shaped;
- Subumbrellar circular musculature broad;
- Colour of live specimens: mesoglea lightly yellowish brown. Endodermis chocolate red.

Life cycle: only medusa stage known.
Geographical and seasonal distribution: North Atlantic Ocean, Gulf of Mexico. Circumglobal, subtropical.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=168762&lvl=0

57 Central disk without radiating furrows

Nausithoe atlantica, Broch 1914

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Nausithoe* (Koelliker, 1853)
Nausithoe atlantica (Broch, 1914)

Morpho-anatomical characteristics
Genus *Nausithoe* (Koelliker, 1853):

- Exumbrella with a coronal furrow dividing it into a dome shaped to flattened central disc and a peripheral margin;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 8 gonads.

Nausithoe atlantica (Broch, 1914):

- Bell 28mm wide, 35mm high;
- Exumbrella smooth;
- Gonads almost coalescent, separated by narrow spaces;
- Colour of live specimens: dark yellowish brown or almost black.

Life cycle: reproductive strategies unknown. Only medusa stage known.
Geographical and seasonal distribution: Gulf of Mexico, North Atlantic Ocean. Pelagic in deep waters.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=645361&lvl=0

58 Gonads very small

Nausithoe clausi, Vanhöffen 1892

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Nausithoe* (Koelliker, 1853)
Nausithoe clausi (Vanhöffen, 1892)

Morpho-anatomical characteristics
Genus *Nausithoe* (Koelliker, 1853):

- Exumbrella with a coronal furrow dividing it into a dome shaped to flattened central disc and a peripheral margin;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 8 gonads.

Nausithoe clausi (Vanhöffen, 1892):

- Bell 9mm wide;
- Exumbrella with central disc flat, smooth without radial furrows;
- Marginal lappets very blunt, 3 cornered;
- Tentacles as long as bell radius, with well developed conical bases;
- Gonads very small, spherical;
- Subumbrellar circular musculature well developed.

Life cycle: reproductive strategies unknown. Only medusa stage known.
Geographical and seasonal distribution: South Pacific Ocean.

58 Not as above 59

59 Gonads of normal dimensions

Nausithoe albatrossi, (Maas 1897)

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Nausithoe* (Koelliker, 1853)
Nausithoe albatrossi (Maas, 1897)

Synonims: *Nauphanta albatrossi* (Maas, 1897)

Morpho-anatomical characteristics
Genus *Nausithoe* (Koelliker, 1853):

- Exumbrella with a coronal furrow dividing it into a dome shaped to flattened central disc and a peripheral margin;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 8 gonads.

Nausithoe albatrossi (Maas, 1897):

- Bell 35-40mm wide, 35mm high;
- Exumbrella with smooth central disc, without a notched margin;
- Marginal lappets narrow and elongated;
- Stomach very short;
- Gonads elongated, oval.

Life cycle: reproductive strategies unknown. Only medusa stage known.
Geographical and seasonal distribution: East Pacific Ocean.

59 Gonads large 60

60 Central disk not thick nor finely punctured

Nausithoe globifera, Broch 1914

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Nausithoe* (Koelliker, 1853)
Nausithoe globifera (Broch, 1914)

Morpho-anatomical characteristics
Genus *Nausithoe* (Koelliker, 1853):

- Exumbrella with a coronal furrow dividing it into a dome shaped to flattened central disc and a peripheral margin;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 8 gonads.

Nausithoe globifera (Broch, 1914):

- Bell 17mm wide;
- Exumbrella with central disc high, arched, solid, covered with nematocysts;
- Marginal lappets broad and rounded;
- Gonads large, almost quadrangular, in pairs;
- Colour of live specimens: stomach brownish or quite black, gonads light brownish, yellowish or reddish;
- Polyp with transparent body and dark purple-red stomach, found at 800m depth.

Life cycle: Typical metagenetic species.
Geographical and seasonal distribution: North Eastern Atlantic (Medusa), Morocco Coast (Polyp). Bathypelagic species.

60 Central disk thick, finely punctured 61

61 Central disk with radiating furrows

Nausithoe challengeri, (Haeckel 1880)

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Nausithoe* (Koelliker, 1853)
Nausithoe challengeri (Haeckel, 1880)

Synonims: *Nauphanta challengeri* (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Nausithoe* (Koelliker, 1853):

- Exumbrella with a coronal furrow dividing it into a dome shaped to flattened central disc and a peripheral margin;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 8 gonads.

Nausithoe challengeri (Haeckel, 1880):

- Bell 12mm wide;
- Exumbrella with deep coronal furrow, central disc smooth and without a notched margin;
- Bell margin cleft by 16 radiating furrows which do not extend to center of bell;
- Tentacles longer than bell radius, tapering;
- Gonads large, elongate.

Life cycle: reproductive strategies unknown. Only medusa stage known.
Geographical and seasonal distribution: South Atlantic Ocean.

61	Central disk without radiating furrows	62
62	Medusa with chocolate brown or carmine gonads and blue gastric cirri	

Nausithoe picta, Agassis & Mayer 1902

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Nausithoe* (Koelliker, 1853)
Nausithoe picta (Agassiz & Mayer, 1902)

Morpho-anatomical characteristics
Genus *Nausithoe* (Koelliker, 1853):

- Exumbrella with a coronal furrow dividing it into a dome shaped to flattened central disc and a peripheral margin;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 8 gonads.

Nausithoe picta (Agassiz & Mayer, 1902):

- Bell 15-22mm wide. Flatter than a hemisphere;
- Exumbrella with central disc smooth. Coronal furrow well developed;
- Marginal lappets wide and pointed;
- Tentacles shorter than bell radius, tapering with wide bases;
- Rhopalia with ocelli;
- Gonads large, egg shaped or oval;
- Colour of live specimens: gonads chocolate brown to carmine.

Life cycle: only medusa stage known.
Geographical and seasonal distribution: South Pacific Ocean.
Notes: NOMEN DUBIUM. According to Mayer (1910), it is a synonym of *Nausithoe punctata* (Koelliker, 1853).

62	Medusa without chocolate brown or carmine gonads and blue gastric cirri	63
63	Gastric cirri not grouped in clusters	

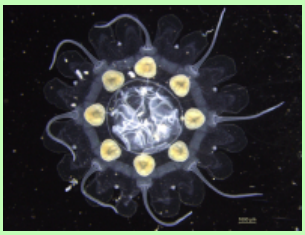
Nausithoe punctata (Kölliker, 1853)

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Nausithoe* (Koelliker, 1853)
Nausithoe punctata (Koelliker, 1853)

Synonims: *Nausithoe albida* (Gegenbaur, 1856), *Nauphanta polaris* (Fewkes, 1888), *Spongicola fistularis* (Schulze, 1877), *Stephanoscyphus mirabilis* (Allman, 1874)

Morpho-anatomical characteristics
Genus *Nausithoe* (Koelliker, 1853):

- Exumbrella with a coronal furrow dividing it into a dome shaped to flattened central disc and a peripheral margin;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 8 gonads.



Nausithoe punctata (Koelliker, 1853):

- Bell up to 20mm wide. Flatter than a hemisphere. Mesoglea thick;
- Exumbrella with central disc smooth, tiny, thick, with finely warted surface and crenate coronal furrow;
- Marginal lappets tongue shaped;
- Tentacles thick;
- Gonads large, globular;
- Subumbrellar circular musculature narrow;
- Colour of live specimens: mesoglea translucent milky, greenish or light brownish. Gonads bright yellow (male) or brown to red (female).

Life cycle: According to Metschnikoff, 1886, the egg is citron-yellow, 0.23 mm in diameter, and is laid in mid-day in December; The remarkable scyphostoma larva of *Nausithoe punctata* bears a striking superficial resemblance to a hydroid and it lives commensal within sponges such as *Suberites*, *Myxilla*, *Renella*, *Esperia*, etc. It is especially abundant at Trieste and Naples. This hydroid-like larva forms a branching tree-like growth within the body of the sponge, the polyp mouths and their tentacles projecting out of the oscula of the sponge. The branching, tree-like stock of the larva is covered with an irregularly annulated, chitinous perisarc, which terminates at a short distance below the zone of tentacles of each polypite. The mouth of the polypite is surrounded by an annulus of about 40 solid filiform tentacles. The polypites are translucent-white. Lobianco and Paul Mayer, 1890, found that ephyra of *Nausithoe* arise by strobilization from this larva. The young ephyra has only 4 gastric filaments and no tentacles.
Geographical and seasonal distribution: North Atlantic Ocean, Mediterranean Sea. Circumglobal in warm waters, supposed to be cosmopolitan. From December to May.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=940423&lvl=0

63 Gastric cirri grouped in clusters

Nausithoe limpida, Hartlaub 1909

Systematic position:
Classis Scyphozoa
Subclassis Coronamedusae
Ordo Coronatae
Familia Nausithoidae (Claus, 1883)
Genus *Nausithoe* (Koelliker, 1853)
Nausithoe limpida (Hartlaub, 1909)

Morpho-anatomical characteristics
Genus *Nausithoe* (Koelliker, 1853):

- Exumbrella with a coronal furrow dividing it into a dome shaped to flattened central disc and a peripheral margin;
- 16 marginal lappets;
- 8 tentacles, alternating with rhopalia;
- 16 stomach pouches, simple;
- 8 rhopalia;
- 8 gonads.

Nausithoe limpida (Hartlaub, 1909):

- Bell 9-15mm wide;
- Exumbrella with central disc thick. Without radiating furrows, finely punctured;
- Gonads large.

Life cycle: only medusa stage known.
Geographical and seasonal distribution: Arctic Ocean, North Atlantic Ocean.
Notes: NOMEN DUBIUM. According to Kramp (1961), probably a *Nausithoe punctata* (Koelliker, 1853).

64	Opening of the subumbrellar cavity partly closed by an annular diaphragm (velarium)	65
64	Opening of the subumbrellar cavity not closed by an annular diaphragm (velarium)	89
65	Tentacles 8 or more	66
65	Tentacles from 4 to 6	76
66	Stomach pouches without diverticula	

Tripedalia cystophora, Conant 1897

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Tripedaliidae (Conant, 1897)
Genus *Tripedalia* (Conant, 1897)
Tripedalia cystophora (Conant, 1897)

Morpho-anatomical characteristics
Genus *Tripedalia* (Conant, 1897):
- With multiple (2-3) simple pedalia at each corner of bell;
- Frown-shaped rhopalial niche ostia;
- 1 simple tentacles per pedalium;
- Sexual dimorphism, larviparous.

Tripedalia cystophora (Conant, 1897):
- Bell 12mm high, 15mm wide. Apex slightly arched, no horizontal constriction. Cuboid shape, with rounded corners;
- Exumbrella with nematocyst warts frame mainly on bell outline from apex edge to velarium;
- 3 pedalia per bell corner, flattened, slender knifeblade shaped. Outer wing keel lined with nematocyst bands;
- 1 single, simple tentacle per pedalium. The pattern of nematocyst banding is one larger band, the none smaller band, repeated along the lenght of the whole tentacle, resembling a string of beads, with white nematocyst batteries;
- Stomach small, flat, with eupaulette shaped gastric phacellae;
- 4 rhopalia with 2 large mediane yes with doubly convex lenses and 2 pairs of lateral ocelli;
- Gonads butterfly shaped. In males, gonad wings stout, triangular. In females, gonad wings longush oval bands;
- Bell whitish transparent with yellowish to brownish tinge in colour. Gonads yellowish to brown orange (males) whitish transparent whitish to yellowish (females).



Life cycle: sexual dimorphism and courtship behaviour had been documented. Females can bear embryos within their gastrovascular pouches. The embryos are thrown out into the water as free-swimming planulae, which settle down in a day or two and quickly develop into small scyphostomae with mouth and typically with 4 tentacles and 4 taeniolae, although 3 and 5 tentacled specimens are not uncommon. In this condition they live for 3 weeks without essential change. Many planulae are besprinkled with dark brown pigment-spots which are scattered over the ectoderm of the narrow posterior end of the larva.
Geographical and seasonal distribution: circumtropical,during summer.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6141&lvl=0

66	Stomach pouches with 8 diverticula	67
67	Gonads not four-leaved	

Chirodectes maculatus, (Cornelius, Fenner & Hore 2005)

Systematic position:
Classis Cubozoa
Ordo Chirodropida
Familia Chirodropidae (Haeckel, 1880)
Genus *Chirodectes* (Southcott, 1967)
Chirodectes maculatus (Cornelius, Fenner & Hore, 2005)

Synonims: *Chiropsalmus maculatus* (Cornelius, Fenner & Hore, 2005)

Morpho-anatomical characteristics

Genus *Chirodectes* (Southcott, 1967):

- Cuboid shape;
- Pedalia not palmated;
- Tentacles simple, long, inserted contiguously.

Chirodectes maculatus (Cornelius, Fenner & Hore, 2005):

- Bell 150mm high, 160mm wide. Apex slightly rounded to flat. Corners of bell grooved from top to within 15mm of pedalium, deepest aborally. Sides of bell with 2 further grooves. Mesoglea thick and rigid;
- Exumbrella with numerous, large, irregular patches, circular to oval, and numerous, scattered, smaller spots.
- Pedalia without palmate central region, comprising a large triangular outer portion bearing tentacles;
- 15 tentacles per pedalium, moderately thick, hollow, tapering distally, 1-1,2m long. New tentacles developing from inner side of pedalium;
- Conspicuos phacellae with numerous long gastric cirri;
- Exumbrellar patches and grooves orange brown. Elastic tissue of vertical corners of exumbrella bright purple. Pedalia colourless, but base of each narrowly rimmed orange brown. Tentacles with purple and white bands.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Great Barrier Reef, Australia. During wet season.

67	Gonads four-leaved	68
68	Medusa with nematocysts on bell	69
68	Medusa without nematocysts on bell	71
69	Each pedalium with more than 4 fingers and tentacles	

Chiropsalmus quadrumanus, Müller 1859

Systematic position:
Classis Cubozoa
Ordo Chirodropida
Familia Chiropsalmidae (Haeckel, 1880)
Genus *Chiropsalmus* (Agassiz, 1862)
Chiropsalmus quadrumanus (F. Müller, 1859)

Synonims: *Tamoya quadrumana* (Mueller, 1859)
Vernacular name: Four-Handed Jelly

Morpho-anatomical characteristics

Genus *Chiropsalmus* (Agassiz, 1862):

- Exumbrella with nematocyst warts;
- Pedalia with branching pattern opposite (bilateral), undivided or divided;
- Tentacles simple, round in cross-section;
- 4 stomach pouches each with 2 finger-shaped, unbranched diverticula projecting into bell cavity;
- Horse-shoe shaped gastric phacellae;
- Gonads leaf-shaped, their free margins entire and simple;
- External fertilization.

Chiropsalmus quadrumanus (F. Müller, 1859):

- Bell 100mm high, 140mm wide, cuboid, slightly rounded, flat apex;
- Exumbrella with nematocyst warts;
- Pedalia large, robust, hand-shaped;
- Tentacles up to 7-9 per pedalium, arising from a short, finger-shaped process inserted on pedalia. 3-4m long, banded when contracted, covered with numerous rings of nematocysts;
- Rhopalial niche ostia triangular;
- Rhopalia with 2 large mediane yes and 2 pairs of lateral ocelli;
- Gonads thin sheet-shaped, when mature extending to meet next one laterally;
- Bell transparent, colorless to pale whitish yellow. Tentacles pale mauve.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Atlantic Ocean, Pacific Ocean, Indian Ocean, neritic.
Toxicity: Sting angerously venomous, toxins can be harmful to the cardiovascular and respiratory systems. Can be fatal to humans.

GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=645347&lvl=0

69 Each pedalium with 4 or less fingers and tentacles 70

70 Each pedalium with 2 fingers and tentacles

Chiropsalmus zygonema, Haeckel 1880

Systematic position:
Classis Cubozoa
Ordo Chirodropida
Familia Chiropsalmidae (Haeckel, 1880)
Genus *Chiropsalmus* (Agassiz, 1862)
Chiropsalmus zygonema (Haeckel,1880)

Morpho-anatomical characteristics
Genus *Chiropsalmus* (Agassiz, 1862):

- Exumbrella with nematocyst warts;
- Pedalia with branching pattern opposite (bilateral), undivided or divided;
- Tentacles simple, round in cross-section;
- 4 stomach pouches each with 2 finger-shaped, unbranched diverticula projecting into bell cavity;
- Horse-shoe shaped gastric phacellae;
- Gonads leaf-shaped, their free margins entire and simple;
- External fertilization.

Chiropsalmus zygonema (Haeckel,1880):

- Bell 60mm high, 40mm wide, pyramidal with truncated apex;
- Pedalia leaf shaped, each with 2 short, asymmetrical, gelatinous finger-shaped processes;
- Tentacles 8 in total.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Atlantic Ocean, South America.
Notes: Gershwin (2006) hypothezises this species may be conspecific with *Chiropsalmus alipes* (Gershwin, 2006), but further analyses can't be done because there is no known type material of *Chiropsalmus zygonema*, Haeckel left no drawings and only a brief description, probably of a young specimen.

70 Each pedalium with 3-4 fingers and tentacles

Chiropsalmus alipes, Gershwin 2006

Systematic position:
Classis Cubozoa
Ordo Chirodropida
Familia Chiropsalmidae (Haeckel, 1880)
Genus *Chiropsalmus* (Agassiz, 1862)
Chiropsalmus alipes (Gershwin, 2006)

Morpho-anatomical characteristics
Genus *Chiropsalmus* (Agassiz, 1862):

- Exumbrella with nematocyst warts;
- Pedalia with branching pattern opposite (bilateral), undivided or divided;
- Tentacles simple, round in cross-section;
- 4 stomach pouches each with 2 finger-shaped, unbranched diverticula projecting into bell cavity;
- Horse-shoe shaped gastric phacellae;
- Gonads leaf-shaped, their free margins entire and simple;
- External fertilization.

Chiropsalmus alipes (Gershwin, 2006):

- Exumbrella with nematocyst warts;
- Pedalial branching pattern in both directions, terminal;
- Tentacles up to 3-4 per pedalium, round and thick in cross section;
- Gastric saccules simple, small, with one wavy edge.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: West coast of Southern Mexico.

71 Medusa with mesenteries poorly developed

Chiropsella bronzie, Gershwin 2006

Systematic position:
Classis Cubozoa
Ordo Chirodropida
Familia Chiropsellidae (Toshino, Miyake & Shibata, 2015)
Genus *Chiropsella* (Gershwin,2006)
Chiropsella bronzie (Gershwin, 2006)

Morpho-anatomical characteristics
Genus *Chiropsella* (Gershwin, 2006):

- Small size, strongly cuboid shape;
- Exumbrella without nematocyst warts;
- Pedalia with branching pattern in both directions (opposite);
- Tentacles simple, round and fine in cross-section;
- Gastric saccules like simple, solid, sessile gelatinous knobs;
- Rhopalia 4, with 2 large mediane yes with lens and 2 pairs of lateral ocelli.

Chiropsella bronzie (Gershwin, 2006):

- Pedalia claw-like, without pedalial keel. Branching pattern all along pedalium;
- Tentacles up to 9 per pedalium, round and very fine in cross section;
- 8 Gastric saccules, simple, solid, sessile, divided, not coalesced;
- Rhopaliar covering scale with extended flap or “tag”.

Life cycle: external fertilization.
Geographical and seasonal distribution: North Queensland, Australia, during wet season.

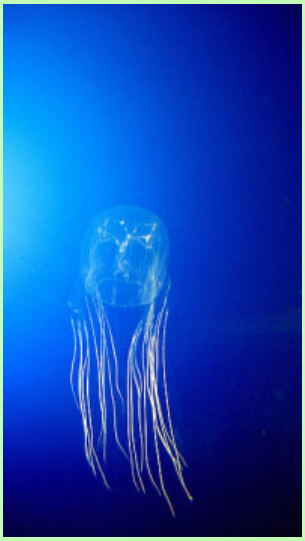
71	Not as above	72
72	Gastric saccules are functioning gonads	

Chironex fleckeri, Southcott 1956

Systematic position:
Classis Cubozoa
Ordo Chirodropida
Familia Chirodropidae (Haeckel, 1880)
Genus *Chironex* (Southcott, 1956)
Chironex fleckeri (Southcott, 1956)

Morpho-anatomical characteristics
Genus *Chironex* (Southcott, 1956):

- Exumbrella without nematocysts;
- Pedalia with alternate branching pattern;
- Tentacles simple;
- 8 branched sac-like projections (gastric saccules) which extend from the 4 stomach pouches into bell cavity, cock's comb shaped/grape cluster like and functioning as gonads;
- Gastric phacellae V-shaped;
- Rhopalial niche ostia dome shaped, with a single upper covering scale;
- External fertilization.



Chironex fleckeri (Southcott, 1956):

- Bell 118mm high;
- Exumbrella without gelatinous warts, without nematocysts;
- Pedalia with 12-15 fingers each;
- Up to 15 tentacles per pedalium, flat, wide, ribbon-like, with highly complex banding;
- Gastric saccules in pairs as lobulated projections from upper portion of the stomach pouches.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Australia, during wet season/summer.
Toxicity: Contact with its tentacles induces a local cutaneous inflammatory reaction which is very painful and can leave permanent scarring. Systemic symptoms can also be observed, including excruciating pain, impaired consciousness, hypertension, hypotension, and cardiac and respiratory failure. Death can occur within minutes after the envenomation, most probably because of cardiac and respiratory effects. Lethal, hemolytic, cardiotoxic, dermonecrotic, pore forming, and cytotoxic activities were observed using crude venom or partially purified fractions.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=45396&lvl=0

72	Gastric saccules are not functioning gonads	73
73	Stomach pouches with 2 branched or feathered saccules	74
73	Stomach pouches with 2 unbranched saccules	75

74 Each pedalium with 9-11 fingers and tentacles

Chirodropus gorilla, Haeckel 1880

Systematic position:
Classis Cubozoa
Ordo Chirodropida
Familia Chirodropidae (Haeckel, 1880)
Genus *Chirodropus* (Haeckel, 1880)
Chirodropus gorilla (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Chirodropus* (Haeckel, 1880):

- Pedalia hand-like;
- Tentacles simple;
- 8 branched sac-like projections (gasrric saccules) which extend from the 4 stomach pouches into bell cavity;
- Horse-shoe shaped gastric phacellae;
- Gonads with grape-like swellings;
- External fertilization.

Chirodropus gorilla (Haeckel, 1880):

- Bell 120-150mm high, 120mm wide. Sides rounded, flat top. Mesoglea thich and rigid. Without gelatinous warts and nematocysts;
- 4 pedalia, hand-like, asymmetrical, ¼ as long as bell height. Each pedalium gives rise to 9 long, narrow, tapering gelatinous processes, each bearing a tentacle;
- Tentacles (36 in total) long, flexible, flat, wide, ribbon-like, longer than bell height. Banding not noted;
- 4 stomach pouches, each bearing 2 conspicuous finger-shaped processes hanging down into subumbrellar space, each wih numerous digitate to filiform processes on one side.
- Sensory niches deep and heart-shaped;

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Eastern Atlantic Ocean.

74 Each pedalium with 21 fingers and tentacles

Chirodropus palmatus, Haeckel 1880

Systematic position:
Classis Cubozoa
Ordo Chirodropida
Familia Chirodropidae (Haeckel, 1880)
Genus *Chirodropus* (Haeckel, 1880)
Chirodropus palmatus (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Chirodropus* (Haeckel, 1880):

- Pedalia hand-like;
- Tentacles simple;
- 8 branched sac-like projections (gasrric saccules) which extend from the 4 stomach pouches into bell cavity;
- Horse-shoe shaped gastric phacellae;
- Gonads with grape-like swellings;
- External fertilization.

Chirodropus palmatus (Haeckel, 1880):

- Bell 100mm high, 70mm wide;
- Pedalia with 21 fingers each;
- The branched sac-like projections which extend from the 4 stomach pouches into bell cavity are fused together in their upper 2/3 and bearing numerous filaments.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Eastern Atlantic Ocean.
Notes: Mayer (1910) and Mianzan&Cornelius (1999) consider this specie as a young specimen of *Chirodropus gorilla* (Haeckel, 1880).

75 Tentacles and fingers not irregularly placed

Chiropsoides buitendijki, (Horst 1907)

Systematic position:
Classis Cubozoa
Ordo Chirodropida

Familia Chiropsalmidae (Haeckel, 1880)
Genus *Chiropsoides* (Southcott, 1956)
Chiropsoides buitendijki (Van der Horst, 1907)

Synonims: *Chiropsalmus buitendijki* (Van der Horst, 1907)

Morpho-anatomical characteristics
Genus *Chiropsoides* (Southcott, 1956):

- Cuboid shape;
- Exumbrella without nematocyst warts;
- Pedalia with branching pattern unilateral;
- Tentacles 4-11 per pedalium, ribbon-like;
- Gastric saccules finger-like, long, pendant, hollow;
- Gastric phacellae V-shaped;
- External fertilization.

Chiropsoides buitendijki (Van der Horst, 1907):

- Bell 65-70mm high and wide, cubical, with slightly arched apex;
- Pedalia with 5-6 lateral branches arranged in a linear series on the outer side of the main shaft, the larger shaft being nearest to the bell;
- Tentacles up to 5-6 per pedalium, wide, ribbon-like;
- Gastric saccules simple, hollow, as long as bell cavity;
- Bell transparent, tentacles pinkish.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean, to India and Sri Lanka.

75 Tentacles and fingers irregularly placed

Chiropsoides quadrigatus, (Haeckel 1880)

Systematic position:
Classis Cubozoa
Ordo Chirodropida
Familia Chiropsalmidae (Haeckel, 1880)
Genus *Chiropsoides* (Southcott, 1956)
Chiropsoides quadrigatus (Haeckel,1880)

Synonims: *Chiropsalmus quadrigatus* (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Chiropsoides* (Southcott, 1956):

- Cuboid shape;
- Exumbrella without nematocyst warts;
- Pedalia with branching pattern unilateral;
- Tentacles 4-11 per pedalium, ribbon-like;
- Gastric saccules finger-like, long, pendant, hollow;
- Gastric phacellae V-shaped;
- External fertilization.

Chiropsoides quadrigatus (Haeckel,1880):

- Bell 100mm high and wide, dome shaped, with evenly rounded apex;
- Pedalia hand- shaped, laterally flattened, each bearing 5-9 finger-shaped processes. Pedalial branching pattern in one direction only;
- Tentacles up to 5-9 per pedalium, flat, ribbon-like, hollow, thickly ringed with nematocysts, various in lenght;
- Gastric saccules laterally flattened and cock's comb shaped;
- Gonads leaf-like;
- Bell milky yellow, tentacles purple pink, ocelli dark brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: West Pacific Ocean.
Toxicity: very severe sting, can cause a cutaneous reaction with scarring of the affected skin, cardiac and respiratory failure. Can be lethal to humans.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=130731&lvl=0

76 Tentacles branched

Manokia stiasnyi, Bigelow 1938

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Alatinidae (Gershwin, 2005)
Genus *Manokia* (Southcott, 1967)
Manokia stiasnyi (Bigelow, 1938)

Synonims: *Carybdea stiasnyi* (Bigelow 1938)

Morpho-anatomical characteristics
Genus *Manokia* (Southcott, 1967):

- Body barrel-shaped;
- 4 pedalia without nematocyst warts;
- Tentacles round in cross section, with lateral branches;
- Stomach shallow, without mesenteries;
- Crescentic phacellae with parallel long cirri;
- T-shaped rhopalial niche ostia;
- Leaf-like gonads;
- Ovoviviparous.

Manokia stiasnyi (Bigelow, 1938):

- Bell 24mm high, 20mm wide, with conspicuos apical depression;
- Exumbrella with scattered gelatinous nematocyst warts;
- Aradial and interradial furrows deep;
- Pedalia scalpel shaped;
- Phacellae with numerous long cirri, arranged more or less parallel;
- Rhopalia with 2 median eyes with lens (distal one larger than proximal one) and 2 pairs of unevenly sixed lateral ocelli (distal pair larger than proximal pair);
- Colour unknown in life.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean.
Notes: can host amphipods inside the subumbrellar cavity.

76	Tentacles simple	77
77	Stomach with weakly developed mesenteries	78
77	Not as above	80
78	Sensory niches without well developed covering scale	

Carybdea sivickisi, Stiasny 1926

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Tripedaliidae (Conant, 1897)
Genus *Copula* (Bentlage, Cartwright, Yanagihara, Lewis, Richards & Collins, 2010)
Copula sivickisi (Stiasny, 1926)

Synonims: *Carybdea sivickisi* (Stiasny, 1926)
Vernacular name: Himeandon – kurage (Japan)

Morpho-anatomical characteristics
Genus *Copula* (Bentlage, Cartwright, Yanagihara, Lewis, Richards & Collins, 2010):

- Exumbrella with nematocyst warts;
- Characteristic adhesive pads on exumbrella that enable the medusa to attach and rest on any substrate;
- 4 simple pedalia, flattened, slender knifeblade-shaped;
- 1 simple tentacle per pedalium;
- Keyhole-shaped rhopalial niche ostia;
- Sexual dimorphism and peculiar reproductive strategy.

Copula sivickisi (Stiasny, 1926):

- Bell 12-21mm high, 12-14mm wide. Blunt, pyramidal, apex flattened;
- Exumbrella with scattered nematocyst warts;
- Pedalia ½ bell height long, with 3-7 broad rectangular nematocyst bands on outer keel;
- Tentacles simple, round in cross section, with typical striped pattern of broad and thin bands;
- Gastric phacelae horizontal, slightly concave, each made of 40 simple, unbranched, vertically stacked gastric cirri;

- Male gonads: 4 transparent, wasp head-shaped gonad tissues with 2 round to oval shaped, brightly yellow to deep orange. Female gonads: 4 palm-leaf shaped paired bands of gonads, slightly opaque, whitish to brownish. Females with additional stomach pouches used as spermathecae;
- Bell transparent, slightly brownish with white nematocyst warts. Adhesive pads transparent, almost invisible. Tentacle bands bright purple (males) or brown orange (females) with white nematocyst batteries.

Life cycle: In *Copula sivickisi*, a mature male and female engage in sexual activity by entangling their tentacles. While swimming as a couple, the male brings its oral opening close to that of the female and produces a spermatophore that is ingested by the female . The subsequent gestation period spans some 2–3 days after which an embryo strand is released into the water column.
Geographical and seasonal distribution: New Zealand, Central Indo Pacific Ocean, circumtropical.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=168718&lvl=0

78 Sensory niches with covering scale above 79

79 Velarial canals 3-4 per octant

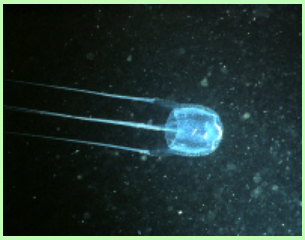
Carybdea marsupialis (Linnaeus, 1758)

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Carybdeidae (Gegenbaur, 1857)
Genus *Carybdea* (Peron & Lesuer, 1810)
Carybdea marsupialis (Linnaeus, 1758)

Vernacular name: Sea Wasp

Morpho-anatomical characteristics
Genus *Carybdea* (Peron & Lesuer, 1810):

- 4 simple pedalia, scalpel shaped, typically with nematocyst clusters on the outer keel;
- 1 simple tentacle per pedalium;
- Stomach small, with eupaulette –like or linear gastric phacellae, with short cirri;
- Heart-shaped rhopalial niche ostia;
- 4 rhopalia;
- Ovoviviparous.



Carybdea marsupialis (Linnaeus, 1758):

- Bell 40mm high, 30mm wide. Quadrangular shape, somewhat constricted near aboral apex, flat top;
- Apex of bell and interradial ridges of exumbrella scattered with nematocysts, without gelatinous warts;
- Pedalia 17mm long, 15mm wide, with numerous nematocysts;
- Tentacles round in cross section, regularly banded with nematocysts. Lenght range from 2 to 12 times as long as bell height;
- Phacellae brush-like, with dendritic gastric cirri;
- Rhopalia with 2 median, large eyes, and 2 pairs of lateral ocelli.
- Gonads leaf-like
- Colour in life: bell and pedalia dull-milky ocher, with dull ocher-yellow nematocysts. Tentalces pink. Ocelli dark brown. Basal branches of gastric cirri dull horny brown.

Life cycle: ovoviviparous. Eggs fertilized internally after female medusae have taken up sperm released into the water colums by males during spawning aggregations. Embryos are released within minutes to hours after fertilization.
Geographical and seasonal distribution: Mediterranean Sea, European waters, North Atlantic Ocean, Gulf of Mexico.
Toxicity: sting causes cutaneous reaction and pain.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=157781&lvl=0

79 Velarial canals 2 per octant

Carybdea rastoni, Haacke 1886

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Carybdeidae (Gegenbaur, 1857)
Genus *Carybdea* (Peron & Lesuer, 1810)
Carybdea rastoni (Haacke, 1886)

Synonims: *Carybdea brevipedalia* (Kishinouye, 1891)
Vernacular name: Andon-Kurage (Japan)

Morpho-anatomical characteristics
Genus *Carybdea* (Peron & Lesuer, 1810):

- 4 simple pedalia, scalpel shaped, typically with nematocyst clusters on the outer keel;
- 1 simple tentacle per pedalium;
- Stomach small, with eupaulette –like or linear gastric phacellae, with short cirri;
- Heart-shaped rhopalial niche ostia;
- 4 rhopalia;
- Ovoviviparous.

Carybdea rastoni (Haacke, 1886):

- Bell 35mm high, 30mm wide. Nearly cubical, flatty rounded apex, nearly vertical sides;
- Exumbrella with nematocysts, without gelatinous warts;
- Pedalia small, 1/3-1/4 as long as bell height;
- Tentacles round in cross section, regularly banded with nematocysts. Lenght 1,5 times as long as bell height;
- Phacellae very small, with dendritic gastric cirri;
- Rhopalia with 2 median, large eyes, and 2 pairs of lateral ocelli;
- Gonads leaf –like, each wider near the stomach;
- Tentacles and gastric cirri pink.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Tropical Pacific Ocean.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi
Notes: according to Toshino (2015), recent molecular phylogenetic analyses and taxonomic investigations suggest that *Carybdea rastoni* (Haacke, 1886) from Japan should be regarded as *Carybdea brevipedalia* (Kishinouye, 1910).

80	Stomach without mesenteries	81
80	Stomach with well developed mesenteries	85
81	Exumbrella without nematocyst-warts	

Alatina moseri, (Mayer 1906)

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Alatinidae (Gershwin, 2005)
Genus *Alatina* (Gershwin, 2005)
Alatina moseri (Mayer 1906)

Synonims: *Alatina mordens* (Gershwin, 2005)
Vernacular name: Outer Reef Irukandji

Morpho-anatomical characteristics
Genus *Alatina* (Gershwin, 2005):

- 4 simple pedalia;
- Simple tentacles, round in cross section, with nematocyst banding;
- Stomach flat without mesenteries;
- Crescentic phacellae with long cirri;
- 3 velarial canals per octant;
- 4 rhopalia;
- T-shaped rhopalial niche ostia;
- Ovoviviparous.

Alatina moseri (Mayer 1906):

- Bell 85mm high, 27mm wide, very tall and narrow. With bluntly rounded apex, without circumaboral groove. With thin but rigid mesoglea;
- Exumbrella with nematocysts, without gelatinous warts;
- Broadly rounded pedalia, pedalial nematocysts absent or in 1 oblong row;
- Tentacles with equal sized nematocyst rings, straight sided at their base;
- Rhopalia with 2 round median eyes with lens and 2 lateral elongated ocelli.
- Gastric cirri arranged in parallel manner, rooted together in pairs;
- Gonads attached along bell walls, growing outwards into the bell cavity.

- Colour in preserved specimens: body hyaline, tentacles pink, ocelli dark brown, gonads milky yellow. Color in life unknown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Pacific Ocean, common all months of the year.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=675638&lvl=0

81	Exumbrella with nematocyst-warts	82
82	Velarial canals 4-5 per octant	83
82	Velarial canals 3 per octant	84
83	Medusa with 6 eyes per rhopalium	

Alatina madraspartana, Menon 1930

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Alatinidae (Gershwin, 2005)
Genus *Alatina* (Gershwin, 2005)
Alatina madraspartana (Menon, 1930)

Synonims: *Carybdea madraspatana* (Menon, 1930)

Morpho-anatomical characteristics
Genus *Alatina* (Gershwin, 2005):

- 4 simple pedalia;
- Simple tentacles, round in cross section, with nematocyst banding;
- Stomach flat without mesenteries;
- Crescentic phacellae with long cirri;
- 3 velarial canals per octant;
- 4 rhopalia;
- T-shaped rhopalial niche ostia;
- Ovoviviparous.

Alatina madraspartana (Menon, 1930):

- Bell height up to 110mm, with apical concavity;
- Exumbrella with small freckles;
- Pedalial freckles small, when present;
- Rhopalia with 6 eyes, one median eye bearing a lens.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Indian Ocean.
Notes: Kramp (1961) considers *Alatina madraspatana* (Menon, 1930) as a variety of *Carybdea alata* (Reynaud, 1830).

83	Medusa with 1 eye per rhopalium	

Alatina tetraptera, (Haeckel 1880)

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Alatinidae (Gershwin, 2005)
Genus *Alatina* (Gershwin, 2005)
Alatina tetraptera (Haeckel 1880)

Synonims: *Procharybdis tetraptera* (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Alatina* (Gershwin, 2005):

- 4 simple pedalia;
- Simple tentacles, round in cross section, with nematocyst banding;
- Stomach flat without mesenteries;
- Crescentic phacellae with long cirri;
- 3 velarial canals per octant;
- 4 rhopalia;
- T-shaped rhopalial niche ostia;
- Ovoviviparous.

Alatina tetraptera (Haeckel 1880):

- Bell 30mm high, 20mm wide. Without nematocysts;
- Large and long pedalia with wings. Without nematocysts;
- Wing-like phacellae with long cirri;
- Heart-shaped rhopalial niche ostia;
- Rhopalia with only one large eye.

Life cycle: reproductive strategies unknown.
Notes: according to Mayer (1910), the species has been described from a single preserved specimen from Sunda Archipelago, Indian Ocean, which may be a immature or damaged specimen of *Carybdea alata* (Reynaud, 1830). This species has not been recognized in the scientific literature for almost 100 years, but according to Gershwin (2005), it seems appropriate to revalidate it awaiting fresh material that can be studied for a proper redescription, seen the peculiar characteristics.

84 Medusa with 2 eyes per rhopalium

Alatina mordens, Gershwin 2005

84 Medusa with 4 eyes per rhopalium

Alatina rainensis, Gershwin 2005

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Alatinidae (Gershwin, 2005)
Genus *Alatina* (Gershwin, 2005)
Alatina rainensis (Gershwin 2005)

Morpho-anatomical characteristics
Genus *Alatina* (Gershwin, 2005):
- 4 simple pedalia;
- Simple tentacles, round in cross section, with nematocyst banding;
- Stomach flat without mesenteries;
- Crescentic phacellae with long cirri;
- 3 velarial canals per octant;
- 4 rhopalia;
- T-shaped rhopalial niche ostia;
- Ovoviviparous.

Alatina rainensis (Gershwin 2005):
- Bell 18mm high, taller than wide, with domed apex;
- Pedalia with long stalk, without nematocysts;
- Tentacles with banding pattern of 2 types: proximally, every 10 bands one smaller than others, giving a segmented appearance to tentacle, distally, bands more or less alternate smaller with larger.
- Exumbrella with wide, shallow, interradial furrows. Lacking circum-aboral groove; with minute nematocysts, without gelatinous warts
- Mouth cruciform with 4 rounded lips;
- Gastric cirri approximately 50 per phacellus, long, simple, rooted simply or in pairs;
- Rhopalia with 4 eyes: 2 median eyes with lens (lower one large and round, upper one laterally flattened) and 2 elongated lateral ocelli;
- Gonads butterfly-shaped, approximately half body height in lenght.
- Colour in preserved specimens, gonads, phacellae, and tentacles whitish, rhopalia dark brown, all other parts transparent and colourless. Colour in life unknown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Western South Pacific Ocean.

85 Medusa with phacellae

Tamoya haplonema, Müller 1859

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Tamoyidae (Haeckel, 1880)
Genus *Tamoya* (Müller, 1859)
Tamoya haplonema (Müller, 1859)

Synonims: *Tamoya prismatica* (Haeckel, 1880)
Vernacular name: Glass Box Jelly

Morpho-anatomical characteristics

Genus *Tamoya* (Müller, 1859):

- Exumbrella with nematocyst warts;
- 4 simple pedalia;
- 1 simple tentacle per pedalium, flat, ribbon-like. Flared tentacle base;
- Stomach with gastric phacellae in vertical rows of short cirri;
- Frown-shaped rhopalial niche ostia;
- 4 rhopalia;
- Reproductive strategies unknown;
- Causes Irukandji syndrome.

Tamoya haplonema (Müller, 1859):

- Bell 90mm high, 5,5mm wide. Flat apex, vertical sides. Elongate-cuboid shape. Rigid mesoglea.
- Exumbrella thickly covered with nematocyst warts;
- Pedalia 30mm long, flat, spatula shaped with sharp edges, with nematocyst warts;
- Tentacles round to flattened a bit, hollow, with regularly spaced rings of nematocysts. Can reach 3m long;
- Sensory niches on ovoid prominences of exumbrella;
- Gonads curtain-like sheets with frilled edges;
- Colour in life: bell transparent, tentacles milky yellow with faint purple hue. Nematocyst warts white. Gonads milky yellow, rhopalia dark brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Atlantic Ocean, neritic, from May to September.
Toxicity: painful sting, but not lethal. It causes intense burning, necrosis and permanent scarring of the affected skin. Burning and itching can persist for one week.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=674995&lvl=0

85 Medusa without phacellae 86

86 Velarial canals more than 5 per octant

Gerongia rifkinae, Gershwin & Alderslade 2005

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Carukiidae (Bentlage, Cartwright, Yanagihara, Lewis, Richards and Collins, 2010)
Genus *Gerongia* (Gershwin & Alderslade, 2005)
Gerongia rifkinae (Gershwin, 2005)

Vernacular name: Darwin carybdeid

Morpho-anatomical characteristics
Genus *Gerongia* (Gershwin & Alderslade, 2005):

- Peculiar robustly developed matchbox-sized body;
- 4 simple pedalia, longer than broad. Outer keel moderately flared, inner keel broadly rounded;
- 1 simple tentacle per pedalium;
- Stomach large, ballooned, without gastric phacellae;
- Frown-shaped rhopalial niche ostia;
- Perradial lappet with 2 rows of low, rounded nematocyst warts;
- 4 rhopalia.

Gerongia rifkinae (Gershwin, 2005):

- Bell 60mm high, 24mm wide;
- Shallow coronal furrow just below apex.
- Exumbrella with small, rounded, unraised nematocyst patches occurring over all surface and especially noticeable on outer keel of pedalia;
- Tentacles round in cross section, thick and hollow, greatly flared at their base; with nematocyst bands which are either of even width or alternating thicker with slightly thinner;
- Stomach large and bag-like when relaxed, or with numerous parallel folds in each corner when contracted;
- Gonads leaf-like, smooth to rippled or pleated;
- Body transparent and colourless in life, with lavender nematocyst patches and tentacles.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Northern Territory, Queensland (Australia).

Toxicity: very little is known about the stinging power of Gerongia rifkinae (Gersshwin, 2005), however it does not appear to be a severe health treat to humans. Stinging involves only localized pain, without any systemic symptoms.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=685049&lvl=0

86 Not as above 87

87 Velarial canals 1 per octant

Carukia shinju, Gershwin 2005

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Carukiidae (Bentlage, Cartwright, Yanagihara, Lewis, Richards and Collins, 2010)
Genus *Carukia* (Southcott, 1967)
Carukia shinju (Gershwin, 2005)

Morpho-anatomical characteristics
Genus *Carukia* (Southcott, 1967):

- Small size, rounded-pyramidal body shape;
- Red exumbrellar nematocyst warts;
- 4 simple pedalia;
- 1 simple tentacle per pedalium,with peculiarly modified cuff-like tentacular nematocyst bands with tails (“neckerchiefs”);
- Stomach without gastric phacellae;
- Frown-shaped rhopalial niche ostia;
- Perradial lappet warts lacking, or lappets with single wart on each side;
- 4 rhopalia with 6 eyes each: 2 median ones with lenses and 2 pairs of lateral ocelli.

Carukia shinju (Gershwin, 2005):

- Bell 16mm high;
- Exumbrella with small nematocyst warts scattered especially on apex; lacking well defined reticulation between warts;
- Tentacles semi-compressed in cross section;
- Scalpel-shaped pedalia;
- Gonads leaf-like, attached along entire bell height of interradial septa;
- Body transparent and colourless in life, with red nematocyst warts, tentacle bands very pale yellow.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean.
Toxicity: presumed to cause Irukandji syndrome.

87 Not as above 88

88 Velarial canals 2 per octant

Carukia barnesi, Southcott 1966



Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Carukiidae (Bentlage, Cartwright, Yanagihara, Lewis, Richards and Collins, 2010)
Genus *Carukia* (Southcott, 1967)
Carukia barnesi (Southcott, 1967)

Vernacular name: Irukandji, sea wasp.

Morpho-anatomical characteristics
Genus *Carukia* (Southcott, 1967):

- Small size, rounded-pyramidal body shape;
- Red exumbrellar nematocyst warts;
- 4 simple pedalia;
- 1 simple tentacle per pedalium,with peculiarly modified cuff-like tentacular nematocyst bands with tails (“neckerchiefs”);
- Stomach without gastric phacellae;
- Frown-shaped rhopalial niche ostia;
- Perradial lappet warts lacking, or lappets with single wart on each side;
- 4 rhopalia with 6 eyes each: 2 median ones with lenses and 2 pairs of lateral ocelli.

Carukia barnesi (Southcott, 1967):

- Bell 13-35 mm high;
-

- Exumbrella with gelatinous nematocyst warts; well defined reticulation between warts;
- Tentacles round in cross section, 750mm long;
- Colour translucent.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Indo Pacific Ocean.
Toxicity: can cause Irukandji syndrome (sharp prickling sensation without visible injury. Systemic effect are delayed by minutes or hours and include severe low back pain, progressing to limb cramping, nausea, vomiting, headache, restlessness), in some cases bringing to death in humans.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=168717&lvl=0

88	Velarial canals 4-5 per octant	

Malo maxima, Gershwin 2005

Systematic position:
Classis Cubozoa
Ordo Carybdeida
Familia Carukiidae (Bentlage, Cartwright, Yanagihara, Lewis, Richards and Collins, 2010)
Genus *Malo* (Gershwin, 2005)
Malo maxima (Gershwin, 2005)

Synonims: *Malo kingi* (Gershwin, 2007)

Morpho-anatomical characteristics
Genus *Malo* (Gershwin 2005):

- Body tall and slim;
- 4 simple pedalia;
- 1 simple tentacle per pedalium, fine, cylindrical, unmodified;
- Stomach without gastric phacellae, with moderately developed mesenteries;
- Frown-shaped rhopalial niche ostia;
- Perradial lappet with 2-3 warts;
- 4 rhopalia with only 2 median eyes, without lateral ocelli.

Malo maxima (Gershwin, 2005):

- Bell 50mm high, robust, evenly thick. Apex flattened, no coronal furrow. Conspicuos gelatinous nematocyst warts scattered over entire exumbrella.
- Tentacles round in cross section, about 5-8x bell height. Nematocysts in narrow rings;
- Pedalia long,scalpel shaped, with 3 nematocyst patches on outer keel;
- Perradial lappets narrow, triangular;
- Stomach flat, small (preserved specimens), bag like (live specimens), with well developed mesenteries;
- Gonads leaf-like, large, overlapping perradially, sparing rhopalial niche;
- Bell hyaline, nematocyst warts pale purple, tentacles whitish to pinkish.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean, Western Australia.
Toxicity: causes Irukandji syndrome.

89	Medusa with a permanent primary mouth opening in adult specimens	90
89	Medusa without a permanent primary mouth opening in adult specimens	136
90	Medusa without tentacles	91
90	Medusa with tentacles	95
91	marginal lappets very shallow, or entirely lacking	92
91	marginal lappets evident	93
92	Exumbrella transparent white, sometimes with brown nuances on margins	

Deepstaria enigmatica (Russel, 1967)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Subfamilia Deepstariinae (Larson, 1986)
Genus *Deepstaria* (Russell, 1967)
Deepstaria enigmatica (Russell, 1967)



Vernacular name: Diipusutaria Kurage (Japan), Deepstar Medusa

Morpho-anatomical characteristics

Genus *Deepstaria* (Russell, 1967):

- Bell with a diffuse reticulated network of anastomoses, more numerous near the margin;
- Without tentacles;
- 5 mouth arms, thin, narrow, elongated,contained within bell margin;
- Canal system uniformly thin, forming netlike anastomoses of fairly equal size;
- With ring canal;
- With subgenital pits.

Deepstaria enigmatica (Russell, 1967):

- Bell up to 600mm wide. Remarkably thin (10-20mm thick), broad, delicate, a rather flat bowl when relaxed;
- Marginal lappets not recorded, apparently very shallow or entirely lacking;
- 4-5 mouth arms, narrow, elongate, basal 1/3 held horizontally with near-right angled bend and remainder hanging down, terminating in a hook-shaped organ. The base of each mouth arm has on each side a plaque in which there are numerous pits containing the gastric cirri, 3-10mm long, up to 8 per pit;
- Stomach small, circular, about 1/6 of belle diameter, protruding beneath subumbrella as a short, thick-walled manubrial tube;
- Canal system fine and somewhat irregular, forming a reticulate network across most of bell. Anastomoses more numerous close to periphery;
- 8-20 rhopalia, probably increasing in number with age;
- 4-5 gonads, seen only in a few specimens, short stalked and lobed, attached near base of mouth arms;
- Subumbrellar musculature diffused, coronal muscles thin but well developed;
- Colour of live specimens: white transarent, sometimes with brown nuances on margin.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Pacific Ocean, North Atlantic Ocean. Bathypelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880228&lvl=0

92 Exumbrella reddish-brown, with stomach margin lighter brown

Deepstaria reticulum (Lerson, Madin & Harbison, 1988)

Systematic position:

Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Subfamilia Deepstariinae (Larson, 1986)
Genus *Deepstaria* (Russell, 1967)
Deepstaria reticulum (Lerson, Madin & Harbison, 1988)

Morpho-anatomical characteristics

Genus *Deepstaria* (Russell, 1967):

- Bell with a diffuse reticulated network of anastomoses, more numerous near the margin;
- Without tentacles;
- 5 mouth arms, thin, narrow, elongated,contained within bell margin;
- Canal system uniformly thin, forming netlike anastomoses of fairly equal size;
- With ring canal;
- With subgenital pits.

Deepstaria reticulum (Lerson, Madin & Harbison, 1988):

- Bell up to 600mm wide, extremely flat and thin;
- Marginal lappets apparently very shallow or entirely lacking;
- 4-5 mouth arms, narrow, elongate, terminating in a hook-shaped organ.;
- Stomach small, circular, about 1/6 of bell diameter;
- Manubrium short and thick;
- Canal system fine, more or less sinuos;
- 8-20 rhopalia, probably increasing in number with age;
- 6 gonads, short, stalked and lobed, arising from base of mouth arms;
- Subumbrellar musculature diffused, coronal muscles thin but well developed;

- Colour of live specimens: reddish brown, stomach margin lighter brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Atlantic, Monterey Bay. Bathypelagic species.

93 Rhopalia 20

Stygiomedusa gigantea (Browne, 1910)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Subfamilia Stygiomedusinae (Russell & Rees, 1960)
Genus *Stygiomedusa* (Russell, 1959)
Stygiomedusa gigantea (Browne, 1910)

Synonims: *Stygiomedusa fabulosa* (Russell, 1959), *Stygiomedusa stauchi* (Repelin, 1967)

Morpho-anatomical characteristics
Genus *Stygiomedusa* (Russell, 1959):

- Bell saucer shaped, with annular exumbrellar groove around central half of disc;
- Without tentacles;
- 60 marginal lappets, shallow, rounded;
- Mouth arms 3 times as long as bell diameter or more;
- Radial canal system much branched and anastomosed;
- With ring canal;
- 20 rhopalia.

Stygiomedusa gigantea (Browne, 1910):

- Bell 500-1000mm wide, can reach 1400mm, wide, brimmed hat shaped. Mesoglea thick and firm;
- Exumbrella smooth, with annular exumbrellar groove around central half of disc;
- 60 marginal lappets, shallow, rounded;
- Without tentacles;
- 4 mouth arms, lenght more than 1m. united basally to form a tube round in section and massive. Distal ¾ comprising 2 thin flat flanges with groove between the margins finely crenulated;
- Stomach large, much modified to enclose 4 brood chambers;
- Radial canals conspicuos, straight to variously tortuos;
- Ring canal following the divided margin;
- Subumbrellar circular musculature weakly developed;
- Colour of live specimens: deep brown to maroon, radial canals and anastomoses whitish.

Life cycle: viviparous. In stomach chambers, gametes perhaps develop in germinal line on the outer surface of brood chambers. Embryo brooded in a unique cyst, probably a modified scyphistoma, with umbilical connection to gastrovascular system; juveniles released viviparously at large size.
Geographical and seasonal distribution: North Atlantic Ocean, Southern ocean. Deep sea, near bottom.

93 Not as above 94

94 Rhopalia from 24 to more than 50, one in every cleft between the lappets

Tiburonia granrojo (Matsumoto, Raskoff & Lindsay, 2003)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Subfamilia Tiburoniinae (Matsumoto, Raskoff & Lindsay, 2003)
Genus *Tiburonia* (Matsumoto, Raskoff & Lindsay, 2003)
Tiburonia granrojo (Matsumoto, Raskoff & Lindsay, 2003)

Vernacular name: Gumdrop Jelly, Fingerfoot Medusa, Yubiashi-Kurage (Japan)

Morpho-anatomical characteristics
Genus *Tiburonia* (Matsumoto, Raskoff & Lindsay, 2003):

- Bell hemispherical, heavy, fleshy;
-

- Without tentacles;
- 24-50 marginal lappets;
- 4-7 mouth arms, bsally thick, tapering to a blunt tip;
- Radial canal system that form a network of anastomoses;
- With ring canal;
- 24-50 rhopalia;
- 7-4 subgenital pits, depending on number of mouth arms.

Tiburonia granrojo (Matsumoto, Raskoff & Lindsay, 2003):
- Bell up to 750mm wide, hemispherical, heavy, fleshy;
- Exumbrella covered with nematocyst warts;
- 24-50 or more marginal lappets, covered on both surfaces with nematocyst warts;
- Without tentacles;
- 4-7 mouth arms, thick at their base, tapering to a blunt tip. Extending beyond bell margin;
- 15-20 radial canals, uniformly thin till periphery,forming a network of anastomoses;
- Rhoapalia difficultly seen because of a “elbow-joint” that bends and hides them;
- Colour of live specimens: dark reddish to brown, mesoglea included.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Pacific Ocean. Mesopelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=214113&lvl=0

94 Rhopalia 8

Stellamedusa ventana (Raskoff & Matsumoto, 2004)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Subfamilia Stellamedusinae (Raskoff & Matsumoto, 2004)
Genus *Stellamedusa* (Raskoff & Matsumoto, 2004)
Stellamedusa ventana (Raskoff & Matsumoto, 2004)

Vernacular name: Bumpy Jelly

Morpho-anatomical characteristics
Genus *Stellamedusa* (Raskoff & Matsumoto, 2004):
- Bell hemispherical to round;
- Without tentacles;
- 3-4 mouth arms;
- Canal system simple, not anastomosed;
- Ring canal with bifurcated projections on each side of a rhopalium; 3-4 Gonads.

Stellamedusa ventana (Raskoff & Matsumoto, 2004):
- Bell up to 940mm wide, hemispherical to round;
- Exumbrella with many small bumps made of aggregations of nematocysts;
- Without tentacles;
- 3-4 mouth arms, fleshy, covered with prominent bumps which terminate in large nematocyst clusters;
- 15-18 radial canals simple, not anastomosed.;
- Short, blunt projections of ring canal run towards the margin, unbranched except on each side of rhopalia, where they bifurcate;
- 8 rhopalia. Exumbrellar sensory pits highly rugous;
- 3-4 horseshoe shaped gonads. Subgenital pits with circular subgenital ostia;
- Colour of live specimens: translucent milky white.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Gulf of California, Monterey Bay. Mesopelagic species.

95 Tentacles not arising from umbrella's margin 96

95 Tentacles arising from umbrella's margin 114

96 Tentacles not arranged in tufts 97

96 Tentacles arranged in tufts 104

97 Medusa without ring-canal

Drymonema dalmatina (Haeckel, 1880)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Drymonematidae (Haeckel, 1880)
Genus *Drymonema* (Haeckel, 1880)
Drymonema dalmatinum (Haeckel, 1880)

Synonims: *Drymonema dalmatina* (Haeckel, 1880)
Vernacular name: Purple Sea Mane

Morpho-anatomical characteristics
Genus *Drymonema* (Haeckel, 1880):

- Bell flat;
- Tentacles arranged in 8 triangular clusters within an annular zone between mouth and rhopalia, arising from within bifurcating subumbrellar furrows;
- 4 mouth arms, curtain-like;
- Gastrovascular system comprising 16 pouches, rarely anastomosed, bifurcating towards margin;
- 8 rhopalia in deep subumbrellar pits.

Drymonema dalmatinum (Haeckel, 1880):

- Bell up to 1000mm wide, flat, circular;
- Exumbrella finely pitted, with small papillae and bifurcating, coloured crenulations;
- 144 marginal lappets, all alike;
- Tentacles few per octant, straight, hollow. Distally within the annular zone between mouth and rhopalia, tentacles number increases while size and lenght decrease. Up to 2m long;
- 4 mouth arms, as long as bell radius;
- Stomach pouches bifurcating towards bell margin, giving 144 terminal canals;
- 4 gonads, pendolous;
- Colour of live specimens: pink to light purple.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Mediterranean Sea, North Atlantic Ocean, Caribbean Sea (Alien), Gulf of Mexico (Alien),USA (Alien). Coastal habitat.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880230&lvl=0

97	Medusa with ring-canal	98
98	Oral arms bifurcated	

Aurosa furcata (Haeckel, 1880)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Aurosa* (Haeckel, 1880)
Aurosa furcata (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Aurosa* (Haeckel, 1880):

- 8 marginal lappets;
- Tentacles and marginal lappets arise from the sides of exumbrella, above bell margin;
- 4 mouth arms, bifurcated;
- 24 radial canals, anastomosing;
- With ring canal;
- 8 rhopalia;
- 4 interradial gonads, invaginated with external subgenital pits and 4 well developed subgenital pits.

Aurosa furcata (Haeckel, 1880):

- Bell 80mm wide,30mm high. Flat, shield shaped;
- Exumbrella with smooth surface;
- 8 marginal lappets;
- Tentacles numerous, small;
- 4 mouth arms, folded, bifurcated;

- 24 radial canals arising from central stomach, all of which give off anastomosing side branches. The peripheral network of anastomosing canals become narrower near ring canal;
- 8 rhopalia;
- 4 horseshoe shaped gonads.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Indian Ocean.
Toxicity: innocuos.

98 Oral arms not bifurcated 99

99 Marginal lappets 16

Aurelia labiata (Chamisso & Eysenhardt, 1821)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Aurelia* (Lamarck, 1816)
Aurelia labiata (Chamisso & Eysenhardt, 1821)

Vernacular name: Moon Jelly

Morpho-anatomical characteristics
Genus *Aurelia* (Lamarck, 1816):

- Bell plate- to shield-shaped;
- Tentacles small, alternate in an equal number of short lappets. Both tentacles and lappets arise from the sides of the exumbrella at a short distance above the bell margin;
- 4 mouth arms, unbranched, surrounding a central mouth;
- A central stomach gives rise to a number of branching radiating canals which anastomose and are connected by a ring canal;
- 8 rhopalia with 2 ocelli;
- 4 interradial gonads and 4 well developed subgenital pits.



Aurelia labiata (Chamisso & Eysenhardt, 1821):

- Bell 100-450mm wide, flat. With 16 notches in its margin;
- Exumbrella with smooth surface;
- 16 marginal lappets, separated by deep median clefts;
- Peculiar velum-like interrhopalar subumbrellar membranes representing the true bell margin;
- Tentacles numerous and short, migrated a considerable distance up the sides of exumbrella, above the velar margin;
- 4 mouth arms, shorter than bell radius,thick and curved, folded and extending laterally against subumbrellar surface. In older specimens the mouth arms become much thickened and folded;
- Manubrium elongated, fleshy, rigid, protruding below bell margin;
- Subgenital ostia of very small size;
- 8 rhopalia;
- A longitudinal strand of muscle fibers extends down the subumbrellar side of each tentacle and interrupts the rings of nematocysts;
- Colour of live specimens: yellowish pale violet. Gonads pale pink or brownish in females, dark purple in males. Juveniles transparent.

Life cycle: asexual reproduction by podocysts. Embryos and larvae brooded on the manubrium or on stiff, shelf-like manubrial extensions. Rarely on mouth arms.
Geographical and seasonal distribution: North Pacific Ocean, Canada.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=184214&lvl=0

99 Marginal lappets 8 100

100 Oral arms short, thick and curved, much folded, extending laterally against subumbrellar surface

Aurelia limbata (Brandt, 1835)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Aurelia* (Lamarck, 1816)

Aurelia limbata (Brandt, 1835)

Vernacular name: Brownbanded Moon Jelly

Morpho-anatomical characteristics

Genus *Aurelia* (Lamarck, 1816):

- Bell plate- to shield-shaped;
- Tentacles small, alternate in an equal number of short lappets. Both tentacles and lappets arise from the sides of the exumbrella at a short distance above the bell margin;
- 4 mouth arms, unbranched, surrounding a central mouth;
- A central stomach gives rise to a number of branching radiating canals which anastomose and are connected by a ring canal;
- 8 rhopalia with 2 ocelli;
- 4 interradial gonads and 4 well developed subgenital pits.

Aurelia limbata (Brandt, 1835):

- Bell 100-450mm wide, shallow, cap-shaped, somewhat contracted at margin. Mesoglea thick at centre, thin towards margin. A central knob, hanging down from the upper wall of stomach cavity, i slow and triangular in cross section;
- Exumbrella very finely granulated;
- 16 marginal lappetsvery short and broad, separated by shallow notches;
- Tentacles few;
- 4 mouth arms, as long as bell radius, thick and curved, folded and extending laterally against subumbrellar surface;
- Manubrium elongated, fleshy, rigid, triangular in cross section;
- Canal system with a very complicated meshwork, very fine near the margin of bell;
- Colour of live specimens: yellowish pale violet with typical chocolate brown margins. Gonads pale pink or brownish in females, dark purple in males. Young specimens pale yellow or pinkish, old specimens brownish with nearly black tentacles.

Life cycle: asexual reproduction by stolons.
Geographical and seasonal distribution: Atlantic USA, Arctic Sea. Upper pelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=184213&lvl=0

100	Not as above	101
101	Oral arms linear, thick and stiff, with densely crenulated margins, as long as bell's radius	

Aurelia aurita (Linnaeus, 1758)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Aurelia* (Lamarck, 1816)
Aurelia aurita (Linnaeus, 1758)

Synonims: *Medusa aurita* (Linnaeus, 1758), *Aurelia coerulea* (Von Lendenfeld, 1884), *Aurelia flavidula* (Peron & Lesuer, 1809), *Aurelia cruciata* (Haeckel, 1880), *Aurelia japonica* (Kishinouye, 1891), Aurelia dubia (Vanhöffen, 1888)
Vernacular name: Moon Jelly

Morpho-anatomical characteristics

Genus *Aurelia* (Lamarck, 1816):

- Bell plate- to shield-shaped;
- Tentacles small, alternate in an equal number of short lappets. Both tentacles and lappets arise from the sides of the exumbrella at a short distance above the bell margin;
- 4 mouth arms, unbranched, surrounding a central mouth;
- A central stomach gives rise to a number of branching radiating canals which anastomose and are connected by a ring canal;
- 8 rhopalia with 2 ocelli;
- 4 interradial gonads and 4 well developed subgenital pits.

Aurelia aurita (Linnaeus, 1758):

- Bell up to 400mm wide, flat, thin. Margin of disc simple and entire except around rhopalia, where it is broken by notches;
- Exumbrella with smooth surface;
- 8 marginal lappets, broad, simple;

- Tentacles hollow, thin, short, coloured, with broken rings of nematocysts on their external side;
- 4 mouth arms as long as bell radius, thick, with densely crenulated margin. Mouth rounded or irregular in shape, seldom cruciform;
- Rhopalar and aradial canals unbranched, the other canals branched, slender. Anastomoses more numerous in American specimens than in European ones;
- 8 rhopalia at the bottom of shallow niches between the 8 broad marginal lappets;
- 4 brilliant horseshoe-shaped gonads, lining gastric pouches;
- Colour of live specimens: mesoglea translucent milky white or yellowish brown. Spermaries usually light pink. In old specimens gonads white, transparent.

Life cycle: Asexual reproduction by lateral budding, stolons, free swimming particles (buds, planuloids), longitudinal/transverse fission; sexual reproduction.
Geographical and seasonal distribution: cosmopolitan. Upper pelagic species, coastal habitat.
Toxicity: *Aurelia aurita* (Linnaeus, 1758) is commonly considered innocuous for humans and it has been defined as “harmless jellyfish” , but it can be anyhow a trouble for bathers when it occurs in great numbers . It was reported that the nematocysts of the moon jellyfish give weak and not irritable stinging, but could anyhow irritate thin or sensitive skin, eyes and lips and produce a modest itchiness.It is known to be harmless, but cases of local cutaneous reaction, associated with pain, have been reported.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6145&lvl=0
Notes: According to Dawson & Jacobs (2001) and Dawson (2003), all currently recognized morphospecies of *Aurelia* are polyphyletic. Novel DNA sequence data reveal at least 10 molecular species of *Aurelia aurita*. Unfortunately, phylogenetically robust morphological characters are rare in this genus, so new molecular phylogenies may be difficult to reconcile with antiquated morphological varietes or nominal species.

101 Not as above 102

102 Oral arms narrow and thin, with slightly folded margins only in proximal part

Aurelia solida (Browne, 1905)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Aurelia* (Lamarck, 1816)
Aurelia solida (Browne, 1905)

Morpho-anatomical characteristics
Genus *Aurelia* (Lamarck, 1816):

- Bell plate- to shield-shaped;
- Tentacles small, alternate in an equal number of short lappets. Both tentacles and lappets arise from the sides of the exumbrella at a short distance above the bell margin;
- 4 mouth arms, unbranched, surrounding a central mouth;
- A central stomach gives rise to a number of branching radiating canals which anastomose and are connected by a ring canal;
- 8 rhopalia with 2 ocelli;
- 4 interradial gonads and 4 well developed subgenital pits.



Aurelia solida (Browne, 1905):

- Bell up to 105mm wide, hemispherical. Mesoglea very thick and rigid;
- Exumbrella with smooth surface;
- 8 marginal lappets, simple, broad;
- Tentacles numerous, short;
- 4 mouth arms, thin, narrow, with slightly folded margin at proximal end;
- 16 radial canals unbranched, the other canals branched with occasional anastomoses;
- 8 rhopalia, arising from the inner end of a deep groove which is open on the exumbrellar side and bordered by the lateral lapets, but closed on the subumbrellar side;
- 4 gonads. With wide subgenital pits. Subgenital ostia very small;
- Colour of live specimens: bell lilac, canal system and tentacles pinkish violet, mature gonads bright violet. Some specimens are blue.

Life cycle: asexual reproduction by podocysts.
Geographical and seasonal distribution: Central Atlantic Ocean, North Indian Ocean.
Toxicity: innocuos.

102 Oral arms long and broad, curtain-like, with densely crenulated margins 103

103 Adradial canals not branched

Aurelia maldivensis (Bigelow, 1904)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Aurelia* (Lamarck, 1816)
Aurelia maldivensis (Bigelow, 1904)

Morpho-anatomical characteristics
Genus *Aurelia* (Lamarck, 1816):

- Bell plate- to shield-shaped;
- Tentacles small, alternate in an equal number of short lappets. Both tentacles and lappets arise from the sides of the exumbrella at a short distance above the bell margin;
- 4 mouth arms, unbranched, surrounding a central mouth;
- A central stomach gives rise to a number of branching radiating canals which anastomose and are connected by a ring canal;
- 8 rhopalia with 2 ocelli;
- 4 interradial gonads and 4 well developed subgenital pits.

Aurelia maldivensis (Bigelow, 1904):

- Bell up to 250mm wide, flat, thick;
- Exumbrella with smooth surface;
- 8 marginal lappets, broad, with very slight central depression;
- Tentacles about 500, small, alternate with an equal number of small lappets;
- 4 mouth arms, broad, curtain like, withdensely crenulated margin. Mouth withcomplexly folded lips bearing numerous short tentacles;
- 16 radial canals unbranched, the other canals branched with occasional anastomoses;
- 4 small horseshoe-shaped gonads. With wide subgenital pits;
- Colour of live specimens: bell lilac, canal system and tentacles pinkish violet, mature gonads bright violet. Some specimens are blue.

Life cycle: asexual reproduction by podocysts.
Geographical and seasonal distribution: North Indian Ocean, Red Sea, New Zealand. In January.
Toxicity: innocuos.

103 Adradial canals branched

Aurelia colpota (Brandt, 1838)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Aurelia* (Lamarck, 1816)
Aurelia colpota (Brandt, 1838)

Vernacular name: Moon Jelly

Morpho-anatomical characteristics
Genus *Aurelia* (Lamarck, 1816):

- Bell plate- to shield-shaped;
- Tentacles small, alternate in an equal number of short lappets. Both tentacles and lappets arise from the sides of the exumbrella at a short distance above the bell margin;
- 4 mouth arms, unbranched, surrounding a central mouth;
- A central stomach gives rise to a number of branching radiating canals which anastomose and are connected by a ring canal;
- 8 rhopalia with 2 ocelli;
- 4 interradial gonads and 4 well developed subgenital pits.

Aurelia colpota (Brandt, 1838):

- Bell up to 200mm wide, flatly rounded to hemispherical;
- Exumbrella with smooth surface;
- 8 marginal lappets, broad, simple, slightly notched centrally;
- Tentacles thin, short;

- 4 mouth arms, longer than bell radius, very large at their base, complexly folded with lateral lappets;
- Interradial canals give rise to 5 primary branches. Aradial canals anastomosing with other canals, or simple and unbranched;
- 8 rhopalia set in shallow clefts at margin of bell;
- 4 brilliant horseshoe-shaped gonads;
- Colour of live specimens: light rose-red, tentacles and gonads deeper in colour.

Life cycle: asexual reproduction by podocysts.
Geographical and seasonal distribution: South Africa, Malay Archipelago, Indian Ocean, Pacific Ocean.
Toxicity: innocuos.

104	Medusa with ring-canal	105
104	Medusa without ring-canal	107
105	Gonads 8	

Poralia rufescens (Vanhöffen, 1902)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Subfamilia Poraliinae (Larson, 1986)
Genus *Poralia* (Vanhöffen, 1902)
Poralia rufescens (Vanhöffen, 1902)

Vernacular name: Ringo-Kurage (Japan), Apple Jelly

Morpho-anatomical characteristics
Genus *Poralia* (Vanhöffen, 1902):
- Bell flat;
- Tentacles fewer than 50, thin, as long as bell diameter, easily lost, arising in linear clusters from subumbrella;
- Without distinct marginal lappets;
- 8 mouth arms, short, narrow, tapered, slightly folded;
- 48 radial canals, simple, broad, unbranched;
- With ring canal;
- 16 rhopalia;
- Gonads sac-like, forming a ring around central stomach. Without subgenital pits.

Poralia rufescens (Vanhöffen, 1902):
- Bell up to 250mm wide, flat, thin. Mesoglea thin, in life bell flexing from flat, through hemispherical to fully spherical in overall shape;
- Without distinct marginal lappets. With a short vertical peripheral skirt;
- 24 tentacles, as long as bell diameter, thin, easily lost;
- 8 mouth arms, approximately as long as ½ bell diameter, arranged in pairs. Tapering gradually to a blunt point. Fused subbasally for a short lenght, basal spaces between forming 8 heart shaped subgenital ostia;
- 41 radial canals arise from central stomach, but 2 of these anastomose so that only 40 extend to the ring canal;
- The ring canals gives rise to a trident-shaped diverticulum in the radius of each rhopalium, and to one or two simple, blindly ending diveerticula in the interrhopalar spaces;
- 16 rhopalia, set within deep niches and covered by a prominent scale, with deep exumbrellar sensory pits;
- 4 gonads, sac-like, forming a nearly continuos ring around the stomach;
- Colour of live specimens: groud colour of bell pale orange translucent, radial canals whitish, mouth arms pale lilac, tentacles colourless. Red pigment granules throughout mesoglea. Subumbrella reddish, gonads paler.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: cosmopolitan in deep waters. Benthopelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880239&lvl=0

105	Gonads 4	106
106	Rhopalia 8	

Sthenonia albida (Eschscholtz, 1829)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Sthenonia* (Eschscholtz, 1829)
Sthenonia albida (Eschscholtz, 1829)

Morpho-anatomical characteristics
Genus *Sthenonia* (Eschscholtz, 1829):

- Bell flat;
- 8 groups of tentacles arranged in single rows;
- 16 rhopalar lappets. 8 velar lappets with evenly rounded markings.
- 8 radial canals anastomosing with a wide ring canal in the zone of rhopalia;
- Ring canal with bifurcated projections on each side of a rhopalium;
- 8 rhopalia;
- Without subgenital pits.

Sthenonia albida (Eschscholtz, 1829):

- Bell 300mm wide, flat, shield shaped;
- Tentacles arising in adradial rows from subumbrella in the intervals between the rhopalia;
- 4 mouth arms, 1/3 as long as bell radius;
- 8 radial canals that give rise to numerous side branches. A simple and a forked canal arise in the 8 radii of the velar lappets. These radial canals anastomose and fuse with a wide ring canal;
- Colour of live specimens: bell whitish, gonads and canal system milky white.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Pacific.
Notes: according to Mayer (1910), this species has not been seen since Eschscholtz described it.

106 Rhopalia 16

Phacellophora camtschatica (Brandt, 1835)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Phacellophora* (Brandt, 1835)
Phacellophora camschatica (Brandt, 1838)

Synonims: *Phacellophora sicula* (Haeckel, 1880), *Phacellophora ambigua* (Haeckel, 1880), *Phacellophora ornata* (Haeckel, 1880)
Vernacular name: Fried Egg Jelly, Egg Yolk Jelly

Morpho-anatomical characteristics
Genus *Phacellophora* (Brandt, 1838):

- Tentacles arising in 16 linear clusters from subumbrella;
- Rhopalar radial canals branched, tentacular radial canals simple;
- 16 rhopalia, alternating with tentacles;
- With ring canal;
- Gonads sac-like, without subgenital pits.

Phacellophora camschatica (Brandt, 1838):

- Bell 500-600mm wide, can reach 1500mm. Flat. Mesoglea moderately thin, flexible;
- 16 marginal lappets, broad, curved, outer margin shallowly divided into sublappets;
- Tentacles in 16 groups, 5-25 per group. As long as bell radius, elliptical in cross section, with 2 rows of nematocysts on one side;
- 4 mouth arms, wide, tapering, thick, 1,5 times as long as bell radius. Sides in form of convoluted curtains which may be lost;
- A central stomach gives rise to 16 rhoapalar canals which send out lateral branches and also 80 simple unbranched velar canals;
- 16 rhopalia, each beneath a large, projecting covering scale;
- 4 gonads, sac-like;
- Subumbrellar circular muscles weak
- Colour of live specimens: variable, perhaps depending on diet. Milky white bell and tentacles. Mouth arms and gonads milky white to lemon yellow. Radial canals orange.

Life cycle: asexual reproduction by lateral budding, longitudinal/transverse fission.
Geographical and seasonal distribution: Mediterranean Sea, North Atlantic Ocean, North Pacific Ocean. Upper pelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=168771&lvl=0

107	Medusa without radial muscolature in the subumbrella	108
107	Medusa with radial muscolature in the subumbrella	110
108	Medusa with few broad canals in the lappets	

Desmonema gaudichaudi (Lesson, 1830)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Cyaneidae(Agassiz, 1862)
Genus *Desmonema* (Agassiz, 1862)
Desmonema gaudichaudi (Lesson, 1832)

Morpho-anatomical characteristics
Genus *Desmonema* (Agassiz, 1862):

- Bell flat;
- Tentacles thick, ribbon-like, arising in 8 straight lines at the base of marginal lappets;
- 4 mouth arms. Mouth with much folded lips;
- 16 radial pouches that extend from the stomach and branch into poorly developed canals only near the marginal lappets. Terminating in numerous, branching, blind canals within marginal lappets;
- Without ring canal;
- 8 rhopalia without ocelli;
- 4 gonads;
- Subumbrellar musculature well developed.

Desmonema gaudichaudi (Lesson, 1832):

- Bell 500-600mm wide, can reach 1500mm;
- Tentacles 80-480, inserted in a single line and not in a field, extending radially, broad, flattish oval in cross section;
- Radial canals branched and few wide canals into marginal lappets;
- Subumbrellar circular musculature divided in 16 bands;
- Colour of live specimens: gastric cavity brownish purple, mesoglea bluish and transparent. Bell white, white with dark spots, with dark centre and light margin with dark spots, or uniformly dark brownish purple or maroon-violet. Gonads brownish purple.

Life cycle: asexual reproduction by podocysts.
Geographical and seasonal distribution: South Atlantic Ocean, South Pacific Ocean, Antarctic Ocean. In April. Pelagic species.

108	Medusa with numerous narrow canals in the lappets	109
109	Tentacles not ribbon-like	

Desmonema chierchianum (Vanhöffen, 1888)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Cyaneidae(Agassiz, 1862)
Genus *Desmonema* (Agassiz, 1862)
Desmonema chierchianum (Vanhöffen, 1888)

Morpho-anatomical characteristics
Genus *Desmonema* (Agassiz, 1862):

- Bell flat;
- Tentacles thick, ribbon-like, arising in 8 straight lines at the base of marginal lappets;
- 4 mouth arms. Mouth with much folded lips;
- 16 radial pouches that extend from the stomach and branch into poorly developed canals only near the marginal lappets. Terminating in numerous, branching, blind canals within marginal lappets;
- Without ring canal;
- 8 rhopalia without ocelli;
- 4 gonads;

- Subumbrellar musculature well developed.

Desmonema chierchianum (Vanhöffen, 1888):

- Bell up to 1500mm wide. Flat, thickest in central part;
- Exumbrella smooth;
- 24 marginal lappets. 8 wide tentacular lappets, 16 narrower rhopalar lappets;
- Tentacles thin, circular in cross section, 30-250 per group, perhaps more in large specimens and probably increasing with age. May be 20m long in larger medusae;
- Mouth arms curtain-like, much folded, approximately of same lenght of bell, hanging down in live specimens;
- Gastrovascular canal system comprising 16 broad pouches terminating in narrow branching canals in lappets with some anastomoses;
- 4 gonads, sac-like, protrusive, much folded and hanging down conspicuosly below bell margin;
- Subumbrellar circular musculature divided in 16 bands, without radial musculature;
- Colour of live specimens: salmon red or brownish red. Canal system darker, tentacles lighter in colour. Some specimens may be marked on exumbrella with 16 broad radial streaks . Juveniles with bluish bell and tentacles, lips salmon or brownish red. Colour may partly follow recent diet.

Life cycle: asexual reproduction by podocysts. Sexual reproduction: Ephyrae 3 to10 mm wide are found in January and February, and Vanhöffen records a young medusa from Gauss Station, Kaiser Wilhelm Land on April 14th. This medusa was 38 mm in diameter, the mouth-arms 16 mm long. There were 8 principal tentacles about two-thirds as long as bell-diameter, and 4 of these were bordered on one side by a small tentacle of recent development.The lips and gastric cirri were brownish-red, other parts being translucent milky-blue.
Geographical and seasonal distribution: Western South Atlantic Ocean, South Africa. From December to June. Pelagic species.

109 Tentacles ribbon-like

Desmonema glaciale (Larson, 1986)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Cyaneidae(Agassiz, 1862)
Genus *Desmonema* (Agassiz, 1862)
Desmonema glaciale (Larson, 1986)

Morpho-anatomical characteristics
Genus *Desmonema* (Agassiz, 1862):

- Bell flat;
- Tentacles thick, ribbon-like, arising in 8 straight lines at the base of marginal lappets;
- 4 mouth arms. Mouth with much folded lips;
- 16 radial pouches that extend from the stomach and branch into poorly developed canals only near the marginal lappets. Terminating in numerous, branching, blind canals within marginal lappets;
- Without ring canal;
- 8 rhopalia without ocelli;
- 4 gonads;
- Subumbrellar musculature well developed.

Desmonema glaciale (Larson, 1986):

- Bell up to 1000mm wide, can reach 1500mm;
- Tentacles less than 80, ribbon-like, up to 5m long;
- Radial canals branched with numerous narrow canals into marginal lappets;
- Subumbrellar circular musculature divided in 16 bands.

Life cycle: asexual reproduction by podocysts.
Geographical and seasonal distribution: Antarctic Ocean. In deep waters.

110 Rhopalar and tentacular stomach pouches completely separated 111

110 Rhopalar and tentacular stomach pouches connected by anastomoses 112

111 Peripheral canals without, or with few anastomoses

Cyanea capillata (Linnaeus, 1758)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae

Ordo Semaeostomeae
Familia Cyaneidae(Agassiz, 1862)
Genus *Cyanea* (Peron & Lesuer, 1810)
Cyanea capillata (Linnaeus, 1758)



Synonims: *Cyanea arctica* (Peron & Lesuer, 1810), *Medusa capillata* (Linnaeus, 1746), *Cyanea fulva* (Agassiz, 1862)
Vernacular name: Tawny's Lion's mane, Lion's mane Jelly

Morpho-anatomical characteristics
Genus *Cyanea* (Peron & Lesuer, 1810):

- Bell flat;
- Tentacles numerous, fine, hair-like, arising from concentric horseshoe-shaped rows at the base of the 8 marginal lappets;
- 4 mouth arms. Mouth with 4 curtain-like lips;
- 16 radial pouches that extend from the stomach and branch into poorly developed canals only near the marginal lappets. Terminating in numerous, branching, blind canals within marginal lappets;
- Without ring canal;
- 8 rhopalia without ocelli;
- 4 gonads, much folded;
- Subumbrella with both circular and radial musculature.

Cyanea capillata (Linnaeus, 1758):

- Bell 300-500mm wide, can reach 1000-2000mm diameter. Saucer-shaped;
- Exumbrella smooth at centre, faintly papillose at periphery. With typical 8 pointed star shape at the end of contraction;
- 16 marginal lappets, 8 primary and 8 secondary. Occasionally further indented giving tertiary lappets;
- Tentacles up tp 150, hollow. Arranged in 8 horseshoe-shaped clusters. Usually 2m long, up to 9m long in big specimens;
- Mouth arms basally thickened;
- The central lenticular stomach gives rise to 16 radiating pouches, giving numerous branched canals which ramify through the lappets, without anastomosing;
- Rhopalia with exumbrellar sensory pit;
- 4 gonads, sac-like, folded;
- Subumbrellar radial musculature entirely outside the periphery of the circular musculature band. Musculature powerful and conspicuos;
- Color of live specimens: yellow ochre to reddish brown. Rarely colourless or blue, purple.

Life cycle: asexual reproduction by podocysts and sexual reproduction.
Geographical and seasonal distribution: Baltic sea, North Atlantic Ocean, North Sea, North Pacific Ocean. In summer. Semicosmopolitan, upper pelagic species.
Toxicity: sting causes moderately severe, persisting skin pain, piloerection, itching, edema, ulcerations, no systemic symptoms, may be possible muscle cramps and breathing problems after prolonged contact. This venom has hemolytic, cytotoxic,cardiotoxic, neurotoxic activities.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=27804&lvl=0

111 Peripheral canals with numerous anastomoses

Cyanea purpurea (Kishinouye, 1910)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Cyaneidae(Agassiz, 1862)
Genus *Cyanea* (Peron & Lesuer, 1810)
Cyanea purpurea (Kishinouye, 1910)

Morpho-anatomical characteristics
Genus *Cyanea* (Peron & Lesuer, 1810):

- Bell flat;
- Tentacles numerous, fine, hair-like, arising from concentric horseshoe-shaped rows at the base of the 8 marginal lappets;
- 4 mouth arms. Mouth with 4 curtain-like lips;
- 16 radial pouches that extend from the stomach and branch into poorly developed canals only near the marginal lappets. Terminating in numerous, branching, blind canals within marginal lappets;
- Without ring canal;

- 8 rhopalia without ocelli;
- 4 gonads, much folded;
- Subumbrella with both circular and radial musculature.

Cyanea purpurea (Kishinouye, 1910):
- Bell up to 300mm wide. Discoidal;
- 16 marginal lappets, broad and rather truncated at end;
- Tentacles numerous. Arranged in 8 horseshoe-shaped clusters;
- Stomach pouches completely separated, peripheral canals with numerous anastomoses forming a complicated network;
- musculature well developed;
- Colour of live specimens: bell violet, mouth arms reddish.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.
Toxicity: sting causes moderately severe skin pain, no systemic symptoms, altough nausea, vomiting and dizziness are recorded.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1249109&lvl=0

112 Peripheral canals with numerous anastomoses

Cyanea nozakii (Kishinouye, 1891)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Cyaneidae(Agassiz, 1862)
Genus *Cyanea* (Peron & Lesuer, 1810)
Cyanea nozakii (Kishinouye, 1891)

Vernacular name: Lion's mane Jelly

Morpho-anatomical characteristics
Genus *Cyanea* (Peron & Lesuer, 1810):
- Bell flat;
- Tentacles numerous, fine, hair-like, arising from concentric horseshoe-shaped rows at the base of the 8 marginal lappets;
- 4 mouth arms. Mouth with 4 curtain-like lips;
- 16 radial pouches that extend from the stomach and branch into poorly developed canals only near the marginal lappets. Terminating in numerous, branching, blind canals within marginal lappets;
- Without ring canal;
- 8 rhopalia without ocelli;
- 4 gonads, much folded;
- Subumbrella with both circular and radial musculature.

Cyanea nozakii (Kishinouye, 1891):
- Bell up to 500mm wide. Flat;
- 8 marginal lappets, round, large;
- 70-150 tentacles, up to 10m long when extended. Arranged in 8 clusters;
- Mouth arms fragile;
- Radial pouches connected with broad, transverse anastomoses, peripheral canals with numerous anastomoses forming a network;
- Colour of live specimens: bell milky white to cream. Tentacles reddish to translucent. Mouth arms orange to reddish brown.

Life cycle: asexual reproduction by podocysts.
Geographical and seasonal distribution: Indo West Pacific Ocean, Japan. Coastal habitat.
Toxicity: sting causes moderately severe skin pain, no systemic symptoms, altough nausea, vomiting and dizziness are recorded. Neurotoxic, hemolytic, and cytotoxic activities were observed.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=135523&lvl=0

112 Peripheral canals without, or with few anastomoses 113

113 Radial muscles originating from the outer side of coronal muscle

Cyanea buitendijki (Stiasny, 1919)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Cyaneidae(Agassiz, 1862)
Genus *Cyanea* (Peron & Lesuer, 1810)
Cyanea buitendijki (Stiasny, 1919)

Morpho-anatomical characteristics
Genus *Cyanea* (Peron & Lesuer, 1810):

- Bell flat;
- Tentacles numerous, fine, hair-like, arising from concentric horseshoe-shaped rows at the base of the 8 marginal lappets;
- 4 mouth arms. Mouth with 4 curtain-like lips;
- 16 radial pouches that extend from the stomach and branch into poorly developed canals only near the marginal lappets. Terminating in numerous, branching, blind canals within marginal lappets;
- Without ring canal;
- 8 rhopalia without ocelli;
- 4 gonads, much folded;
- Subumbrella with both circular and radial musculature.

Cyanea buitendijki (Stiasny, 1919):

- Bell up to 310mm wide;
- Tentacles 2-3 times as long as broad. Arranged in 8 horseshoe-shaped clusters;
- Rhopalar and tentacular stomach pouches connected with several broad transverse anastomoses. Peripheral canals without anastomoses;
- Subumbrellar radial musculature entirely outside the periphery of the circular musculature band.

Life cycle: asexual reproduction by podocysts.
Geographical and seasonal distribution: Central Indo West Pacific Ocean, Red Sea.
Toxicity: moderately severe skin pain, no systemic symptoms, altough nausea, vomiting and dizziness are recorded.

113 Radial muscles originating from the middle of coronal muscle

Cyanea mjobergi, (Stiasny, 1921)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Cyaneidae(Agassiz, 1862)
Genus *Cyanea* (Peron & Lesuer, 1810)
Cyanea mjobergi (Stiasny, 1921)

Vernacular name: Lion's mane Jelly

Morpho-anatomical characteristics
Genus *Cyanea* (Peron & Lesuer, 1810):

- Bell flat;
- Tentacles numerous, fine, hair-like, arising from concentric horseshoe-shaped rows at the base of the 8 marginal lappets;
- 4 mouth arms. Mouth with 4 curtain-like lips;
- 16 radial pouches that extend from the stomach and branch into poorly developed canals only near the marginal lappets. Terminating in numerous, branching, blind canals within marginal lappets;
- Without ring canal;
- 8 rhopalia without ocelli;
- 4 gonads, much folded;
- Subumbrella with both circular and radial musculature.

Cyanea mjobergi (Stiasny, 1921):

- Bell up to 140mm wide;
- Tentacles as long as broad. Arranged in 8 horseshoe-shaped clusters;
- Stomach pouches connected with several broad, transversee anastomoses. Peripheral canals without anastomoses;
- Radial muscles inserted in the middle of subumbrellar circular musculature.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Australia, Eastern Indian Ocean.

Toxicity: sting causes moderately severe skin pain, no systemic symptoms although nausea, vomiting ad dizziness are recorded.

114	Medusa with ring-canal	115
114	Medusa without ring-canal	123
115	Marginal lappets 48	

Undosa undulata (Stiasny,1935)

SISTEMATIC POSITION
Classis: Scyphozoa
SubClassis: Discomedusae
Ordo: Semaeostomeae
Familia: Ulmaridae (ex Aureliidae)
SubFamilia: Discomedusinae (ex Ulmarinae)
Genus: Undosa (Haeckel, 1880)
Species: U. undulata (Stiasny, 1935)

MORPHO-ANATOMICAL CHARACTERISTICS
Genus Undosa

- tentacles arising from umbrella margin, in cleft between the lappets
- 40 tentacles
- 48 marginal lappets
- 8 rhopalia
- 8 perradial and 8 interradial canals branched, 8 adradial canals simple
- with ring canal
- protrusive sac-like gonads without subgenital pits

Undosa undulata

- bell 12 cm wide, 4 cm high
- 16 rayed star-like figure on exumbrella

115	Not as above	116
116	Marginal lappets 16	117
116	Not as above	118
117	Oral arms broad, egg-shaped	

Ulmaris prototypus (Haeckel, 1880)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Ulmaris* (Haeckel, 1880)
Ulmaris prototypus (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Ulmaris* (Haeckel, 1880):

- 8 tentacles, arising from clefts between marginal lappets;
- 16 marginal lappets;
- 8 adradial tentacular canals simple, 8 rhopalar canals with lateral branches;
- With ring canal;
- 8 rhopalia;
- With protrusive, sac-like gonads. Without subgenital pits.

Ulmaris prototypus (Haeckel, 1880):

- Bell 30mm wide;
- Exumbrella covered with nematocyst warts;
- 8 tentacles;
- 16 marginal lappets, pointed, as long as broad;
- Mouth arms broad, egg-shaped;
- Canal system without anastomoses.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Atlantic Ocean. Mesopelagic species.
Toxicity: innocuos.
Notes: Mayer (1910) suggests that *Ulmaris prototypus* (Haeckel, 1880) is a juvenile of *Discomedusa* sp. in a stage with only 8 tentacles and 16 lappets.

117	Oral arms narrow and pointed	

Ulmaris snelliusi (Stiasny, 1935)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Ulmaris* (Haeckel, 1880)
Ulmaris snelliusi (Stiasny, 1935)

Morpho-anatomical characteristics
Genus *Ulmaris* (Haeckel, 1880):

- 8 tentacles, arising from clefts between marginal lappets;
- 16 marginal lappets;
- 8 adradial tentacular canals simple, 8 rhopalar canals with lateral branches;
- With ring canal;
- 8 rhopalia;
- With protrusive, sac-like gonads. Without subgenital pits.

Ulmaris snelliusi (Stiasny, 1935):

- Bell 18-25mm wide;
- Exumbrella with lines of nematocysts;
- 40 tentacles, arising from bell margin in clefts between the lappets;
- 48 marginal lappets, rectangular, broad, with concave edge;
- Mouth arms narrow, pointed;
- 8 aradial canals simple, 8 perradial and 8 interradial canals, branched;
- Gonads protrusive, sac-like. Without subgenital pits.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean. Mesopelagic species.

118	Marginal lappets 64	119
118	Marginal lappets 32	121
119	Tentacles 24	

Parumbrosa polylobata (Kishinouye, 1910)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Parumbrosa* (Kishinouye, 1910)
Parumbrosa polylobata (Kishinouye, 1910)

Morpho-anatomical characteristics
Genus *Parumbrosa* (Kishinouye, 1910):

- 64 marginal lappets, every 2 of which alternate with a sensory club or a tentacle;
- 24 tentacles;
- 8 perradial and 8 interradial canals branched, 8 aradial simple ones;
- 8 rhopalia;
- With ring canal;
- Gonads sac-like, without subgenital pits.

Parumbrosa polylobata (Kishinouye, 1910):

- Bell up to 160mm wide, very delicate;
- Exumbrella finely granulated;
- 64 marginal lappets. Velar lappets lanceolated, rhopalar lappets narrow, divergent;
- 24 tentacles, fairly long, with strong musculature and nematocysts in transverse bands;
- 4 mouth arms, as long as bell radius, lanceolated, finely frilled, with minute filaments on margin;
- 16 radial canals, broad but not uniform in calibre;
- 4 gonads, long, narrow, transversely folded;
- Colour of live specimens: transparent.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North West Pacific, Japan, Philippine Sea, in June. Benthopelagic species.

Toxicity: innocuos.
Notes: Mayer (1910) suggests *Discomedusa philippina* (Mayer, 1910) is a young stage of *Parumbrosa polylobata* (Kishinouye, 1910).

119 Tentacles 16 120

120 Anastomoses absent

Diplulmaris antarctica (Maas, 1908)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Diplulmaris* (Maas, 1908)
Diplulmaris antarctica (Maas, 1908)

Morpho-anatomical characteristics
Genus *Diplulmaris* (Maas, 1908):

- Bell flat, thin;
- 64 marginal lappets;
- 16 tentacles arising from bell margin, in clefts between the lappets;
- 4 mouth arms, curtain-like;
- 16 rhopalar radial canals, branched. 16 tentacular canals, unbranched;
- 16 rhopalia;
- With ring canal;
- Gonads protrusive, sac-like, without subgenital pits.



Diplulmaris antarctica (Maas, 1908):

- Bell up to 180mm wide, usually 50mm. Flat, flexing during swimming. Mesoglea thin, transparent;
- Marginal lappets pointed. Rhopalar ones slightly greater than tentacular ones;
- 48 tentacles, laterally compressed, stout basally, extensible up to 2 times bell diameter. In life held remarkably straight and at varied, irregular angles;
- 4 mouth arms, about as long as bell diameter. Sides much prolonged and curtain-like, somewhat folded;
- Stomach circular, 1/3 of bell diameter;
- Up to 96 radial canals with same width as gap between each and next. all unbranched for inner ½-1/3 of lenght, somewhat regularly anastomosed in outer 1/3;
- 4 gonads. When mature forming a single wide ring around stomach, eventually protruding through. Without subgenital cavity or subgenital ostia;
- Colour of live specimens: possibly partly reflecting feeding history. Recorded as transparent excepting yellowish brown canal system and dull purple tentacles (Mayer, 1910). Gonads, gastrodermis of stomach and mouth arms orange (Rybakov, 1976). Gonads bright orange, rest colourless (BBC, 1993).

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Southern Ocean, from January to March. Oceanic species.

120 Anastomoses present

Diplulmaris malayensis (Stiasny, 1935)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Diplulmaris* (Maas, 1908)
Diplulmaris malayensis (Stiasny, 1935)

Morpho-anatomical characteristics
Genus *Diplulmaris* (Maas, 1908):

- Bell flat, thin;
- 64 marginal lappets;
- 16 tentacles arising from bell margin, in clefts between the lappets;
- 4 mouth arms, curtain-like;
- 16 rhopalar radial canals, branched. 16 tentacular canals, unbranched;
- 16 rhopalia;
- With ring canal;
- Gonads protrusive, sac-like, without subgenital pits.

Diplulmaris malayensis (Stiasny, 1935):

- Bell up to 30mm wide. Flat, thin;
- Exumbrella with numerous nematocyst warts;
- Marginal lappets wide, flat;
- 48 tentacles, laterally compressed, extensible up to 2 times bell diameter. With nematocyst warts;
- 4 mouth arms, as long as bell diameter. Curtain-like;
- Tentacular canals narrower than rhopalar ones, with a marginal network of anastomoses;
- Colour of live specimens: transparent.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo pacific Ocean.

121 Tentacles 32 or 48

Discomedusa lobata (Claus, 1877)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Discomedusa* (Claus, 1878)
Discomedusa lobata (Claus, 1877)

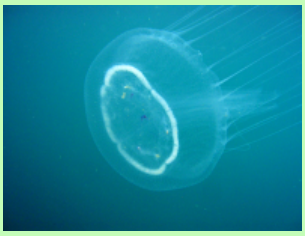
Synonims: *Undosa undulata* (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Discomedusa* (Claus, 1878):

- Bell flat, thick;
- 32 marginal lappets;
- 24 tentacles arising from bell margin, in clefts between the lappets;
- 4 mouth arms, thick and broad;
- 8 perradial and 8 interradial canals, branched. 8 aradial canals, unbranched;
- 8 rhopalia;
- With ring canal;
- Gonads sac-like, without subgenital pits.

Discomedusa lobata (Claus, 1877):

- Bell 120-400mm wide. Flat, thick;
- Exumbrella with nematocyst warts in star pattern aligned with ridges in underlying mesoglea;
- 32 marginal lappets. 16 rhopalar ones as wide as 16 tentacular ones but somewhat longer and with central notch;
- 32-48 tentacles, 16 longer rimary ones alternated with 16 secondary ones. Eventual shorter tertiary ones arising in correspondence of rhopalar lappets notches;
- 4 mouth arms, thick and broad, curtain-like, folded, with numerous filaments;
- 8 aradial canals unbranched nearr margin. 8 perradial and 8 interradial canals much anastomosing peripherally, but leaving 16 triangular patches of mesoglea internally, without gastrovascular canals;
- Ring canal following margin of bell in 16 shallow to nearly flat curves, in subcrenate pattern;
- 4 gonads, sac like at maturity,projecting from subumbrella floor. without subgenital ostia;
- Colour of live specimens: exumbrella with 16 radial streaks comprising numerous dark brown pigmented spots.



Life cycle: The young medusa of *Discomedusa lobata* (Claus, 1877) passes through a stage wherein there are only 16 lappets and 8 adradial tentacles. The 8 adradial canals are simple and the 8 perradial and interradial ones branched.
Geographical and seasonal distribution: Eastern North Atlantic, North Sea, Mediterranean Sea,from December to March.
Notes: According to Pagés (1992), *Discomedusa lobata* (Claus, 1877) and *Undosa undulata* (Haeckel, 1880) are a single species. During 2 cruises, specimens collected exhibit characters common to both species, besides the number of marginal lappets and tentacles, which demonstrated to be quite variable. Since invariable morphological characters are required to identify a species, there are few citations of both species and new records were collected in a short time in the same zone, Pagés suggests there is only a single species. Applying the law of priority of the zoological nomenclature, this has to be *Discomedusa lobata* (Claus, 1877).

121 Tentacles 24 122

122 Perradial canals branched

Discomedusa philippina (Mayer, 1910)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Discomedusa* (Claus, 1878)
Discomedusa philippina (Mayer, 1910)

Morpho-anatomical characteristics
Genus *Discomedusa* (Claus, 1878):

- Bell flat, thick;
- 32 marginal lappets;
- 24 tentacles arising from bell margin, in clefts between the lappets;
- 4 mouth arms, thick and broad;
- 8 perradial and 8 interradial canals, branched. 8 aradial canals, unbranched;
- 8 rhopalia;
- With ring canal;
- Gonads sac-like, without subgenital pits.

Discomedusa philippina (Mayer, 1910):

- Bell 30mm wide;
- Exumbrella with numerous prominent nematocyst warts;
- Marginal lappets oval, all alike;
- 24 tentacles, 8 aradial longer and stouter than the others;
- 4 mouth arms, thick and broad, curtain-like. Mouth with 4 simple crenulated lips;
- 8 aradial canals unbranched arise from central stomach and reach the ring canal. an anastomosing network of canals arise from stomach and fuse with ring canal, but do not fuse with the 8 aradial canals;
- The outer side of ring canal gives rise to 64 simpe, unbranched, blindly ending diverticula, a pair in each lappet;
- 4 crescentic shaped gonads.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean.
Toxicity: innocuos.
Notes: Mayer (1910) suggests *Discomedusa philippina* (Mayer, 1910) is a young stage of *Parumbrosa polylobata* (Kishinouye, 1910).

122 Perradial canals not branched

Floresca parthenia (Haeckel, 1880)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Ulmaridae (Haeckel, 1880)
Genus *Floresca* (Haeckel, 1880)
Floresca parthenia (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Floresca* (Haeckel, 1880):

- Bell round shaped;
- 32 marginal lappets;
- Tentacles arising from bell margin, in clefts between the lappets;
- 16 unbranched radial canals;
- 8 rhopalia;
- With ring canal;
- Gonads sac-like, without subgenital pits.

Floresca parthenia (Haeckel, 1880):

- Bell 500mm wide, 300mm high, rounded;
- Exumbrella with a 16-rayed pigmented star-like pattern;
- 32 marginal lappets, tongue shaped;
- 24 tentacles, hollow, 2-3 times as long as bell diameter;
- Mouth with 4 complexly folded, leaf-shaped lips;
- 16 unbranched radial canals, connected to a marginal ring canal;
- 4 semicircular gonads, lined on inner side by a row of gastric cirri.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.
Toxicity: innocuos.
Notes: According to Mayer (1910), Haeckel is the only naturalist that has seen *Floresca parthenia* (Haeckel, 1880). The specimen, which appeared immature, was preserved and Haeckel didn't cut any section. Thus Mayer suggests this species may be the young stage of another Ulmaridae.

123 Stomach pouches 32 124

123 Stomach pouches 16 125

124 Subgenital pits heart-shaped

Sanderia malayensis (Goette, 1886)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Sanderia* (Goette, 1886)
Sanderia malayensis (Goette, 1886)

Synonims: *Neopelagia eximia* (Kishinouye, 1910)

Morpho-anatomical characteristics
Genus *Sanderia* (Goette, 1886):

- Bell thin;
- Exumbrella with conspicuos, flattened, nematocyst warts;
- 32 marginal lappets;
- 16 tentacles, flattened laterally, alternated with rhopalia, with nematocyst warts on both sides;
- 3-4 mouth arms, linear, surrounding a central mouth;
- Gastrovascular system comprising 32 radiating gastric pouches;
- Without ring canal;
- 16 rhopalia;
- 4 gonads, each in 14-30 finger-like external, pendant papillae, lining rim of gastric pouches. Subgenital ostia heart-shaped.



Sanderia malayensis (Goette, 1886):

- Bell up to 75mm wide, thin;
- Exumbrella with conspicuos, flattened, solid nematocyst tipped papillae over entire surface. In some specimens, papillae concentrated more on central part and radiating in rows towards marginal lappets;
- Marginal lappets squared, each with 2 triangular extensions in correspondence of gastric pouches;
- Tentacles flattened;
- Mouth arms linear, narrow, with small round nematocyst patches;
- Gastric pouches unequal, tentacular ones broader proximally and distally than rhopalar ones;
- Rhopalia open to subumbrellar side, with blind ending, outward pointing exumbrellar cone;
- Gonads forming a small number of ridges and subsequantly elongating into finger-like papillae and growing in number to a mature stage with up to 30 papillae;
- Colour of live specimens: bell yellow, central part with reddish flecks which extend outwards in the radii of rhopalia and tentacles. Mouth arms covered with reddish spots. Gonads pinkish. Colour of preserved specimens: translucent.

Life cycle: asexual reproduction by lateral budding, stolons, longitudinal/transverse fission.
Geographical and seasonal distribution: Red Sea, South Pacific Ocean.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=128131&lvl=0

124 Subgenital pits horseshoe-shaped

Sanderia pampinosus (Gershwin & Zeidler, 2008)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Sanderia* (Goette, 1886)

Sanderia pampinosus (Gershwin & Zeidler, 2008)

Morpho-anatomical characteristics

Genus *Sanderia* (Goette, 1886):

- Bell thin;
- Exumbrella with conspicuos, flattened, nematocyst warts;
- 32 marginal lappets;
- 16 tentacles, flattened laterally, alternated with rhopalia, with nematocyst warts on both sides;
- 3-4 mouth arms, linear, surrounding a central mouth;
- Gastrovascular system comprising 32 radiating gastric pouches;
- Without ring canal;
- 16 rhopalia;
- 4 gonads, each in 14-30 finger-like external, pendant papillae, lining rim of gastric pouches. Subgenital ostia heart-shaped.

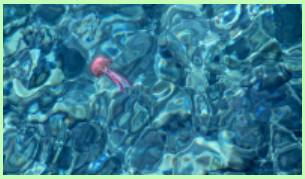
Sanderia pampinosus (Gershwin & Zeidler, 2008):

- Bell up to 75mm wide, thin;
- Exumbrella with conspicuos, flattened, solid nematocyst tipped papillae over entire surface, appearing to arise from transparent “holes” in translucent exumbrella. In some specimens, papillae concentrated more on central part and radiating in rows towards marginal lappets. Without subumbrellar nematocyst warts;
- Marginal lappets squared, each with 2 triangular extensions in correspondence of gastric pouches;
- Tentacles flattened, as long as bell diameter, with nematocysts scattered in round patches, larger on abaxial side;
- Mouth arms fleshy, about as long as bell diameter, narrow, with sparsely scattered small, round, nematocyst patches;
- Gastric pouches unequal, tentacular ones broader proximally and distally than rhopalar ones;
- Rhopalia open to subumbrellar side, with blind ending, outward pointing exumbrellar cone;
- Gonads with approximately 40 papillae lining each gastric pouch;
- Colour of live specimens: unknown. Colour of preserved specimens: translucent with pinkish gonads.

Life cycle: asexual reproduction by podocysts.
Geographical and seasonal distribution: Australia, in autumn.

125	Marginal lappets 16	126
125	Not as above	127
126	Nematocyst warts about as long as wide	

Pelagia noctiluca (Forsskål, 1775)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Pelagia* (Peron & Lesuer, 1810)
Pelagia noctiluca (Forsskål, 1775)

Synonims: *Medusa noctiluca* (Forsskal, 1775), *Pelagia perla* (Slabber, 1781), *Pelagia cyanella* (Hoese, 1973)
Vernacular name: Oceanic Jelly, Purple Jelly, Mauve Stinger, Warty Jelly

Morpho-anatomical characteristics

Genus *Pelagia* (Peron & Lesuer, 1810):

- Bell dome-shaped;
- Exumbrella with conspicuos warts;
- 16 marginal lappets;
- 8 tentacles, arising from clefts between marginal lappets, alternating with rhopalia;
- 4 mouth arms, long, frilly, simple, surrounding a central mouth;
- Gastrovascular system comprising 16 pouches, all alike, completely separated, ending with a pair of unbranched canals;
- Without ring canal;
- 8 rhopalia with shallow exumbrellar sensory pits;
- 4 gonads, much folded;
- Direct life cycle, without polyp stage.

Pelagia noctiluca (Forsskål, 1775):

- Bell 35-130mm wide. Sides of bell relatively straight and sloping, apex flat;
- Exumbrella with numerous nematocyst warts, arranged in more or less irregular lines radiating from apex;
- Marginal lappets squared with rounded corners and a small median incision;
- 8 tentacles, 2-3 times as long as bell diameter, hollow, proximal base elliptical;
- Mouth arms, 1,5 times as long as bell diameter, linear, with numerous nematocyst warts on distal part;
- 4 gonads, appearing as 4 elongated ridges in the entoderm of subumbrella;
- Subumbrellar circular musculature well developed;
- Colour of live specimens: bell rich rose-purple. Gastric cavity darker. Mouth arms and tentacles mauve pink to yellowish brown. Exumbrellar warts orange-brownish red. Gonads purple (males) or reddish (female)With green luminescence.

Life cycle: purely oceanic species, a benthic scyphistoma stage is entirely bypassed, with the planula larva developing directly into an ephyra, and ephyra into medusa. The biological cycle of *Pelagia noctiluca* (Forsskal, 1775) is annual; for this reason it shows high natural mortality, typical of short life-cycle species. Its reproductive period was also extensively studied and it was observed that *Pelagia noctiluca* reproduces throughout the year.
Geographical and seasonal distribution: North Pacific Ocean, North Atlantic Ocean, North Sea, Mediterranean Sea, Red Sea. In spring and late summer. Pelagic oceanic species.
Toxicity: *Pelagia noctiluca* (Forsskål, 1775) is a strong stinging jellyfish; its venom can produce erythema, edema and vesicles as well as persisting pain in the stung skin. Nevertheless, the damage is generally neither severe nor prolonged; the systemic symptoms are extremely uncommon, even though pain, distress, generalized allergy, bronchospasm, dyspnoea, pruritus, urticaria-like lesions and hyperpigmentation were reported.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=400838&lvl=0

126 Nematocyst warts highly protrusive, more long than wide

Pelagia flaveola (Eschscholtz, 1829)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Pelagia* (Peron & Lesuer, 1810)
Pelagia flaveola (Eschscholtz, 1829)

Synonims: *Pelagia tahitiana* (Agassiz & Mayer, 1902), *Pelagia papillata* (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Pelagia* (Peron & Lesuer, 1810):

- Bell dome-shaped;
- Exumbrella with conspicuos warts;
- 16 marginal lappets;
- 8 tentacles, arising from clefts between marginal lappets, alternating with rhopalia;
- 4 mouth arms, long, frilly, simple, surrounding a central mouth;
- Gastrovascular system comprising 16 pouches, all alike, completely separated, ending with a pair of unbranched canals;
- Without ring canal;
- 8 rhopalia with shallow exumbrellar sensory pits;
- 4 gonads, much folded;
- Direct life cycle, without polyp stage.

Pelagia flaveola (Eschscholtz, 1829):

- Bell 160-300mm wide. Hemispherical;
- Exumbrella with evident, highly protrusive, egg-shaped nematocyst warts which cluster thickly at apex;
- Marginal lappets rounded, double, twice as wide as long;
- 8 tentacles, with elliptical proximal base; Colour of live specimens: light yellow background, tentacles citron yellow. Gonads brownish yellow. Nematocyst warts tipped with orange. Mouth arms light brown to orange red.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Indo Pacific Ocean.
Notes: NOMEN DUBIUM.

127	Marginal lappets 48	128
127	Marginal lappets 32	130
128	Tentacles all alike	

Chrysaora fulgida (Reynaud, 1830)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Chrysaora* (Peron & Lesuer, 1810)
Chrysaora fulgida (Reynaud, 1830)

Synonims: *Chrysaora africana* (Vanhöffen, 1902), *Chrysaora reynaudi* (Reynaud, 1830), *Chrysaora reynaudii* (Reynaud, 1830), *Dactylometra africana* (Vanhöffen, 1902), *Dactylometra fulgida* (Reynaud, 1830) *Medusa fulgidum* (Reynaud, 1830)
Vernacular name: Sea Nettle

Morpho-anatomical characteristics
Genus *Chrysaora* (Peron & Lesuer, 1810):

- Bell dome-shaped;
- Exumbrella without conspicuos warts;
- 32 or more marginal lappets;
- Tentacles 24 or more, arising from clefts between marginal lappets;
- 4 mouth arms, long, frilly, simple;
- Gastrovascular system comprising 16 pouches, rhopalar ones narrower than tentacular ones;
- Without ring canal;
- 8 rhopalia with deep exumbrellar sensory pits;
- 4 gonads, much folded;
- Colour of species may be various, with a range of density, so it can be misleading in identification;
- Ephyrae with clusters of nematocysts on each side of rhopalia.

Chrysaora fulgida (Reynaud, 1830):

- Bell 200-300mm wide, can reach 800mm. Flatly hemispherical, central part thick and cartilagineous. Mesoglea flexible;
- Exumbrella finely granulated;
- 48 marginal lappets, round thick, all alike;
- 24-40 tentacles, as long as bell diameter, thin, easily lost;
- 4 mouth arms, as long as bell diameter,with basal part particularly broad. With highly developed frillt margins;
- 16 gastric pouches, uniformly wide centrally, tentacular pouches enlarged distally;
- 8 rhopalia with a thickened region of mesoglea at intersection
- 4 gonads, semicircular, much folded;
- Colour of live specimens: bell red, pink in juvenile specimens, with 16 darker red or brown spokes radiating from centre to margin. Marginal lappets and tentacles red. Mouth arms orange.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Africa.
Toxicity: innocuos.
Notes: according to Stiasny (1935), *Chrysaora africana* (Vanhöffen, 1902) is an older stage of *Chrysaora fulgida* (Reynaud, 1830).

128	Tentacles different in length	129
129	Tentacles usually 5 per octant, 1 central primary, 2 lateral secondary about half in length, 2 tertiary, between former two types, about 1/4 as long as the median	

Chrysaora lactea (Eschscholtz, 1829)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Chrysaora* (Peron & Lesuer, 1810)
Chrysaora lactea (Eschscholtz, 1829)

Synonims: *Chrysaora blossevillei* (Lesson, 1830), *Dactylometra lactea* (Eschscholtz, 1829), *Lobocrocis blossevillii* (Lesson, 1830), *Pelagia volutata* (Couthouy, 1862), *Zygonema volutata* (Agassiz, 1862)

Morpho-anatomical characteristics

Genus *Chrysaora* (Peron & Lesuer, 1810):

- Bell dome-shaped;
- Exumbrella without conspicuos warts;
- 32 or more marginal lappets;
- Tentacles 24 or more, arising from clefts between marginal lappets;
- 4 mouth arms, long, frilly, simple;
- Gastrovascular system comprising 16 pouches, rhopalar ones narrower than tentacular ones;
- Without ring canal;
- 8 rhopalia with deep exumbrellar sensory pits;
- 4 gonads, much folded;
- Colour of species may be various, with a range of density, so it can be misleading in identification;
- Ephyrae with clusters of nematocysts on each side of rhopalia.

Chrysaora lactea (Eschscholtz, 1829):

- Bell 60-120mm wide, can reach 250mm. Almost hemispherical. Mesoglea thin, flexible;
- Exumbrella finely granulated with very small nematocyst warts;
- 48 marginal lappets, rounded;
- 24-40 tentacles, as long as bell diameter;
- 4 mouth arms, broad, delicate, with frilly margin, slightly coiled at distal end;
- 16 gastric pouches, uniformly wide centrally, tentacular pouches enlarged distally;
- 4 gonads, semicircular, much folded. Subgenital ostia oval;
- Colour of live specimens: milky white background with small brown spots on exumbrella and mouth arms. Nematocysts on exumbrella milky yellow. Some specimens with a radial pattern of brownish triangles. Rhopalia yellowish. Gonads dull milky pink.

Life cycle: planula: elongated, pear shaped, 0,14-0,2mm long, whitish. Scyphistoma: conical to goblet shaped, 2,2mm high, oral disc 1,2mm wide. 12-21, typically 16 tentacles, 5 times as long as polyp height, whitish to cream. Podocysts: trapezoid, 0,2-0,3mm wide, yellowish brown. Strobila: polydisc (2-10 ephyrae), whitish. Strobilation lasting about 10 days. Ephyra: with 8 arms/lobes, 16 marginal lappets, 8 rhopalia, 1mm wide after release, transparent.
Geographical and seasonal distribution: Caribbean Sea, South West Atlantic Ocean.
Toxicity: sting can cause mild effects, lasting 30-60 minutes.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880220&lvl=0

129 Tentacles 5 per octant, 3 primary arising from deep cleft between tentacular lappets and 2 lateral and shorter secondary, arising from subumbrellar side of rhopalar lappets

Chrysaora quinquecirrha (Desor, 1848)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Chrysaora* (Peron & Lesuer, 1810)
Chrysaora quinquecirrha (Desor, 1848)

Synonims: *Dactylometra quinquecirrha* (Desor, 1848), *Pelagia quinquecirrha* (Desor, 1848), *Bathyluca solaris* (Mayer, 1900)
Vernacular name: Sea Nettle, Stinging Nettle

Morpho-anatomical characteristics

Genus *Chrysaora* (Peron & Lesuer, 1810):

- Bell dome-shaped;
- Exumbrella without conspicuos warts;
- 32 or more marginal lappets;
- Tentacles 24 or more, arising from clefts between marginal lappets;
- 4 mouth arms, long, frilly, simple;
- Gastrovascular system comprising 16 pouches, rhopalar ones narrower than tentacular ones;
- Without ring canal;
- 8 rhopalia with deep exumbrellar sensory pits;
- 4 gonads, much folded;

- Colour of species may be various, with a range of density, so it can be misleading in identification;
- Ephyrae with clusters of nematocysts on each side of rhopalia.

Chrysaora quinquecirrha (Desor, 1848):
- Bell 250-400mm wide. Almost hemispherical, with flatter apex;
- Exumbrella finely granulated;
- 48 marginal lappets, rounded;
- 40 tentacles, in each octant, 3 primary ones arising from deep clefts between tentacular lappets and 2 shorter secondary ones arising from subumbrellar side of rhopalar lappets;
- 4 mouth arms, with frilly edges, may be 6-15 times as long as bell diameter;
- 16 gastric pouches, of equal width;
- 4 gonads, semicircular, much folded;
- Colour of live specimens: background colour whitish, pinkish or yellowish, sometimes with reddish to brownish specklings and streaks. Mouth arms pale yellow to pale pink, sometimes with reddish or purplish spots or radial stripes. Gonads pink in males, yellowish, ashgray or grayish brown in females.

Life cycle: planula elongated, pear-shaped. Scyphistoma conical to goblet-shaped, 4mm high, oral disc 1,5mm wide. 13-20, typically 16 tentacles, 5 times as long as polyp height, whitish to cream. Podocysts trapezoid, 0,35-0,45mm wide, yellowish brown. Strobila polydisc (3-5 ephyrae), pinkish, strobilation lasting about 10 days. Ephyra with 8 arms/lobes, 16 marginal lappets, 8 rhopalia, 2,5mm wide after release, pinkish.
Geographical and seasonal distribution: Western North Atlantic Ocean, East Coast of USA, from spring to autumn. Neritic species.
Toxicity: sting painful to severe, causing irritating skin rush and systemic symptoms as painful breathing, nasal and respiratory catarrh, vomiting, fever, muscular cramps. Medical attention may be needed.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6148&lvl=0

130 Tentacles 8

Chrysaora colorata (Russel, 1964)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Chrysaora* (Peron & Lesuer, 1810)
Chrysaora colorata (Russell, 1964)

Synonims: *Pelagia colorata* (Russell, 1964), *Pelagia cyanella* (Hartman & Emery, 1956), *Pelagia noctiluca panopyra* (Fox & Millot, 1954), *Pelagia panopyra* (Fewkes, 1889)
Vernacular name: Purple Striped Jelly

Morpho-anatomical characteristics
Genus *Chrysaora* (Peron & Lesuer, 1810):
- Bell dome-shaped;
- Exumbrella without conspicuos warts;
- 32 or more marginal lappets;
- Tentacles 24 or more, arising from clefts between marginal lappets;
- 4 mouth arms, long, frilly, simple;
- Gastrovascular system comprising 16 pouches, rhopalar ones narrower than tentacular ones;
- Without ring canal;
- 8 rhopalia with deep exumbrellar sensory pits;
- 4 gonads, much folded;
- Colour of species may be various, with a range of density, so it can be misleading in identification;
- Ephyrae with clusters of nematocysts on each side of rhopalia.

Chrysaora colorata (Russell, 1964):
- Bell 300-500mm wide, frequently 700mm,can reach 1000mm.Hemispherical and massive. Mesoglea greatly thickened especially on rhopalar axis;
- Exumbrella finely granulated;
- 32 marginal lappets, broadly rounded;
- 8 tentacles, hollow, alternating with rhopalia. Typically bulging inward. With bases laterally compressed;
- 4 mouth arms, extremely frilly and typically coiled and entwined, appearing as one large mass tapering towards end. Reported to be over 6m long;

- 16 gastric pouches, uniformly wide centrally, tentacular pouches enlarged distally;
- 8 rhopalia with a thickened region of mesoglea at intersection
- 4 gonads, nearly concealed by thick subumbrellar mesogleal rings surrounding the ostia;
- Colour of live specimens: bell white to silvery, with 16 purple to brownish purple stripes radiating from a purple apical ring. Stripes typically flanked distally by 2 arrow shaped purple blotches and numerous small flecks. Tentacles reddish except proximal zone, where colourless on outer face with faint purple sheen on inner side. Gonads purple brownish in females, lilac in males.

Life cycle: planula unknown, Scyphistoma conical to goblet shaped, 2-5mm in height. Oral disc 1,5-2mm wide. 16 tentacles, 3 times as long as polyp height. Whitish. Podocysts: trapezois, 0,2-0,5mm wide, greenish-yellow. Strobila: polydisc (up to 56 ephyrae), purple, strobilation lasting almost 15 days. Ephyra typically with 8 arms, 16 marginal lappets, pointed, 8 rhopalia, 2-3 mm diameter after release, purple with a nematocyst concentration on each side of rhopalia (on the lappets).
Geographical and seasonal distribution: Western California, North-Eastern Pacific Ocean.
Toxicity: sting painful with cutaneous rash, lasting approximately 1 hour.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=168767&lvl=0

130 Tentacles 24 131

131 Exumbrella usually whitish or pale-brownish, with 16 typical gold-brown or yellow-brown marks, bordered by darker V-shaped lines radiating from central region

Chrysaora hysoscella (Linnaeus, 1766)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Chrysaora* (Peron & Lesuer, 1810)
Chrysaora hysoscella (Linnaeus, 1766)

Synonims: *Chrysaora isosceles* (Peron & Lesuer, 1810), *Chrysaora lesuer* (Peron & Lesuer, 1810), *Chrysaora macrogona* (Peron & Lesuer, 1810), *Chrysaora mediterranea* (Peron & Lesuer, 1810), *Chrysaora pleurophora* (Peron & Lesuer, 1810), *Chrysaora spilhemigona* (Peron & Lesuer, 1810), *Chrysaora spilogona* (Peron & Lesuer, 1810)
Vernacular name: Compass Jelly

Morpho-anatomical characteristics
Genus *Chrysaora* (Peron & Lesuer, 1810):
- Bell dome-shaped;
- Exumbrella without conspicuos warts;
- 32 or more marginal lappets;
- Tentacles 24 or more, arising from clefts between marginal lappets;
- 4 mouth arms, long, frilly, simple;
- Gastrovascular system comprising 16 pouches, rhopalar ones narrower than tentacular ones;
- Without ring canal;
- 8 rhopalia with deep exumbrellar sensory pits;
- 4 gonads, much folded;
- Colour of species may be various, with a range of density, so it can be misleading in identification;
- Ephyrae with clusters of nematocysts on each side of rhopalia.

Chrysaora hysoscella (Linnaeus, 1766):
- Bell 150-630mm wide. Saucer shaped, thick. Mesoglea flexible;
- Exumbrella finely granulated;
- 32 marginal lappets, rounded, thin;
- 24 tentacles, all arising from edge of bell in clefts between the lappets;
- 4 mouth arms, up to 5 times as long as bell diameter, narrow, with broad, weakily coiled margin. Extreme terminal region spirally coiled, but may be lost;
- 16 gastric pouches, uniformly wide centrally, tentacular pouches enlarged distally;
- 4 gonads, protrusive, much folded;
- Colour of live specimens: variable. Frequently whitish to pale brownish with 16 gold brown or yellow brown marks, bordered by darker V-shaped lines radiating from central region. Marginal lappets brown. Mouth arms brown with whitish margin.

Life cycle: Asexual reproduction by: podocysts, lateral budding. *Chrysaora hysoscella* (Linnaeus, 1766) is mature in winter in the Adriatic Sea. The eggs segment in the ovaries and are set free as pear-shaped planulae in March and April. Scyphistoma conical to goblet-shaped, up to 2,5mm high. 14-16, typically 16 tentacles, 5 times as long as polyp height. Whitish to cream. Polyps strobilate in September and October and each gives rise to 2-6 ephyrae. Strobilation lasts about 10 days. Ephyra with 8 arms/lobes, 16 marginal lappets, 8 rhopalia, 1,5-2mm wide after release, pale orange.
Geographical and seasonal distribution: Eastern North Atlantic Ocean, North Sea, Mediterranean Sea. From May till September. Coastal habitat.
Toxicity: sting causes dermatitis with itching and burning, observed within 20 minutes from contact. Within few hours symptoms tend to spontaneously disappear.

131 Not as above 132

132 Exumbrella yellowish-brown or reddish-yellow with 32-rayed chestnut-brown star

Chrysaora helvola (Brandt, 1838)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Chrysaora* (Peron & Lesuer, 1810)
Chrysaora helvola (Brandt, 1838)

Synonims: *Chrysaora caliparea* (Haeckel, 1880), *Chrysaora chinensis* (Vanhöffen, 1902)
Vernacular name: Indonesian Sea Nettle

Morpho-anatomical characteristics
Genus *Chrysaora* (Peron & Lesuer, 1810):

- Bell dome-shaped;
- Exumbrella without conspicuos warts;
- 32 or more marginal lappets;
- Tentacles 24 or more, arising from clefts between marginal lappets;
- 4 mouth arms, long, frilly, simple;
- Gastrovascular system comprising 16 pouches, rhopalar ones narrower than tentacular ones;
- Without ring canal;
- 8 rhopalia with deep exumbrellar sensory pits;
- 4 gonads, much folded;
- Colour of species may be various, with a range of density, so it can be misleading in identification;
- Ephyrae with clusters of nematocysts on each side of rhopalia.

Chrysaora helvola (Brandt, 1838):

- Bell 100-300mm wide. Hemispherical or flatter;
- Exumbrella smooth;
- 32 marginal lappets, oval;
- 24 tentacles, flat, ribbon-like;
- 4 mouth arms, with broad frilly margin. Over 4m long;
- 16 gastric pouches, rhopalar ones oval,tentacular ones rectangular ;
- Colour of live specimens: bell yellowish brown or reddish yellow with 32 rayed chestnut brown stars. Marginal lappets and mouth arms speckled with rusty red. Tentacles dark rusty red.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1193141&lvl=0

132 Not as above 133

133 Exumbrella reddish-brown or purplish-pink with 16 broad, darker radial bands and numerous light spots

Chrysaora plocamia (Lesson, 1830)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Chrysaora* (Peron & Lesuer, 1810)
Chrysaora plocamia (Lesson, 1830)

Synonims: *Cyanea plocamia* (Lesson, 1830), *Stenoptycha plocamia* (Lesson, 1830)

Morpho-anatomical characteristics

Genus *Chrysaora* (Peron & Lesuer, 1810):

- Bell dome-shaped;
- Exumbrella without conspicuos warts;
- 32 or more marginal lappets;
- Tentacles 24 or more, arising from clefts between marginal lappets;
- 4 mouth arms, long, frilly, simple;
- Gastrovascular system comprising 16 pouches, rhopalar ones narrower than tentacular ones;
- Without ring canal;
- 8 rhopalia with deep exumbrellar sensory pits;
- 4 gonads, much folded;
- Colour of species may be various, with a range of density, so it can be misleading in identification;
- Ephyrae with clusters of nematocysts on each side of rhopalia.

Chrysaora plocamia (Lesson, 1830):

- Bell 300-1000mm wide, typically 500mm. Almost hemispherical, fleshy;
- Exumbrella smooth;
- 32 marginal lappets, squared. 16 tentacular lappets slightly wider than the 16 rhopalar ones;
- 24 tentacles;
- 4 mouth arms, linear, fleshy, heavily frilled, coiled at end. P to 5m long;
- 16 gastric pouches, uniformly wide centrally, tentacular pouches enlarged distally;
- 4 gonads, semicircular, much folded. Subgential ostia small, rounded;
- Colour of live specimens: different colour patterns, each seldom recorded. Usually reddish brown to purplish pink with 16 broad, darker radial bands and numerous lighter spots. Mouth arms brownish white. Gonads whitish to pale pink.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Gulf of Mexico, South Atlantic Ocean, South Pacific Ocean.
Toxicity: Sting recorded as irritating but not severe, lasting 30-60 minutes. The mildly toxic venom of *C. Plocamia* (Lesson 1830) can cause slight cutaneous and ophthalmologic manifestations within the first 24h, and delayed long-term reactions in individuals who have been sensitized through previous contacts that result in an immune response.

133	Not as above	134
134	Oral arms extremely large with frilly margins, hardly coiled to form a dense mass	

Chrysaora achlyos (Martin, Gershwin, Burnett, Cargo & Bloom, 1997)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Chrysaora* (Peron & Lesuer, 1810)
Chrysaora achlyos (Martin, Gershwin, Burnett, Cargo & Bloom, 1997)

Vernacular name: Black Jelly, Black Sea Nettle

Morpho-anatomical characteristics

Genus *Chrysaora* (Peron & Lesuer, 1810):

- Bell dome-shaped;
- Exumbrella without conspicuos warts;
- 32 or more marginal lappets;
- Tentacles 24 or more, arising from clefts between marginal lappets;
- 4 mouth arms, long, frilly, simple;
- Gastrovascular system comprising 16 pouches, rhopalar ones narrower than tentacular ones;
- Without ring canal;
- 8 rhopalia with deep exumbrellar sensory pits;
- 4 gonads, much folded;
- Colour of species may be various, with a range of density, so it can be misleading in identification;
- Ephyrae with clusters of nematocysts on each side of rhopalia.

Chrysaora achlyos (Martin, Gershwin, Burnett, Cargo & Bloom, 1997):

- Bell 200-400mm wide, can reach 1000mm. Hemispherical, flatter in juvenile specimens. Mesoglea rigid, thick centrally, thinner at margin;
- Exumbrella smooth or finely granulated with small papillae;
- 32 marginal lappets, squared with rounded corners. Rhopalar lappets slightly smaller than tentacular ones;
- 24 tentacles, as long as ¾ mouth arms. With basal swelling;
- 4 mouth arms, extremely large, with frilly maegins, hardly coiled to form a dense mass. Can reach 6m;
- 16 gastric pouches, uniformly wide centrally, tentacular pouches enlarged distally;
- 4 gonads, finger-like, protrusive. Subgenital ostia triangular with rounded margin;
- Colour of live specimens: deep burgundy to blackish, without obvious stripes. Juvenile specimens dark orange (in captivity). Colour of preserved specimens: translucent light brown.

Life cycle: planula unknown, Scyphistoma conical to goblet shaped, up to 3,3mm in height. Oral disc 2,1mm wide. 14-18, typically 16 tentacles. Whitish. Podocysts: trapezois, 0,4-0,8mm wide, yellowish-brown. Strobila: polydisc (more than 20 ephyrae), reddish, strobilation lasting almost 15 days. Ephyra typically with 8 arms, 16 marginal lappets, pointed, 8 rhopalia, 1,3 mm diameter after release, reddish with a nematocyst concentration on each side of rhopalia (on the lappets).
Geographical and seasonal distribution: Southern California, Mexican Pacific Coast.
Toxicity: after contact with dead specimens, mild local burning sensation. Probably more severe effects from living specimens.

134	Oral arms linear, with broad frilly margins, more or less coiled around central body	135
135	Exumbrella pale, with 32 radiating reddish or brown streaks and typical 16 dark-brown or black streaks on subombrellar side, below the septa	

Chrysaora melanaster (Brandt, 1838)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Chrysaora* (Peron & Lesuer, 1810)
Chrysaora melanaster (Brandt, 1838)

Synonims: *Chrysaora depressa* (Kishinouye, 1902)

Morpho-anatomical characteristics
Genus *Chrysaora* (Peron & Lesuer, 1810):

- Bell dome-shaped;
- Exumbrella without conspicuos warts;
- 32 or more marginal lappets;
- Tentacles 24 or more, arising from clefts between marginal lappets;
- 4 mouth arms, long, frilly, simple;
- Gastrovascular system comprising 16 pouches, rhopalar ones narrower than tentacular ones;
- Without ring canal;
- 8 rhopalia with deep exumbrellar sensory pits;
- 4 gonads, much folded;
- Colour of species may be various, with a range of density, so it can be misleading in identification;
- Ephyrae with clusters of nematocysts on each side of rhopalia.

Chrysaora melanaster (Brandt, 1838):

- Bell 85 mm wide, can reach 600mm. Flat, fleshy;
- Exumbrella smooth in preserved specimens;
- 32 marginal lappets. In each octant, tentacular lappets decrease in size from the median pair towards both sides. Rhopalar lappets as large as median tentacular ones. With canals into lappets;
- 24-40 tentacles, 2-3 times as long as bell diameter, ribbon-like;
- 4 mouth arms, up to 6 times longer than bell diameter, linear, with broad, weakily coiled margins;
- 16 gastric pouches, uniformly wide centrally, tentacular pouches enlarged distally;
- 4 gonads, semicircular, much folded;
- Colour of live specimens: bell with 32 radiating reddish or brown stripes. 16 brown or black stripes on subumbrella. Rhopalia bright yellow and brown. Tips of tentacles red.

Life cycle: asexual reproduction by podocysts.
Geographical and seasonal distribution: North Pacific Ocean, Bering Sea, Canada.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=168724&lvl=0
Notes: According to Morandini & Marques (2010), it is sometimes confused with *Chrysaora fuscescens* (Brandt, 1835) and *Chrysaora pacifica* (Goette, 1886), but it may be distiguished from the former by gastrovascular canals in marginal lappets, which don't occur in *C. Fuscescens*, and from the latter by differences in tentacle and lappets numbers.

135 Exumbrella golden-brown, with darker margins, sometimes with 16-32 lighter radial stripes

Chrysaora fuscescens (Brandt, 1835)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Semaeostomeae
Familia Pelagiidae (Gegenbaur, 1856)
Genus *Chrysaora* (Peron & Lesuer, 1810)
Chrysaora fuscescens (Brandt, 1835)

Synonims: *Chrysaora gilberti* (Kishinouye, 1898), *Chrysaora helvola* (Brandt, 1838), *Melanaster mertensii* (Agassiz, 1862), *Polybostricha helvola* (Brandt, 1838)
Vernacular name: Pacific Sea Nettle, West Coast Sea Nettle

Morpho-anatomical characteristics
Genus *Chrysaora* (Peron & Lesuer, 1810):

- Bell dome-shaped;
- Exumbrella without conspicuos warts;
- 32 or more marginal lappets;
- Tentacles 24 or more, arising from clefts between marginal lappets;
- 4 mouth arms, long, frilly, simple;
- Gastrovascular system comprising 16 pouches, rhopalar ones narrower than tentacular ones;
- Without ring canal;
- 8 rhopalia with deep exumbrellar sensory pits;
- 4 gonads, much folded;
- Colour of species may be various, with a range of density, so it can be misleading in identification;
- Ephyrae with clusters of nematocysts on each side of rhopalia.



Chrysaora fuscescens (Brandt, 1835):

- Bell 300-500mm wide, can reach 1000mm. Hemispherical;
- Exumbrella with not evident nematocyst warts;
- 32 marginal lappets, rounded;
- 24 tentacles, several m long;
- 4 mouth arms, with broad frilly margin. Over 4m long;
- 16 gastric pouches, uniformly wide centrally, tentacular pouches enlarged distally;
- 8 rhopalia with a thickened region of mesoglea at intersection
- 4 gonads, semicircular, much folded;
- Colour of live specimens: bell dark amber, golden brown with darker margin. Sometimes with 16 lighter radial stripes. Mouth arms brown with white margin.

Life cycle: planula unknown, Scyphistoma conical to goblet shaped, 2-5mm in height. Oral disc 1,5-2mm wide. 16 tentacles, 3 times as long as polyp height. Whitish. Podocysts: trapezois, 0,5mm wide, yellowish brown. Strobila: polydisc (more than 25 ephyrae), pale orange, strobilation lasting almost 20 days. Ephyra typically with 8 arms, 16 marginal lappets, 8 rhopalia, 1,5-2 mm diameter after release, pale orange with a nematocyst concentration on each side of rhopalia (on the lappets).
Geographical and seasonal distribution: Northern California. Coastal habitat. Can cause dense swarms in autumn and winter.
Toxicity: sting causes a painful rash.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880219&lvl=0
Notes: the species was first described by Brandt (1835), who later referred it to a synonym of *Chrysaora helvola* (Brandt, 1838). The name reappeared in literature in 1984 when the name *fuscescens* had been resurrected to distinguish the Southern USA species of *Chrysaora* from the one found in Alaska, *Chrysaora melanaster* (Brandt, 1838).

136 Umbrella with papillar knobs 137

136 Umbrella without papillar knobs 139

137 Oral arms without filaments

Lobonemoides sewelli, Rao 1931

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Lobonematidae (Stiasny, 1921)
Genus *Lobonemoides* (Light, 1914)
Lobonemoides sewelli (Rao, 1931)

Morpho-anatomical characteristics
Genus *Lobonemoides* (Light, 1914):

- Exumbrella with numerous papillae;
- Marginal lappets elongated, not contractile and without muscles;
- Mouth arms membranes perforated by window-like openings. With spindle-like appendages;
- Intracircular anastomosing canal system communicting with rhopalar and ring canals, but not with inter-rhopalar canals.

Lobonemoides sewelli (Rao, 1931):

- Bell 260mm wide;
- Exumbrella with some scattered, tiny papillae;
- 2-6 marginal lappets between neighbouring rhopalia, elongately triangular, 10-15mm long;
- 8 mouth arms, separated, with window-like openings. No filamentous appendages, with short stiff rod-like appendages scattered among the mouths;
- 16 rhopaliar canals reaching margin, 16 interrhopaliar canals reaching only ring canal;
- 16 rhopalia.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Indian Ocean.

137 Oral arms with filaments 138

138 Intracircular anastomosing network in communication with the inter-rhopalar canals

Lobonema smithii, Mayer 1910



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Lobonematidae (Stiasny, 1921)
Genus *Lobonema* (Mayer, 1910)
Lobonema smithii (Mayer, 1910)

Synonims: *Lobonema mayeri* (Light, 1914)

Morpho-anatomical characteristics
Genus *Lobonema* (Mayer, 1910):

- Exumbrella with numerous, prominent, tapering papillae;
- Marginal lappets greatly extended, tapering to pointed ends, not contractile and without muscles;
- Mouth arms membranes perforated by window-like openings. With spindle-like appendages;
- With ring canal which gives off anastomosing canals on both its inner and uter side. Inner network does not connect with stomach;
- 8-16 rhopalia;
- Twice as many radial canal as rhopalia. All radial canals extend beyond the ring canal.
- Ring muscles welle developed.

Lobonema smithii (Mayer, 1910):

- Bell 230mm wide, flatter than a hemisphere. Mesoglea thick and rigid;
- Exumbrella regularly besprinkled with erect, gelatinous papillae, largest and most abundant at the centre of exumbrella, but which disappear near the margin. Papillae 35-40mm long, 3-5mm wide at base, conical, more or less curved. Thickly covered with nematocysts;
- 32 velar lappets, 90-100mm long, tapering gradually from base to tip;

- 8 moth arms, separated. 150mm long, each 3-winged in their lower part. Each of the 3 lateral membranes is perforated by 3 windows or openings. Numerous appendages arising between the mouths: large and spindle-shaped near the end of mouth arms, more slender the higher up, mere thread-like filaments the ones above;
- 8 rhopalia without ocelli, flanked by very small, oval lappets;
- Ring muscles powerfully developed. No radial or lappet muscles.
- Colour in preserved specimens: milky-gray, mouths and gonads darker.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.
Toxicity: sting not very severe.

138 Intracircular anastomosing network not in communication with the inter-rhopalar canals

Lobonemoides robustus, Stiasny 1920

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Lobonematidae (Stiasny, 1921)
Genus *Lobonemoides* (Light, 1914)
Lobonemoides robustus (Stiasny, 1920)

Vernacular name: White Type (Trade name)

Morpho-anatomical characteristics
Genus *Lobonemoides* (Light, 1914):

- Exumbrella with numerous papillae;
- Marginal lappets elongated, not contractile and without muscles;
- Mouth arms membranes perforated by window-like openings. With spindle-like appendages;
- Intracircular anastomosing canal system communicting with rhopalar and ring canals, but not with inter-rhopalar canals.

Lobonemoides robustus (Stiasny, 1920):

- Bell 380-460mm wide, flatter than a hemisphere;
- Central portion of exumbrella very thick, with pointed papillae 15-30mm long. Margin of umbrella thin, without papillae;
- 3-4 elongated tentacle-like marginal lappets between neighbouring rhopalia. Rhopaliar lappets short with rounded tip;
- 8 mouth arms, separated. With 3 rows of window-like openings on each arm. Upper openings larger. With spindle shaped appendages at distal end of the arm and thread like appendages in the proximal portion;
- 24-32 radial canals;
- 11-21 rhopalia;
- 4 genital ostia, widely opened. On each lower edge, 2-4 tiny gelatinous projections;
- Subumbrellar muscles well developed in intracircular parts, but weak in extra circular ones. No lappet muscles;
- Colour of live specimens: white, slightly pink in some specimens.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific.
Toxicity: innocuos.
Notes: According to Kitamura & Omori (2010), edible species, it is the most important commercial jellyfish in South-East Asia.

139 Oral arms dichotomous 140

139 Oral arms three-winged 160

140 Medusa with 4 completely separated subgenital cavities 141

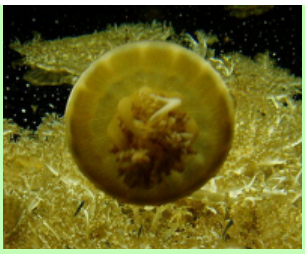
140 Medusa with 4 not completely separated subgenital cavities 148

141 Oral arms 1 1/4 times the lenght of bell radius, triangular in cross-section, aboral surface broad and flat, with 10-15 alternate primary branches

Cassiopea xamachana, Bigelow 1892

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cassiopeidae (Agassiz, 1862)

Genus *Cassiopea* (Peron & Lesuer, 1809)
Cassiopea xamachana (Bigelow, 1892)



Synonims: *Cassiopea vanderhorsti* (Stiasny, 1920)

Morpho-anatomical characteristics

Genus *Cassiopea* (Peron & Lesuer, 1809):

- 8 mouth arms, complexly branched, with numerous mouths and appendages on their lower portion;
- Radial canals placed in communication one with another through an anastomosing network of canals;
- More than 8 rhopalia;

Cassiopea xamachana (Bigelow, 1892):

- Bell 150mm wide, flat with rounded edges;
- Exumbrella with a well marked concavity on its central part that enables the medusa to cling firmly to any smooth surface as by a sucker;
- 40 marginal lappets. Velar lappets twice as wide as rhopalar ones;
- Mouth arms 1,25 times as long as bell radius, projecting beyond the margin. Triangular in cross section, with lower portion broad and flat. Each mouth arm gives off 10-15 alternate, primary branches, which give rise to secondary branches. In the axil of each primary branch there's a single flat ribbon like filament. With 5-13 large ribbon-shaped filaments upon the oral surface of the arm disc. The larger filamenti s at the centre, the other ones decrease in lenght out over the mouth arms. With numerous short club shaped appendages scattered among the mouths. Muths found upon the oral sides of the primary and secondary branches of muth arms, and upon the oral sides of the 8 basal trunks of the arms. No mouths at the centre of the arm disc, although they are commonly found near the edges of the disc. Mouths fringed with numerous fine, waving tentacles;
- 4 small, deep, oval subgenital pits. 4 searated, invaginated genital sacs;
- Central stomach that gives rise to twice as many radial canals in the subumbrella as rhopalia. All radial canals connect with each other with numerous anastomosing branches;
- No well defined ring canal;
- 11-23 rhopalia, usually 16. With ocelli, without sensory pit on exumbrella. With sensory niche protected above by a shelf-like membrane spanning the cleft between the adjacent lappets;
- With well developed subumbrellar circular musculature;
- Colour in live specimens: general greenish-gray blue with a wide, dull white circle arond the central concavity of exumbrella, edged on its inner side with faint gray-brown. A Y-shaped, radial white stripe extends outward from the broad ring in the radii of the rhopalia, the sense organs being in the centre of the crotch of the Y. A single radial stripe extends outwards down the middle of the exumbrella side of each marginal lappet. With white regions found in the mesoglea from the subumbrella towards the exumbrella surface. Mouths, filaments and appendages olive green or olive brown, with appendages and filaments green. A rare colour variety has diamond shaped white spots without white ring on exumbrella.

Life cycle: asexual and sexual reproduction
Geographical and seasonal distribution: Caribbean Sea, Gulf of Mexico.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=12993&lvl=0

141	Not as above	142
142	Oral arms 3/4 the lenght of bell radius	

Cassiopea frondosa, (Pallas 1774)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cassiopeidae (Agassiz, 1862)
Genus *Cassiopea* (Peron & Lesuer, 1809)
Cassiopea frondosa (Pallas, 1774)



Morpho-anatomical characteristics

Genus *Cassiopea* (Peron & Lesuer, 1809):

- 8 mouth arms, complexly branched, with numerous mouths and appendages on their lower portion;
- Radial canals placed in communication one with another through an anastomosing network of canals;
- More than 8 rhopalia.

Cassiopea frondosa (Pallas, 1774):

- Bell 120-260mm wide. Flat with rounded edge;
- Exumbrella without aboral concavity;
- 60 Marginal lappets, short, subrectangular, nearly straight ended. Rhopalar lappets only half as wide as velar lappets;
- Mouth arms as long as 3/4 bell radius. Usually bifurcated at their free ends, giving rise to short, pinnated side branches. Mouths only upon their lower sides, upper sides smooth and without mouths. 30-40 small, expanded, flat, leaf-like appendages between the mouths;
- 24 radial canals arising from the stomach, put in communication one with another by a network of anastomosing canals;
- 12 rhopalia;
- 4 small, round, interradial subgenital pits. 4 separated, invaginated genital sacs which project into the stomach cavity;
- Colour: mesoglea amber-yellow, slightly olive or greenish, with a single, large, bean-shaped white spot just above each rhopalium. With a smaller white spot in each marginal lappet. A white line extends through the lenght of each mouth arm. Mouths cinnamon colour, leaf-like vesicles opaque, dull white. Spots upon the bell are very variale in number and arrangement.

Life cycle: reproductive strategies unknown. Asexual reproduction by free swimming particles (Buds, planuloids).
Geographical and seasonal distribution: Caribbean Sea, Gulf of Mexico.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=237412&lvl=0

142 Not as above 143

143 Oral arms very large, flat, with 6-8 short, wide-spreading main branches

Cassiopea depressa, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cassiopeidae (Agassiz, 1862)
Genus *Cassiopea* (Peron & Lesuer, 1809)
Cassiopea depressa (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Cassiopea* (Peron & Lesuer, 1809):

- 8 mouth arms, complexly branched, with numerous mouths and appendages on their lower portion;
- Radial canals placed in communication one with another through an anastomosing network of canals;
- More than 8 rhopalia.

Cassiopea depressa (Haeckel, 1880):

- Bell 100-120mm wide, 15-20mm high. Flat, shield-shaped;
- Exumbrella smooth, without aboral concavity or dome;
- 144 Marginal lappets, wide, pointed but not prominent;
- Mouth arms shorter than bell radius, very wide, flat. 6-8 short, wide spreading main branches. Numerous very small club-shaped appendages between the mouths;
- 16 rhopalia.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Indian Ocean.

143 Not as above 144

144 Oral arms cylindrical, slender, somewhat longer than bell radius

Cassiopea ornata, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cassiopeidae (Agassiz, 1862)
Genus *Cassiopea* (Peron & Lesuer, 1809)
Cassiopea ornata (Haeckel, 1880)

Morpho-anatomical characteristics

Genus *Cassiopea* (Peron & Lesuer, 1809):

- 8 mouth arms, complexly branched, with numerous mouths and appendages on their lower portion;
- Radial canals placed in communication one with another through an anastomosing network of canals;
- More than 8 rhopalia.

Cassiopea ornata (Haeckel, 1880):

- Bell 100-120mm wide, 30-40mm high. Flat, shield-shaped;
- 80 Marginal lappets;
- Mouth arms somewhat longer than bell radius, cylindrical, slender, not broad and flat. With small club-shaped appendages between the mouths;
- 16 rhopalia;
- 16 interrhopalar radial canals, narrower than rhopalar ones. The network of anastomosing canals becomes fine meshed on the inner side of ring canal, wide meshed on the outer side, the meshes of which become finer near the bell margin. Characteristic of this species is the presence of 2 ring canals, one connects the 16 principal radial canals, the other is at the margin of umbrella.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880217&lvl=0

144 Not as above 145

145 Oral arms wide, flat, with 4-6 flat, short tree-shaped side branches

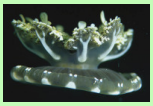
Cassiopea andromeda (Forsskål, 1775)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cassiopeidae (Agassiz, 1862)
Genus *Cassiopea* (Peron & Lesuer, 1809)
Cassiopea andromeda (Forsskål, 1775)

Synonims: *Medusa andromeda* (Forsskål, 1775)
Vernacular name: Upside-down Jelly

Morpho-anatomical characteristics
Genus *Cassiopea* (Peron & Lesuer, 1809):

- 8 mouth arms, complexly branched, with numerous mouths and appendages on their lower portion;
- Radial canals placed in communication one with another through an anastomosing network of canals;
- More than 8 rhopalia.



Cassiopea andromeda (Forsskål, 1775):

- Bell 100-120mm wide, 20-30mm high. Flat, shield-shaped;
- Marginal lappets blunt, short, variable in number;
- Mouth arms as long as bell radius,wide, flat. 4-6 flat, short side branches arise from each arm, and give off further side branchlets. Numerous small and 5 or more large club-shaped appendages on each arm beween the mouths;
- 15-18mrhopalia, usually 16;
- Colour of live specimens: very brilliant and variable. Exumbrella reddish brown to violet brown with milky white spots and dark radial stripes. Bell margin bluish or violet. Mouth arms violet green to reddish brown, spotted with white.

Life cycle: reproductive strategies unknown. Asexual reporduction by free swimming particles (buds, planuloids).
Geographical and seasonal distribution: Mediterrannean Sea, North Atlantic ocean, Red Sea, South Pacific Ocean.
Toxicity: venomous species. Crude venom can cause vasopermeability and dermonecrosis.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=114796&lvl=0
Notes: *Cassiopea andromeda* (Forsskål, 1775) was the first known lessepsian species found in the Eastern Mediterranean Sea after the opening of the Suez Canal. It was reported into the canal already in the late 19th century.

145 Not as above 146

146 Oral arms with numerous small lateral branches in their proximal portion

Cassiopea medusa, Light 1914

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cassiopeidae (Agassiz, 1862)
Genus *Cassiopea* (Peron & Lesuer, 1809)
Cassiopea medusa (Light, 1914)

Morpho-anatomical characteristics
Genus *Cassiopea* (Peron & Lesuer, 1809):

- 8 mouth arms, complexly branched, with numerous mouths and appendages on their lower portion;
- Radial canals placed in communication one with another through an anastomosing network of canals;
- More than 8 rhopalia.

Cassiopea medusa (Light, 1914):

- Bell 260mm wide. Flat;
- Exumbrella with a thickened central disc;
- 56 Marginal lappets, irregular and indistinct;
- Mouth arms with numerous small, lateral branches in their upper portion. lower portion with 3 man branches which are again subdivided. Numerous appendages, from small and incospicuos to very large and cylindrical, up to 110 mm long;
- 17 rhopalia.

Life cycle: reproductive strategies unknown.
Toxicity: sting can cause dermatitis.

146 Oral arms cylindrical, 1 1/2 times as long as bell radius, branched tree-like 147

147 Species with numerous large club-shaped vesicles

Cassiopea mertensi, Brandt 1838

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cassiopeidae (Agassiz, 1862)
Genus *Cassiopea* (Peron & Lesuer, 1809)
Cassiopea mertensi (Brandt, 1838)

Morpho-anatomical characteristics
Genus *Cassiopea* (Peron & Lesuer, 1809):

- 8 mouth arms, complexly branched, with numerous mouths and appendages on their lower portion;
- Radial canals placed in communication one with another through an anastomosing network of canals;
- More than 8 rhopalia.

Cassiopea mertensi (Brandt, 1838):

- Bell 100-120mm wide, 30-40mm high. Evenly rounded;
- Exumbrella without aboral concavity;
- 128 Marginal lappets, small, tongue-shaped, prominently projecting;
- Mouth arms 1,5 times as long as bell radius, giving off 8-12 main branches, which also branch in a tree-like manner. With numerous large club-shaped appendages between the mouths;
- 16 rhopalia;
- Colour: bell yellowish, rusty brown, lighter in the centre, with reddish brown radial streaks. With 2 white half-moon-shaped spots over each rhopalium. Upper portion of mouth arms light ellow. Mouths dark rusty yellow. Appendages white.

Life cycle: reproductive strategies unknown. Asexual reproduction by swimming particles (buds, planuloids).
Geographical and seasonal distribution: South Pacific Ocean.

147 Species without ribbon-like filaments

Cassiopea ndrosia, Agassiz & Mayer 1899

Systematic position:
Classis Scyphozoa

Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cassiopeidae (Agassiz, 1862)
Genus *Cassiopea* (Peron & Lesuer, 1809)
Cassiopea ndrosia (Agassiz & Mayer, 1899)

Morpho-anatomical characteristics
Genus *Cassiopea* (Peron & Lesuer, 1809):

- 8 mouth arms, complexly branched, with numerous mouths and appendages on their lower portion;
- Radial canals placed in communication one with another through an anastomosing network of canals;
- More than 8 rhopalia.

Cassiopea ndrosia (Agassiz & Mayer, 1899):

- Bell 50mm wide;
- Exumbrella with shallow concavity on central part;
- 32 Marginal lappets, very indistinct;
- Mouth arms 1,5 times as long as bell radius, giving off 6-12 main branches, which also branch in a tree-like manner. With numerous small, flattened, expanded leaf-shaped appendages between the mouths, most numerous at the centre of arm disc;
- 18-22 rhopalia;
- 4 small, round subgenital ostia. 4 genital cavities, separated from gastric cavities;
- Colour of live specimens: bell grayish brown with bluish and white radiating streaks on subumbrella. With a large spearhead shaped white spot on exumbrella above each marginal lappet. Lower portion of mouth arms grayish white, mouths deep brown, appendages olive green.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.

148	Oral arms without filaments	149
148	Oral arms with filaments	151
149	Exumbrella without a central rised dome	

Marivagia stellata (Gershwin, 2010)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Marivagia* (Galil & Gershwin, 2010)
Marivagia stellata (Galil & Gershwin, 2010)

Morpho-anatomical characteristics
Genus *Marivagia* (Galil & Gershwin, 2010):

- Bell lacking central dome, papillae or knobs, with only very small warts and ridges;
- Exumbrella with a starbust-like pigmentation;
- Arm disc and 8 mouth arms without filaments or other appendages. With feathery mouthlets;
- 8 main radial canals free proximally, 3 secondary canals per octant, anastomosed.

Marivagia stellata (Galil & Gershwin, 2010):

- Bell 70-150mm wide;
- Exumbrella without conspicuos warts, papillae or knobs, ornamented with only a series of pigment marks which overlay microscopic raised dots and ridges. Peripheral region of bell inverted in live specimens;
- 56-72 marginal lappets. Velar lappets large, broad, tongue-shaped. Rhopalar lappets smaller, shorter, narrower than velar ones. All lappets well defined by thick, raised, gelatinous projections of bell margin;
- Mouth arms shorter than bell radius, triangular in cross section, bifurcated half-way with 6 branched, dendritic, with feather-like mouths. Lacking appendages between mouths and on oral disc;
- 8 rhopalia, with W-shaped niches;
- 32 radial canals, loosely anastomosed in proximal 2/3 of bell. With numerous blind diverticula in proximal region;
- 4 gonads, crescentic-shaped with concavity facing outward toward bell margin;
- Colour of live specimens: translucent bluish-white jelly, with conspicuos pattern of reddish stars, dots and streaks clustered in central third of exumbrella. Gonads pale

- whitish. Subumbellar surface of stmach region with small reddish dots. Oral arms translucent whitish, mouths pale purplish blue.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Mediterranean Sea (Alien), Indian Ocean.

149 Exumbrella with a central rised dome 150

150 More than 1 cupolar warts

Netrostoma dumokuroa (Agassiz & Mayer, 1899)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Netrostoma* (Schultze, 1898)
Netrostoma dumokuroa (Agassiz & Mayer, 1899)

Morpho-anatomical characteristics
Genus *Netrostoma* (Schultze, 1898):

- Bell with a central dome with warts or a single large knob;
- Arm disc massive, octagonal. With numerous filaments on oral disc and mouth arms. With or without stiff appendages. With feathery mouthlets;
- 8 rhopalia;
- 32 radial canals free proximally, anastomosed distally;
- Without ring canal;
- Subgenital cavity not always divided into 4 completely separated chambers. Subgenital ostia small and round, without papillae;
- Subumbrellar circular musculature weak, radial musculature beam shaped.

Netrostoma dumokuroa (Agassiz & Mayer, 1899):

- Bell 300mm wide, flat with vertical sides near margin;
- Exumbrella with a large prominent dome, smooth, surrounded by 2 verticils of solid papillae and a wide, shallow furrow;
- 72 marginal lappets, inconspicuos, scarsely perceptible;
- 8 mouth arms, short, bifurcated, without filaments and appendages;
- 8 rhopalia, rhopalial niche with a protective web on the subumbrellar side;
- 32 radial canals, 4 ones wider than the others;
- Genital system completely separated from gastric system;
- Colour of live specimens: blue.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.

150 1 cupolar wart

Netrostoma nuda, (Gershwin & Zeidler, 2008b)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Netrostoma* (Schultze, 1898)
Netrostoma nuda (Gershwin & Zeidler, 2008)

Morpho-anatomical characteristics
Genus *Netrostoma* (Schultze, 1898):

- Bell with a central dome with warts or a single large knob;
- Arm disc massive, octagonal. With numerous filaments on oral disc and mouth arms. With or without stiff appendages. With feathery mouthlets;
- 8 rhopalia;
- 32 radial canals free proximally, anastomosed distally;
- Without ring canal;
- Subgenital cavity not always divided into 4 completely separated chambers. Subgenital ostia small and round, without papillae;
- Subumbrellar circular musculature weak, radial musculature beam shaped.

Netrostoma nuda (Gershwin & Zeidler, 2008):

-

- Bell with a single, large, round protruding knob at apex. Peripheral region of bell inverted;
- Exumbrella smooth, lacking papillae or warts. Subumbrella with approximately 80 gelatinous radial ridges;
- 72 marginal lappets. Velar lappets rounded, large. Rhopalar lappets small, pointed;
- 8 mouth arms, about as long as bell radius, bifurcated with numerous progressively shorter branches, with feather-like mouths. Without appendages. Arm disc with numerous long, stiff, hollow, cylindrical, gelatinous appendages arising at branch points of moth arms;
- 8 rhopalia, rhopalial niche heart shaped;
- 32 radial canals. The 8 rhopalar canals are of equal width, but thicker than the remaining 24 ones;
- 4 gonads, U-shaped to amorphous;
- Gastric and genital systems continuos;
- Colour of live specimens: translucent hazy bluish-white throughout, lacking spots, streaks or other pigment. Colour of preserved specimens: mostly transparent with translucent canals and oral arms, gonads yellowish.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Australia.
Toxicity: mild but annoying sting.

151	In each octant 3 radial canals	152
151	In each octant more than 3 radial canals	154
152	Between the mouths two kinds of appendages	

Netrostoma coerulescens, Maas 1903

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Netrostoma* (Schultze, 1898)
Netrostoma coerulescens (Maas, 1903)

Synonims: *Netrostoma typhlodendrium* (Schultze, 1898)

Morpho-anatomical characteristics
Genus *Netrostoma* (Schultze, 1898):
- Bell with a central dome with warts or a single large knob;
- Arm disc massive, octagonal. With numerous filaments on oral disc and mouth arms. With or without stiff appendages. With feathery mouthlets;
- 8 rhopalia;
- 32 radial canals free proximally, anastomosed distally;
- Without ring canal;
- Subgenital cavity not always divided into 4 completely separated chambers. Subgenital ostia small and round, without papillae;
- Subumbrellar circular musculature weak, radial musculature beam shaped.

Netrostoma coerulescens (Maas, 1903):
- Bell 200mm wide or more;
- Exumbrella a central dome with 10 warts;
- 48-64 marginal lappets, rounded;
- 8 mouth arms, short, massive, laterally compressed, curved outwards, bifurcated at outer ends with numerous short lateral branches. With appendages between the mouths: small, thin tubular with prominent nematocyst warts or spindle shaped.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.

152	Between the mouths numerous appendages	153
153	Exumbrella with a central rised dome	

Netrostoma setouchianum, (Kishinouye 1902)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)

Genus *Netrostoma* (Schultze, 1898)
Netrostoma setouchianum (Kishinouye, 1902)



Morpho-anatomical characteristics
Genus *Netrostoma* (Schultze, 1898):

- Bell with a central dome with warts or a single large knob;
- Arm disc massive, octagonal. With numerous filaments on oral disc and mouth arms. With or without stiff appendages. With feathery mouthlets;
- 8 rhopalia;
- 32 radial canals free proximally, anastomosed distally;
- Without ring canal;
- Subgenital cavity not always divided into 4 completely separated chambers. Subgenital ostia small and round, without papillae;
- Subumbrellar circular musculature weak, radial musculature beam shaped.

Netrostoma setouchianum (Kishinouye, 1902):

- Bell 100-200mm wide, with a prominent central dome covered completely by 50 or more solid, pointed projections and surrounded by a wide annular furrow;
- 48-64 marginal lappets, flatly rounded;
- 8 mouth arms with numerous small, short appendages between the mouths;
- Gastric and genital systems completely separated.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Pacific Ocean, Japan.

153 Exumbrella without a central rised dome

Cephea octostyla, (Forskål 1775)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Cephea* (Peron & Lesuer, 1810)
Cephea octostyla (Forsskål, 1775)

Morpho-anatomical characteristics
Genus *Cephea* (Peron & Lesuer, 1810):

- Exumbrella with large, conspicuos warts on central part;
- Arms disc massive, octagonal;
- 8 mouth arms, dichotomous, with long, narrow filaments;
- 8 main radial canals corresponding with the rhopalia. 3 or more interrhopalar canals in each octant;
- Without definite ring canal;
- Subgenital ostia small and round, without papillae. Subgential cavitites not always divided into 4 completely separated chambers;
- 8 rhopalia without ocelli, without sensory pit on exumbrella;
- Subumbrellar circular musculature weak. Radial musculature beams shaped.



Cephea octostyla (Forsskål, 1775):

- Bell 300mm wide, flatter than a hemisphere;
- Exumbrella smooth, without central dome;
- 50-60 marginal lappets, wide, flatly rounded;
- Arm disc wider than bell radius. Mouth arms 1,25 times as long as bell radius. The forks of each arma s long as undivided upper portion of arm. 9 long, stout filaments arising from arm disc. With 12 short, stout, swollen club-shaped appendages between the mouths on the ventral side of mouth arms;
- 64 radial canals, all connected one with another by a network of anastomosing canals;
- 8 rhopalia, without ocelli. Without sensory pit on exumbrella;
- With unitary cruciform genital cavity;
- Colour of live specimens: blue and hyaline.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Red Sea, South Pacific Ocean.

154 Exumbrella without a central rised dome

Polyrhiza vesiculosa (Agassiz, 1862)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Polyrhiza* (Agassiz, 1862)
Polyrhiza vesiculosa (Ehrenberg, 1835)

Morpho-anatomical characteristics
Genus *Polyrhiza* (Agassiz, 1862):

- Bell without a central dome, with a central concavity and with radiating furrows;
- Mouth arms bifurcated 2 or more times. With numerous filaments between the mouths;
- 8 rhopalia;
- Numerous radial canals all connected by a network of anastomosing canals.

Polyrhiza vesiculosa (Ehrenberg, 1835):

- Bell 50-60mm wide, flat, with a pit on central part and 32 radiating furrows separated by a deep annular furrow;
- 80 marginal lappets. Velar lappets rectangular, rhopaliar lappts smaller;
- 8 mouth arms which branch dichtomously 4 to 6 times. Arm disc with a large cluster of long, simple filaments;
- 8 rhopalia;
- 32 radial canals all connected by a wide-,eshed network of anastomosing canals;
- Without a definite ring canal;
- Colour of specimens: bell rose-red, knobs of mouth arms brownish-black, filaments transparent.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Red Sea.
Notes: NOMEN DUBIUM. According to Kramp (1961), *Polyrhiza vesiculosa* (Ehrenberg, 1835) is a doubtful species, insufficiently described.

154	Exumbrella with a central rised dome	155
155	Medusa with warts on the central portion of the exumbrella	156
155	Medusa without warts on the central portion of the exumbrella	157
156	Radial canals 5-6 per ottante	

Cephea cephea, (Forskål 1775)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Cephea* (Peron & Lesuer, 1810)
Cephea cephea (Forsskål, 1775)

Synonims: *Cephea conifera* (Haeckel, 1880)
Vernacular name: Cauliflower Jellyfish

Morpho-anatomical characteristics
Genus *Cephea* (Peron & Lesuer, 1810):

- Exumbrella with large, conspicuos warts on central part;
- Arms disc massive, octagonal;
- 8 mouth arms, dichotomous, with long, narrow filaments;
- 8 main radial canals corresponding with the rhopalia. 3 or more interrhopalar canals in each octant;
- Without definite ring canal;
- Subgenital ostia small and round, without papillae. Subgential cavitites not always divided into 4 completely separated chambers;
- 8 rhopalia without ocelli, without sensory pit on exumbrella;
- Subumbrellar circular musculature weak. Radial musculature beams shaped.

Cephea cephea (Forsskål, 1775):

- Bell 100-140mm wide, can reach 500mm. Massive;
- Exumbrella with a large dome at apex, covered completely with about 30 large warts, varied in shape from filamentous to thick, in some specimens angular, pointed to rounded. Surrounded by a wide, shallow ring furrow which searates it from the equally wide, flexible marginal zone of the bell. Proportional extent of

- central subumbrellar region, shape and size of warts greatly varied among specimens;
- 80-90 marginal lappets. Velar lappets large, oval, united by a web so that the bell margin appears to be nearly entire. Rhopalar appets very small, pointed;
- Arm disc without mouths on its central part. 8 mouth arms laterally compressed, stout, shorter than bell radius. Upper portion nearly coalesced, lower portion forking, each main branch curves upwards with many secondary branches. With numerous frilled mouths on ventral sides of primary and secondary branches. With more than 100 long tapering, hollow filaments. The largest of these arise a the points of origin of the mouth arms and are as long as bell diameter;
- 32 radial canals, joined peripherally by a broad anastomosing network of canals;
- 8 rhopalia, with deep sensory niches;
- 4 subgenital ostia, very small. With unitary, cruciform subgenital cavity;
- Subumbrellar circular muscles unbroken and near bell margin. Radial muscles contained on the subumbrella in a radiating zone of folded ridges;
- Colour of live specimens: purplish. Exumbrella blue through lilac to mauve, translucent peripherally. Mouth arms brown, club shaped appendages white, filaments colourless.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Red Sea, South Pacific Ocean.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880218&lvl=0
Notes: oceanic species, occasionally drifting inshore.

156 Radial canals 7 per ottante

Cephea coerulea, Vanhöffen 1902

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Cephea* (Peron & Lesuer, 1810)
Cephea coerulea (Vanhöffen, 1902)

Morpho-anatomical characteristics
Genus *Cephea* (Peron & Lesuer, 1810):

- Exumbrella with large, conspicuos warts on central part;
- Arms disc massive, octagonal;
- 8 mouth arms, dichotomous, with long, narrow filaments;
- 8 main radial canals corresponding with the rhopalia. 3 or more interrhopalar canals in each octant;
- Without definite ring canal;
- Subgenital ostia small and round, without papillae. Subgential cavitites not always divided into 4 completely separated chambers;
- 8 rhopalia without ocelli, without sensory pit on exumbrella;
- Subumbrellar circular musculature weak. Radial musculature beams shaped.

Cephea coerulea (Vanhöffen, 1902):

- Bell 57mm wide;
- Exumbrella with a dome at apex, with 6 large and about 30 small, rounded warts with numerous fine punctations between the warts. Dome surrounded by an annular furrow 9mm wide.;
- No marginal lappets. 64 radial thickenings of mesoglea at the margin;
- Mouth arms 16mm long, much branched, extending slightly beyind bell margin, with frilled mouths on ventral sides. With 10-50 short club shaped appendages and 4 long filaments at the bifurcation of each of the primary arms. Of these, the second and third ones are 2-3 times longer and much stouter than small filaments among mouths;
- 64 radial canals, arising from central stomach, which breaks up into a wide, anastomosing networ of canals near the bell margin;
- 8 rhopalia;
- 4 subgenital ostia, very small;
- Subumbrellar circular muscles broad. Radial muscles wide;
- Colour of live specimens: bell, mouth arms and filaments blue, frilled moths brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Indian Ocean, South Atlantic Ocean.

157 In each octant 4-6 radial canals

Cotylorhiza erythraea, Stiasny 1920

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Cotylorhiza* (Agassiz, 1862)
Cotylorhiza erythrea (Stiasny, 1920)

Morpho-anatomical characteristics
Genus *Cotylorhiza* (Agassiz, 1862):

- Exumbrella without aboral concavity, with a smooth central dome without warts;
- 8 mouth arms with appendages mounted upon pedunculated filaments;
- 8 main radial canals and up to 13 secondary canals, completely anastomosed;
- Without definite ring canal;
- 4 subgenital ostia simple, funnel shaped, with unitary genital cavity;
- 8 rhopalia without ocelli, without sensory pit on exumbrella;
- Subumbrellar circular musculature unitary, with a inner zone of radial muscles.

Cotylorhiza erythrea (Stiasny, 1920):

- Bell up to 90mm wide;
- Exumbrella smooth, without warts of concavity;
- Mouth arms with club shaped appendages between the mouths;
- 8 rhopalia;
- 32-48 aradial canals, completely anastomosed with the 8 main canals.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Red Sea.

157 Not as above 158

158 In each octant 7-9 radial canals

Cotylorhiza tuberculata (Macri, 1778)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Cotylorhiza* (Agassiz, 1862)
Cotylorhiza tuberculata (Macrì, 1778)

Morpho-anatomical characteristics
Genus *Cotylorhiza* (Agassiz, 1862):

- Exumbrella without aboral concavity, with a smooth central dome without warts;
- 8 mouth arms with appendages mounted upon pedunculated filaments;
- 8 main radial canals and up to 13 secondary canals, completely anastomosed;
- Without definite ring canal;
- 4 subgenital ostia simple, funnel shaped, with unitary genital cavity;
- 8 rhopalia without ocelli, without sensory pit on exumbrella;
- Subumbrellar circular musculature unitary, with a inner zone of radial muscles.

Cotylorhiza tuberculata (Macrì, 1778):

- Bell 150-170mm wide, up to 300mm. Mesoglea very rigid;
- Exumbrella with smooth central dome, somewhat flatter than a hemisphere. Around the dome there's a depressed region forming a gutter-like ring, lower than the part of bell near margin;
- 96 marginal lappets. Velar lappets 10 per octant, te middle 6 of which are sometimes but not always, cleft. The outer edges of these lappets are subrectangular with bluntly rounded angles. The primary clefts between the lappets are twice as on gas the secondary clefts of the 6 middle lappets, but all the clefts are bridged over by a web of subumbrellar tissue, so that they are not complete cuts, but mere grooves upon the exumbrella;
- Arms disc octagonal, sharply set off from subumbrella. Mouth arms bluntly simitar shaped in general outline, half as long as bell radius, somewhat thicker than wide and arise from the arm disc at 45° apart. Each mouth arm bifurcates near its base and each of the main branches gives rise to 10-14 secondary branches, which in turn give to 30-40 smaller branches, and these agaisn to 100-150 smaller branches,

- which branch still further dendritically. Numerous short, club shaped appendages between the frilled mouths terminate in bluntly conical to flatly expanded disc-like ends covered with small wart-like tubercles. Less numerous but larger appendages terminate in a flattened ball-like to disc-like end. At the bifurcation of the main 8 mouth arms there's a filament, nearly as long as the mouth arm itself. Centripetal to these 8 main filaments there are 3-5 shorter filaments arising between the frilled mouths. Nar and at the centre of arm disc there are numerous slender filaments, 1/3 as long as main filament, terminating in expanded disc-like conical ends;
- 8 rhopalia without ocelli. Without sensory pit;
- 88-124 radial canals arising from central stomach and extending outwards to the bell margin;
- Without a distinct ring canal, but with numerous lateral anastomoses between radial canals, forming a complex network;
- With unitary, cruciform subgenital cavity;
- Subumbrellar circular muscles unitary and well developed. With a inner zone of radial muscles in the subumbrella;
- Colour of live specimens: bell olive green tending to orange or brownish yellow, being darker and brownish on dome-like apex of exumbrella. Arm disc and mouth arms pale milky white tinged with delicate creamy yellow. Free outer edges of mouths tinged with purple varying to purple or violet.

Life cycle: asexual reproduction.
Geographical and seasonal distribution: Mediterranean Sea, North Atlanic Ocean.
Toxicity: not very toxic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=323337&lvl=0

158 In each octant more than 11 radial canals 159

159 Radial canals 11-13 per ottante

Cotylorhiza ambulacrata, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Cotylorhiza* (Agassiz, 1862)
Cotylorhiza ambulacrata (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Cotylorhiza* (Agassiz, 1862):

- Exumbrella without aboral concavity, with a smooth central dome without warts;
- 8 mouth arms with appendages mounted upon pedunculated filaments;
- 8 main radial canals and up to 13 secondary canals, completely anastomosed;
- Without definite ring canal;
- 4 subgenital ostia simple, funnel shaped, with unitary genital cavity;
- 8 rhopalia without ocelli, without sensory pit on exumbrella;
- Subumbrellar circular musculature unitary, with a inner zone of radial muscles.

Cotylorhiza ambulacrata (Haeckel, 1880):

- Bell 90mm wide;
- 88-104 radial canals.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: East Atlantic Ocean.
Notes: Mayer (1910) considers *Cotylorhiza ambulacrata* (Haeckel, 1880) as identical with *Cotylorhiza tuberculata* (Macrì, 1778), while according to Stiasny (1922), by a mistake, *Stomaster palmatus* (Haeckel 1880) from the Atlantic Ocean has been the type specimen of *Cotylorhiza ambulacrata* (Haeckel, 1880).

159 Radial canals 16-17 per ottante

Cotylorhiza paciifica (Mayer, 1915)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Cepheidae (Agassiz, 1862)
Genus *Cotylorhiza* (Agassiz, 1862)
Cotylorhiza pacifica (Mayer, 1910)

Morpho-anatomical characteristics

Genus *Cotylorhiza* (Agassiz, 1862):

- Exumbrella without aboral concavity, with a smooth central dome without warts;
- 8 mouth arms with appendages mounted upon pedunculated filaments;
- 8 main radial canals and up to 13 secondary canals, completely anastomosed;
- Without definite ring canal;
- 4 subgenital ostia simple, funnel shaped, with unitary genital cavity;
- 8 rhopalia without ocelli, without sensory pit on exumbrella;
- Subumbrellar circular musculature unitary, with a inner zone of radial muscles.

Cotylorhiza pacifica (Mayer, 1910):

- Bell 200mm wide;
- Exumbrella finely granular with a central dome;
- 80 marginal lappets. Velar lappets large, irregularly spaced, bluntly pointed, with deep furrows between each other. Rhopalar lappets short and pointed;
- Mouth arms half as long as bell radius, bluntly simitar shaped in general outline, thicker than wide. Each mouth arm bifurcates and each branch gives off 10-14 side branches, which in turn branch still further dendritically. With window-like openings in the lateral membranes. Central part of arm disc covered with slender filamentous appendages which terminate in nematocyst-bearing swollen knob-like ends. Upper portion of mouth arms ¼ as long as lower portion;
- 8 rhopalia without ocelli. Without sensory pit;
- About 140 radial canals, the 8 rhopalar ones being about twice as wide as the others. All canals anastomose in a network under the zone of subumbrellar circular muscles;
- The subumbrellar circular musculature occupies the entire zone of subumbrella;
- Colour of preserved specimens: uniform dull yellowish brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Pacific Ocean.
Notes: according to Kramp (1961), nomen dubium, possibly a *Phyllorhiza*.

160	Oral arms triangular	161
160	Oral arms not triangular	163
161	Oral arms terminate in a long, tapering filament	

Thysanostoma flagellatum, (Haeckel 1880)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Thysanostomatidae (Gegenbaur, 1857)
Genus *Thysanostoma* (Agassiz, 1862)
Thysanostoma flagellatum (Haeckel, 1880)

Synonims: *Lorifera flagellata* (Haeckel, 1880), *Himanostoma flagellata* (Haeckel, 1880)

Morpho-anatomical characteristics

Genus *Thysanostoma* (Agassiz, 1862):

- Mouth arms bearing 3 rows of mouths from base to lower end. With or without terminal club-shaped appendage;
- 8 rhopalia;
- 8 radial canals all with anastomoses;
- With ring canal;
- Exumbrellar sensory pits small, without furrows;
- Subumbrellar circular musculature well developed, only partially interrupted in the 8 principal radii.

Thysanostoma flagellatum (Haeckel, 1880):

- Bell 200mm wide, flatly rounded. Mesoglea thick, tough;
- Exumbrella with fine granulations;
- 80 marginal lappets. Velar lappets large, rounded. Rhopalar lappets short, pointed;
- Arm disc octagonal. 8 mouth arms hardly longer than bell diameter. Lower portions are free and 6 times as long as upper portions. With numerous short slender filaments between the mouths. Without club-shaped terminal appendages, with a long, tapering, naled terminal filament, about 2/3 as long as the lower portion of mouth arms;

- 8 main radial canals, which are put in communication with each other by a network of anastomosing canals which arise not only from the radial canals but also from the edges of the stomach;
- Without a clearly developed ring canal;
- 8 rhopalia;
- 4 horseshoe-shaped gonads, completely folded. Subgenital ostia very broad;
- Subumbrellar circular musculature very wide, only somewhat thinned but not interrupted in the 8 principal radii;
- Colour of live specimens: mesoglea porcelain white. Exumbrella with light brown punctations near margin, numerous on marginal lappets.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Pacific Ocean. Pelagic species.

161 Not as above 162

162 Oral arms terminate in a short, oval knob

Thysanostoma loriferum, (Ehrenberg 1835)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Thysanostomatidae (Gegenbaur, 1857)
Genus *Thysanostoma* (Agassiz, 1862)
Thysanostoma loriferum (Ehrenberg, 1835)

Synonims: *Rhizostoma lorifera* (Ehrenberg, 1835), *Himanostoma lorifera* (Haeckel, 1880), *Lorifera arabica* (Haeckel, 1880), *Lorifera lorifera* (Mayer, 1910), *Thysanostoma lorifera* (Stiasny, 1920)

Morpho-anatomical characteristics
Genus *Thysanostoma* (Agassiz, 1862):
- Mouth arms bearing 3 rows of mouths from base to lower end. With or without terminal club-shaped appendage;
- 8 rhopalia;
- 8 radial canals all with anastomoses;
- With ring canal;
- Exumbrellar sensory pits small, without furrows;
- Subumbrellar circular musculature well developed, only partially interrupted in the 8 principal radii.

Thysanostoma loriferum (Ehrenberg, 1835):
- Bell up to 180mm wide, hemispherical. Mesoglea stiff;
- Exumbrella smooth;
- Marginal lappets broadly rounded, united by a thin membrane;
- 8 mouth arms with a short terminal filament;
- Very finely meshed canal system, with radial and perradial rhopalar canals clearly distinguishable;
- 8 rhopalia;
- Subgenital ostia very broad;
- Subumbrellar circular musculature well developed;
- Colour of live specimens: bell amethist with a white margin and dark violet spots upon each lappet. Mouths dark violet. Mouth arms translucent white with dark purple central stem with very dark, almost black fringes, fading to white in preserved specimens. Gonads reddish yellow.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Red Sea, Western Pacific Ocean. Neritic species.

162 Oral arms without a terminal portion

Thysanostoma thysanura, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Thysanostomatidae (Gegenbaur, 1857)
Genus *Thysanostoma* (Agassiz, 1862)
Thysanostoma thysanura (Haeckel, 1880)



Synonims: *Rhizostoma brachyura* (Lesson, 1829)

Morpho-anatomical characteristics

Genus *Thysanostoma* (Agassiz, 1862):

- Mouth arms bearing 3 rows of mouths from base to lower end. With or without terminal club-shaped appendage;
- 8 rhopalia;
- 8 radial canals all with anastomoses;
- With ring canal;
- Exumbrellar sensory pits small, without furrows;
- Subumbrellar circular musculature well developed, only partially interrupted in the 8 principal radii.

Thysanostoma thysanura (Haeckel, 1880):

- Bell 90-120mm wide, shield-shaped. Mesoglea thick at centre, thinner at margin;
- Exumbrella with a polygonal network or granular elevation, larger at the centre than at the margin;
- 120 marginal lappets;
- Arm disc quadrangular,with numerous short, slender filaments. 8 mouth arms , 1,5 to 3 times as long as bell diameter. Upper portion 1/12 as long as lower portion. lower portion 3-winged, ending in a blunt distal extremity, covered with frilled mouths. The wings are thin, the 2 lateral ones give rise each to short small secondary wings near their upper end. Without appendages or terminal knob;
- 8 rhopalar radial canals wider than the others. An anastomosing network of canals extends on both sides of the ring canal, fusing with the 8 radial canals and with the central stomach;
- 8 rhopalia, with a very small, shallow, simple exumbrellar sensory pit;
- Subgenital ostia very broad;
- Subumbrellar circular musculature stronger near the margin and wider in the 4 perradii. Muscles only partially interrupted in the 8 principal radii;
- Colour of live specimens: exumbrella violet or mauve, grading into russet at margin. Subumbrella flesh coloured. Gonads and mouths russet or hazel brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean, Japan. Pelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880243&lvl=0

163	Oral arms not pyramidal	164
163	Oral arms pyramidal	181
164	Oral arms broad	165
164	Oral arms of normal width	170
165	Oral arms without filaments	166
165	Oral arms with filaments	167
166	Oral arms without terminal clubs	

Lychnorhiza malayensis, Stiasny 1920

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Lychnorhizidae (Haeckel, 1880)
Genus *Lychnorhiza* (Haeckel, 1880)
Lychnorhiza malayensis (Stiasny, 1920)

Morpho-anatomical characteristics

Genus *Lychnorhiza* (Haeckel, 1880):

- 8 Mouth arms 3-winged, lacking terminal clubs. Without club-shaped appendages between the mouths. With or without filaments;
- 8 rhopalar canals extending to the bell margin, 8 adradial canals ending in the ring canal. In each of the 16 spaces 2-4 centripetal canals.

Lychnorhiza malayensis (Stiasny, 1920):

- Bell 42mm wide, 17mm high, flatter than a hemisphere;
- Exumbrella partially smooth, in some zones with a network or small, irregular polygonal meshes;

- 48 Marginal lappets. Velar lappets separated by fairly deep jelly furrows. Rhopalar lappets narrower and shorter;
- Mouth arms as long as bell diameter. Upper portion 1/3 as long as lower portion, which is divided into 3 thin wide richly overlapped wings with frizzy mouths. Almost all mouths on the ventral side, dorsal side flat, covered with clumps of nematocysts;
- 8 rhopalia. Sensory pits with radial folds;
- 16 fairly broad bottle shaped radial canals, of which 8 extend till rhopalia. 8 shorter interrhopalar canals which reach only the ring canal. Ring canal tends to anastomose and ramificate;
- Subgenital ostia with 3 papillae: a large median hemispherical one ans a small one on both sides;
- Subumbrellar musculature well developed and continue;
- Colour of live specimens: cloudy.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Malayan Archipelago.

166 Oral arms with terminal clubs

Pseudorhiza aurosa, von Lendenfeld 1882

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Lychnorhizidae (Haeckel, 1880)
Genus *Pseudorhiza* (Von Lendenfeld, 1882)
Pseudorhiza aurosa (Von Lendenfeld, 1882)

Morpho-anatomical characteristics
Genus *Pseudorhiza* (Von Lendenfeld, 1882):
- Exumbrella rough;
- 8 Mouth arms with terminal appendage very large. No other appendages. With or without filaments between mouthlets;
- 8 radial canals reaching bell margin and 8 reaching only ring canal. In each of the 16 spaces, 10 centripetal unbranched blind vessels.

Pseudorhiza aurosa (Von Lendenfeld, 1882):
- Bell 400mm wide, 130mm high, flatly rounded;
- Exumbrella rough, with a reticulate figure;
- 48 Marginal lappets. Velar lappetsconsist of 3 secondary flaps. Rhopalar lappets long and narrow;
- Mouth arms as long as bell diameter. With large terminal appendages. Without filaments;
- Colour in life: bell colourless with violet reticulated figure. Gastral cavity brown. Mouth arms colourless and transparent. Frills along the margin of the grooves and distal end of long filament richly violet.

Life cycle: embryos are carried about in pouches suspended in great number from the radial canals, which rim centripetally from the ring canal. They remain there till they are fit to turn into scyphistomas, then escape and affix themselves with the aboral pole to any submerged surface.
Geographical and seasonal distribution: Australia.

167 Oral arms with terminal clubs

Anomalorhiza shawi, Light 1921

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Lychnorhizidae (Haeckel, 1880)
Genus *Anomalorhiza* (Light, 1921)
Anomalorhiza shawi (Light, 1921)

Morpho-anatomical characteristics
Genus *Anomalorhiza* (Light, 1921):
- Exumbrella with wart-like projections on central part;
- Mouth arms each with an axial terminal cub, slender club shaped. Thread-like filamentous appendages scattered on mouth arms;
- With only one intracircular centripetal canal between adjacent radial canals.

Anomalorhiza shawi (Light, 1921):

- Bell 500-870mm wide, clear, fragile;
- Exumbrella with numerous low, warty bumps, each ringed with a light chocolate brown set;
- 48 velar lappets, slightly convex;
- Mouth arms unbranched for about 2/3 of lenght (Excluding terminal filaments). Terminal filament with club-shaped distal point, easily lost. Several thick, brownish filaments on the subumbrellar surface between the mouth arms. Mouths surrounded by tiny filaments;
- Colour of live specimens light purple.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean, neritic or estuarine habitat.
Toxicity: low stinging potential, no pain or redness on the skin at contact.

167	Oral arms without terminal clubs	168
168	In each octant 4 velar lappets	

Lychnorhiza lucerna, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Lychnorhizidae (Haeckel, 1880)
Genus *Lychnorhiza* (Haeckel, 1880)
Lychnorhiza lucerna (Haeckel, 1880)

Synonims: *Catostylus cruciatus* (Lesson, 1830)

Morpho-anatomical characteristics
Genus *Lychnorhiza* (Haeckel, 1880):

- 8 Mouth arms 3-winged, lacking terminal clubs. Without club-shaped appendages between the mouths. With or without filaments;
- 8 rhopalar canals extending to the bell margin, 8 adradial canals ending in the ring canal. In each of the 16 spaces 2-4 centripetal canals.

Lychnorhiza lucerna (Haeckel, 1880):

- Bell 120-150mm wide, hemispherical when young (up to 70mm), becoming gradually flatter with age, at maximum 450mm width inverted saucer-shaped. Mesoglea flexible, thin;
- Exumbrella with numerous, low conical projections, 1mm wide;
- 48 Marginal lappets. Rhopalar lappets small, sharply pointed and triangular. Velar lappets 3 ties as broad and 3-4 times as long as rhopalar ones, nearly oval. End of lappets in older specimens possibly dividing to form additional lappets;
- Mouth arms arising from a large, gelatinous base which projects from the center of exumbrella. Mouth arms laterally compressed, separated, as long as bell diameter. Outer sides of upper portion smooth, without mouths. Lower portions of arms 3-winged, which meet at a point below. With numerous mouths surrounded by minute clubbed tentacles. Edges adjacent to the mouths bearing numerous long filaments;
- Central stomach cross-shaped. 8 Rhopalar radial canals extending till the rhopalia,8 adradial canals ending in the ring canal. Extracircular network fine, uniformly anastomosed;
- 8 rhopalia in deep clefts. Sensory pit with radiating furrows;
- Gonads much folded, filling much part of the stomach cavity. Subgenital ostia wide;
- Subumbrellar musculature well developed;
- Colour of live specimens: exumbrella colourless to uniform very pale brown or with varied density of elongated variegated patches quite asymmetrically arranged, brown to pale brown. Lappets slightl darker brown than exumbrellar patches or deep blue. Mouth arms colourless. Rhopalia white. Gonads creamy white.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Brazil.

168	Not as above	169
169	In each octant 8 velar lappets	

Lychnorhiza arubae, Stiasny 1920

Systematic position:
Classis Scyphozoa

Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Lychnorhizidae (Haeckel, 1880)
Genus *Lychnorhiza* (Haeckel, 1880)
Lychnorhiza arubae (Stiasny, 1920)

Morpho-anatomical characteristics
Genus *Lychnorhiza* (Haeckel, 1880):

- 8 Mouth arms 3-winged, lacking terminal clubs. Without club-shaped appendages between the mouths. With or without filaments;
- 8 rhopalar canals extending to the bell margin, 8 adradial canals ending in the ring canal. In each of the 16 spaces 2-4 centripetal canals.

Lychnorhiza arubae (Stiasny, 1920):

- Bell 230mm wide, flat;
- Exumbrella with numerous nematocyst warts radiating from apex toward margin. Between these strips, there are more or less deep grooves;
- Marginal lappets smooth. Velar lappets 45mm long, 30mm wide, separated by deep furrows. Rhopalar lappets much shorter, narrower, more acute;
- Mouth arms as long as bell radius. Lower part twice as long as upper part, with 2 broad dorsal wings, each of which is staffed by 2 rows of star-shaped mouths and whip-shaped filaments;
- Rhopalar radial canals broad, interrhopalar ones narrower. 2 centripetal canals between adjacent radial canals;
- Wide ring canal in the rather deep ring groove at the boundary between thicker and thinner zone of the subumbrella;
- 8 rhopalia with radial sensory pits;
- Gonads sac-like. Subgenital cavity very spacious. Subgenital ostia without papillae;
- Subumbrellar musculature continue;
- Colour yellowish brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Malayan Archipelago.

169 In each octant 6 velar lappets

Pseudorhiza haeckeli, Haacke 1884

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Lychnorhizidae (Haeckel, 1880)
Genus *Pseudorhiza* (Von Lendenfeld, 1882)
Pseudorhiza haeckeli (Haacke, 1884)

Morpho-anatomical characteristics
Genus *Pseudorhiza* (Von Lendenfeld, 1882):

- Exumbrella rough;
- 8 Mouth arms with terminal appendage very large. No other appendages. With or without filaments between mouthlets;
- 8 radial canals reaching bell margin and 8 reaching only ring canal. In each of the 16 spaces, 10 centripetal unbranched blind vessels.



Pseudorhiza haeckeli (Haacke, 1884):

- Bell 200-250mm wide, 50-100mm high;
- Exumbrella rough;
- 48 Marginal lappets, wide and short. Without secondary lappets;
- Mouth arms with 3-winged lower portion with many flat, fern-like expansions. With a single large very thick terminal appendage.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Australia.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880241&lvl=0

170 Oral arms coalesced throughout their entire length

Stomolophus meleagris, Agassiz 1862

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae

Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Stomolophidae (Haeckel, 1880)
Genus *Stomolophus* (Agassiz, 1862)
Stomolophus meleagris (Agassiz, 1862)

Synonims: *Cephea rhizostoma* (Gibbes, 1848)
Vernacular name: Cannonball Jelly, Cabbage Head

Morpho-anatomical characteristics
Genus *Stomolophus* (Agassiz, 1862):

- With central mouth opening;
- 8 mouth arms fused along their sided having only the lower ends free and forming an elongate throat tube for the central mouth;
- Without marginal tentacles;
- 8 pairs of large scapulets;
- 4 invaginated gonads;
- 16 radial canals, connected by a network of anastomosing vessels;
- 8 rhopalia.

Stomolophus meleagris (Agassiz, 1862):

- Bell 180mm wide, globular. Mesoglea thick and rigid;
- Exumbrella smooth, with minute nematocyst warts;
- 128 marginal lappetswith rounded edges besides ocular lappets, which are 3 times longer than others, sharp pointed.
- Mouth arms fused along most of lenght, grooved externally, projecting slightly beyon perimeter (lenght 40-50mm). The ends bifurcating, flared, lacking clubs or filaments;
- Rhopalia deeply set within a niche between the ocular lappets, protected above by a partial web between the lappets;
- 4 deep cylinfrical subgenital pits. A blunt papilla on subumbrella surface beyond opening of each gential ostium;
- 16 semihelliptical areas of circular muscles in the subumbrella, 16 narrow triangular strands of weakly developed radial muscle fibers;
- Colour in life greatly varied: exumbrella brown, cream, milky bluish to yellowish, with surface reticulated with brown pigment, especially dense near the margin, where there are also numerous white or yellowish spots. Mouth frills brownish pink.

Life cycle: life cylce is known from studies on laboratory cultures. No brooded planulae. Polyp with 16 tentacles, short stalk, large and flexible manubrium. 1-3 ephyrae per strobila, usually 2. Asexual reproduction by podocysts.
Geographical and seasonal distribution: neritic species. Italy (alien species), Gulf of Mexico, Atlantic ocean, North Pacific ocean.
Toxicity: can cause local cutaneous reaction such as itching and edema, but also more severe symptoms like myalgia, dyspnea, hypotension and shock. Death can occur.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=168796&lvl=0
Notes: bell margin pulsates incessantly with remarkable strenght and rapidity.

170	Oral arms coalesced in proximal portion only	171
171	Oral arms with filaments	172
171	Oral arms without filaments	175
172	Umbrella more than 100 cm wide	



Nemopilema nomurai (Kishinouye 1922)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Nemopilema* (Kishinouye, 1922)
Nemopilema nomurai (Kishinouye, 1922)

Vernacular name: Echizen Kurage (Japan)

Morpho-anatomical characteristics
Genus *Nemopilema* (Kishinouye, 1922):

- Exumbrella with warts;
- Mouth arms fused in their upper portion, 3-winged in their lower portion,without clubs or fusiform appendages;
- With a central mouth;
- Subgenital ostia without papillae.

Nemopilema nomurai (Kishinouye, 1922):

- Bell 1000mm wide and more;
- Exumbrella with numerous warts, the size of wich increasing towards the central part;
- With large scapulets;
- With a narrow central mouth covered by a membrane;
- Mouth arms with whip-shaped appendages, without fusiform or club shapedappendages. Outer 2 wings of mouth arms with window-like openings;
- 8 rhopalia.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: from China to Japan.
Toxicity: sting causes burning pain ad erythematous eruption with small vesicles.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=321803&lvl=0

172 Umbrella less than 100 cm wide 173

173 Velar lappets 14-20 in each octant

Rhopilema esculentum, Kishinouye 1891

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Rhopilema* (Haeckel, 1880)
Rhopilema esculentum (Kishinouye, 1891)

Synonims: *Rhopilema asamushi* (Uchida, 1927)
Vernacular name: Bizen Kurage (Japan).

Morpho-anatomical characteristics
Genus *Rhopilema* (Haeckel, 1880):

- Umbrella dome-shaped, big size. Mesoglea thick, firm;
- Exumbrella smooth;
- 48 marginal lappets;
- With large scapulets;
- 8 Mouth arms fused basally, 3-winged distally, with numerous appendages or filaments.usually with a large terminal appendage;
- 16 radial canals extending to umbrella margin, connecting with each other through a network of fine meshed anastomosing canals;
- Without ring canal.

Rhopilema esculentum (Kishinouye, 1891):

- Bell more than 450mm wide, nearly hemispherical. Mesoglea thicker in central part, thinner towards margin;
- Exumbrella smooth;
- 128-176 marginal lappets, furrowed with numerous minute radial grooves. Velar lappets, oval, rhoapalar lappets ver small, lanceolated;
- 16 simitar-shaped scapulets;
- Mouth arms stout, triangular, pyramidal, 2/3 as long as umbrella diameter. Upper portion of mouth arms coalesced for half of their lenght, without mouthlets. Lower portion 2 times as long as upper one, with numerous mouths and more than 100 filamentous and fusiform appendages. No definite terminal appendages;
- 8 rhopalia with furrowed sensory pit;
- 16 radial canals arising from stomach, extending to bell margin and connected to each other by a network of anastomosing canals;
- Well developed subumbrellar circular muscles;
- Colour of live specimens: usually blue, occasionally dark red. Mouth frills brown, mouth arms appendages milky white or nearly transparent. Gonads yellow.

Life cycle: asexual reproduction by podocysts. Sexual reprodution: no brooded planulae. Polyp with 16 tentacles, short stalk, large manubrium. Up to 17 ephyrae per strobila.
Geographical and seasonal distribution: South Pacific Ocean.
Toxicity: venom contains proteolytic, cytotoxic and hemolytic molecules.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=499914&lvl=0

173 Velar lappets 8 in each octant 174

174 Exumbrella with sharply conical warts

Rhopilema hispidum, (Vanhöffen 1888)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Rhopilema* (Haeckel, 1880)
Rhopilema hispidum (Maas, 1903)

Vernacular name: Sand Type (Trade name), Ulbu Kiburu (Indonesia).

Morpho-anatomical characteristics
Genus *Rhopilema* (Haeckel, 1880):

- Umbrella dome-shaped, big size. Mesoglea thick, firm;
- Exumbrella smooth;
- 48 marginal lappets;
- With large scapulets;
- 8 Mouth arms fused basally, 3-winged distally, with numerous appendages or filaments.usually with a large terminal appendage;
- 16 radial canals extending to umbrella margin, connecting with each other through a network of fine meshed anastomosing canals;
- Without ring canal.

Rhopilema hispidum (Maas, 1903):

- Bell 120-650mm wide, hemispherical or higher than a hemisphere. Mesoglea very thin;
- Exumbrella with numerous small, sharp-pointed conical warts;
- 80 marginal lappets. Velar lappets oblong, rounded. Rhopalar lappets very small, narrow, lanceolated;
- With large scapulets, with frilled mouths and filform appendages upon their upper side;
- Mouth arms 2/3 as long as bell diameter. Upper portion of mouth arms coalesced. Lower portion 3-winged, one wing directed inwards, 2 directed outwards, triangular, with many frilled mouths surrounded by numerous swollen club-shaped appendages. With a large, club-shaped terminal appendage at the point of contact of the 3 wings. With 4 long whip-like appendages arising from the oral side of the fused part of mouth arms;
- 8 rhopalia without ocelli, with large furrowed sensory pits;
- 16 radial canals, all extending quite to the bell maegin and all giving offside branches which form an anastomosing network;
- Genital ostia with a large, relatively compressed projection. The 4 genital cavities are only aetially and irregularly fused;
- Subumbrellar circular muscles well developed;
- Colour of live specimens: exumbrella white.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean, Red Sea.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1191432&lvl=0
Notes: edible species. Can host ectoparasitic Copepoda.

174 Exumbrella with blunt tuberculation

Rhopilema nomadica (Galil, Spannier & Ferguson, 1990)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Rhopilema* (Haeckel, 1880)
Rhopilema nomadica (Galil, Spannier & Ferguson, 1990)

Vernacular name: Nomad Jellyfish

Morpho-anatomical characteristics
Genus *Rhopilema* (Haeckel, 1880):

- Umbrella dome-shaped, big size. Mesoglea thick, firm;
- Exumbrella smooth;

- 48 marginal lappets;
- With large scapulets;
- 8 Mouth arms fused basally, 3-winged distally, with numerous appendages or filaments.usually with a large terminal appendage;
- 16 radial canals extending to umbrella margin, connecting with each other through a network of fine meshed anastomosing canals;
- Without ring canal.

Rhopilema nomadica (Galil, Spannier & Ferguson, 1990):

- Bell 400-600mm wide, till 900mm. Rounded;
- Exumbrella rough, covered with minute, blunt warts;
- Mouth with numerous filaments laterally and one terminal vermicular appendage (terminating in a filament);
- Colour of live specimens: light blue.



Life cycle: asexual reproduction by polyp budding and podocysts. Sexual reproduction: no brooded planulae, polyp with 16 tentacles, short stalk, large and flexible manubrium. 5-6 ephyrae per strobila. Spawning occurs between June and August. The sexually reproducing medusae appear when the water temperature exceeds 24°C.
Geographical and seasonal distribution: South Eastern Mediterranean Sea (ALIEN), Red Sea, tropical neritic epipelagic species.
Toxicity: sting from *Rhopilema nomadica* (Galil, 1990) induce local burning pain and erythematous eruptions that may last weeks after the event. Delayed (after 2-7 days) cutaneous reactions and systemic symptoms such as fever, fatigue and muscular aches were described. In some case sting can be severe enough to require hospitalization.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=42738&lvl=0
Notes: *Rhopilema nomadica* (Galil, 1990) entered the Mediterranean Sea from Suez Canal in the late 1970s. Since the mid 1980s huge swarms of this species have appeared along the Levantine coast. It has recently recorded off Turkey, Greece and Malta.

175	Oral arms with clubs	176
175	Oral arms without clubs	177
176	Velar lappets 14-20 in each octant	

Rhopilema rhopalophorum, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Rhopilema* (Haeckel, 1880)
Rhopilema rhopalophorum (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Rhopilema* (Haeckel, 1880):

- Umbrella dome-shaped, big size. Mesoglea thick, firm;
- Exumbrella smooth;
- 48 marginal lappets;
- With large scapulets;
- 8 Mouth arms fused basally, 3-winged distally, with numerous appendages or filaments.usually with a large terminal appendage;
- 16 radial canals extending to umbrella margin, connecting with each other through a network of fine meshed anastomosing canals;
- Without ring canal.

Rhopilema rhopalophorum (Haeckel, 1880):

- Bell 42mm wide. Mesoglea very thin;
- Exumbrella smooth;
- 112-128 marginal lappets, roundish, flat;
- With small scapulets;
- Mouth arms about as long as half bell diameter with very few, small clubs. Filaments only on scapulets, faintly developed. One large spindle terminal appendage.Manubrium extraordinarily short;
- Intracircular canal system noticeably broad, with many anastomoses with rhopalar canals;
- Without subgenital papillae.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: North Atlantic Ocean.

176 Velar lappets 6 in each octant

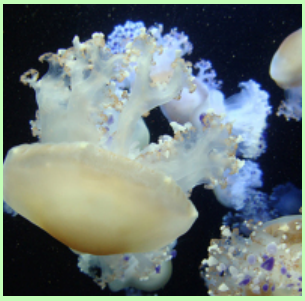
Rhopilema verrilli, (Fewkes 1887)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Rhopilema* (Haeckel, 1880)
Rhopilema verrilli (Fewkes, 1887)

Synonims: *Nectopilema verrilli* (Fewkes, 1887)
Vernacular name: Mushroom Jellyfish

Morpho-anatomical characteristics
Genus *Rhopilema* (Haeckel, 1880):

- Umbrella dome-shaped, big size. Mesoglea thick, firm;
- Exumbrella smooth;
- 48 marginal lappets;
- With large scapulets;
- 8 Mouth arms fused basally, 3-winged distally, with numerous appendages or filaments.usually with a large terminal appendage;
- 16 radial canals extending to umbrella margin, connecting with each other through a network of fine meshed anastomosing canals;
- Without ring canal.



Rhopilema verrilli (Fewkes, 1887):

- Bell 350mm wide, hemispherical in contraction, flatter than a hemisphere when expanded. Mesoglea thick and rigid;
- Exumbrella smooth oncentral part, on the margin there are many shallow furrow and surface resembles sand-paper, with numerous minute elevations;
- 64 marginal lappets. Velar lappets large, oval. Rhopalar lappets small, oval;
- Mouth arms short, tough, gelatinous, Y-shaped in cross section. With numerous mouths upon their lower and inner portion, in furrows bordered by numerous small, waving filaments. With 25-60 blunt translucent spindle shaped appendages, besprinkled with wart-like clusters of nematocysts. With one spindle terminal appendage;
- 16 radial canals that give rise to numerous side branches which anastomose in a network of canals;
- With heart shaped subgenital ostia;
- 8 rhopalia without ocelli;
- Well developed subumbrellar circular muscles;
- Colour of live specimens: mesoglea translucent, dull milky yellow. Mouths rich yellow with chocolate red blotches of pigment scattered at the bases of filaments. Subumbrellar circular muscles yellow. Radial canals chocolate, yellow or rich chestnut. Gonads dull milky yellow.

Life cycle: asexual reproduction by podocysts. Sexual reproduction: with brooded planulae. Polyp with up to 20 tentacles, short stalk, large and flexible manubrium. up to 3 ephyrae per strobila.
Geographical and seasonal distribution: North Atlantic Ocean.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880222&lvl=0

177 Oral arms without terminal clubs 178

177 Oral arms with terminal clubs 179

178 Umbrella ca. 150 mm wide; marginal lobes rectagular in shape

Eupilema scapulare, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Eupilema* (Haeckel, 1880)
Eupilema scapulare (Haeckel, 1880)

Morpho-anatomical characteristics

Genus *Eupilema* (Haeckel, 1880):

- 8 mouth arms, 3-winged, not coalesced, without appendages or filaments;
- 16 radial canals, all connected by an anastomosing network of peripheral canals.

Eupilema scapulare (Haeckel, 1880):

- Bell 150mm wide, 50mm high, hat shaped with rounded dome;
- 144 marginal lappets. Velar lappets long, narrow, rectangular. Rhopalar lappets small and oval;
- Mouth arms shorter than bell radius. Scapulets simitar-shaped, as long as the free, upper portion of mouth arms;
- 16 radial canals, all connected by an anastomosing network of canals;
- 8 rhopalia.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Indonesia, Japan.
Notes: NOMEN DUBIUM. Species very briefly described from a preserved specimen, Stiasny (1920) and Kramp (1961) consider it as a probably damaged specimen of *Rhopilema esculentum* (Kishinouye, 1891).

178 Umbrella ca. 400 mm wide; marginal lobes triangular in shape

Eupilema inexpectata (Pages, Gili and Bouillon, 1992)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Eupilema* (Haeckel, 1880)
Eupilema inexpectata (Pages, Gill & Bouillon, 1992)

Vernacular name: Root-Mouthed Jellyfish

Morpho-anatomical characteristics
Genus *Eupilema* (Haeckel, 1880):

- 8 mouth arms, 3-winged, not coalesced, without appendages or filaments;
- 16 radial canals, all connected by an anastomosing network of peripheral canals.

Eupilema inexpectata (Pages, Gill & Bouillon, 1992):

- Bell 400mm wide, hemispherical. Mesoglea thick on central part;
- Exumbrella finely granulated;
- 48 marginal lappets. Velar lappets triangular, pointed. Rhopalar lappets 1/3-1/4 as long as velar lappets, narrow, pointed;
- Mouth arms fused basally for more than half of their lenght. Lower portion 3-winged, with mouths on inner faces of wings. distal regions of each bearing several inwardly-directed, hooked-shaped, solid terminal appendages. No clubs or filaments;
- 16 radial canals, continuing to margin. Finely anastomosing peripheral network of canals and broaded centripetal network connected to ring canal;
- Colour in live specimens: uniformly transparent, excepting gonads and mouthlets. Sometimes with large blue patches on bell margin.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Africa.

179 Proximal portion of oral arms considerably longer than distal portion

Rhizostoma luteum, (Quoy & Gaimard 1827)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Rhizostoma* (Cuvier, 1800)
Rhizostoma luteum (Quoy & Gaimard, 1827)

Morpho-anatomical characteristics
Genus *Rhizostoma* (Cuvier, 1800):

- With small scapulaets and short manubrium;
- Mouth arms without club-shaped or filamentous appendages. With a single club-like terminal appendage;
- With ring canal;
- Intracircular network of canals with few and large meshes.

Rhizostoma luteum (Quoy & Gaimard, 1827):

- Bell 200-300mm wide, till 600mm;
- Exumbrella rough, with oval warts;
- 80 marginal lappets, short and oval;
- Mouth arms with upper portion longer and stronger than lower portion, fused throughout forming a thick manubrium. lower portion remarkably small. Terminal appendage with club-shaped extremity on a long, thin, prismatic pedicel;
- Gonads bean shaped. Subgenital papillae egg or bean shaped;
- Colour of live specimens: exumbrellar warts reddish brown, frilled mouths yellowish, terminal clubs on mouth arms deep purple brown.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Atlantic Ocean.
Notes: rare jellyfish.

179 Proximal portion of oral arms about as long as distal portion 180

180 Taxon present in the Mediterranean and in the Atlantic Ocean

Rhizostoma pulmo (Macri, 1778)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Rhizostoma* (Cuvier, 1800)
Rhizostoma pulmo (Macrì, 1778)

Synonims: *Medusa pulmo* (Macrì, 1778), *Rhizostoma aldrovandi* (Peron & Lesuer, 1809), *Cephea aldrovandi* (Lamarck, 1816), *Rhizostoma cuvieri* (Chamisso & Eysenhardt, 1821), *Pilema pulmo* (Haeckel, 1880)
Vernacular name: Football Jellyfish, Barrell Jellyfish.

Morpho-anatomical characteristics
Genus *Rhizostoma* (Cuvier, 1800):

- With small scapulaets and short manubrium;
- Mouth arms without club-shaped or filamentous appendages. With a single club-like terminal appendage;
- With ring canal;
- Intracircular network of canals with few and large meshes.

Rhizostoma pulmo (Macrì, 1778):

- Bell 400-600mm wide, somewhat higher than a hemisphere. Mesoglea thick, stiff over central part, thinner and flexible towards margin;
- Exumbrella finely granulated;
- 80 marginal lappets. Velar lappets pointed. Rhopaliar lappets smaller than velar ones;
- Mouth arms 3-wonged or Y-Shaped in cross section. 2 outwardly directed wing like expansions bear nmerous moths, surrounded by a row of short, flexible, knobbed tentacles. Terminally there's a large, translucent, terminal club, triangular in cross section, usually a little shorter than upper portion of arms. Scapulets hidden away under the concavity of subumbrella. A central mouth is present in very young medusae, buti t usually disappears in the adult;
- 8 rhopalia without ocelli;
- A network of anastomosing canals connects the uter side of the 16 radial canals. In the inner side there are 16 blindly ending areas of anastomosing canals. There is no distinct ring canal, but connections between the radial canals are wider along the inner edge of the zone of anastomosing canals than elsewhere;
- 4 gonads, looking like a much convoluted lobe. In older specimens, surface of gonads bearing grooves. Subgenital pits narrow, slit-like, with opening consttricted in the middle by a knob-shaped protuberance upon the floor of subumbrella;
- Subumbrellar musculature divided in 8 distinct peripheral fields;
- Colour of live specimens: mesoglea creamy yellow to milky, translucent. Marginal lappets cobalt blue or violet. Rhopalia tipped with orange. Mouths dull orange, yellow or brownish yellow. Same colour for outer parts of terminal knobs. Gonads yellowish.

Life cycle: Asexual reproduction.
Geographical and seasonal distribution: European Coasts, Mediterranean Sea, North Atlantic Ocean, North Sea.
Toxicity: moderately venomous. A contact may cause erythematous and ulcerous

lesions; rare cases of dermatitis are described as slight erythema disappears after a few ours, even though burning of the skin, sneezing, rhynorrea, urticaria and systemic symptoms have been referred.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=269554&lvl=0

180	Taxon present in the North Sea only	

Rhizostoma octopus (Macri 1778)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Rhizostomatidae (Cuvier, 1799)
Genus *Rhizostoma* (Cuvier, 1800)
Rhizostoma octopus (Macrì, 1778)

Morpho-anatomical characteristics
Genus *Rhizostoma* (Cuvier, 1800):

- With small scapulaets and short manubrium;
- Mouth arms without club-shaped or filamentous appendages. With a single club-like terminal appendage;
- With ring canal;
- Intracircular network of canals with few and large meshes.

Rhizostoma octopus (Macrì, 1778):

- Bell 150-600mm wide;
- Exumbrella finely granulated;
- 96 to 112 marginal lappets, short and pointed;
- Mouth arms with upper portion shorter than lower portion. Terminal appendage longer than upper portion, with a slender basal stalk and swollen club-like outer end;
- Colour of live specimens: bell milky yellow. Marginal lappets blue or violet. Mouth frills orange yellow to brownish red or violet.

Life cycle: asexual reproduction by polyp buds (rare), and podocysts. No brooded planulae. Polyp with up to 24 tentacles and short stalk, large and flexible manubrium. 1-5 ephyrae per strobila.
Geographical and seasonal distribution: North Sea, can swarm in September and October.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=941927&lvl=0

181	Oral arms shorter than usual	182
181	Oral arms of normal lenght	195
182	Oral arms without terminal appendages	183
182	Oral arms with terminal appendages	184
183	Medusa with rhopalar canals with anastomoses throughout thier length	

Mastigietta palmipes, (Haeckel 1880)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Mastigietta* (Stiasny, 1921)
Mastigietta palmipes (Haeckel, 1880)

Synonims: *Crambessa palmipes* (Haeckel, 1880), *Catostylus palmipes* (Mayer, 1910)

Morpho-anatomical characteristics
Genus *Mastigietta* (Stiasny, 1921):

- 8 mouth arms without appendages. Upper portion undivided, much reduced, only partly united by 8 membranes.

Mastigietta palmipes (Haeckel, 1880):

- Bell 70mm wide;
- Exumbrella with numerous nematocyst warts;
- 40-64 marginal lappets, smooth. Velar lappets squared. Rhopalar lappets oval;
- Arm disc with filaments. 8 mouth arms shorter than bell radius, thick, without appendages. Mouths extend to blunt tips of mouth arms without naked areas;

- 96-112 radial canals. Rhopalar canals with anastomoses throughout their lenght;
- Colour of preserved specimens: dull ocher-violet, mesoglea milky.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean. Pelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=322613&lvl=0

183 Medusa with perradial rhopalar canals without anastomoses, interradial canals with anastomoses

Versuriga anadyomene, (Maas 1903)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Versurigidae (Kramp, 1961)
Genus *Versuriga* (Kramp, 1961)
Versuriga anadyomene (Maas, 1903)

Synonims: *Versura anadyomene* (Mayer, 1910)

Morpho-anatomical characteristics
Genus *Versuriga* (Kramp, 1961):

- Arm disc with a cluster of frilled mouths at the centre, with filaments between them. Mouth arms 3-winged, broad, with club-shaped appendages and filaments. Without terminal appendage;
- 8 rhopalia. Exumbrellar sensory pits without radiating furrows;
- Subgenital ostia wide;
- Subumbrellar circular musculature well developed, radial musculature absent.

Versuriga anadyomene (Maas, 1903):

- Bell up to 600mm wide, flat. Mesoglea very thin;
- Exumbrella with a network of anastomosing furrows, leaving irregular polygonal elevations;
- 80 marginal lappets. Velar lappets large and semicircular. Rhopalar lappets small and narrow;
- Arm disc with filaments. 8 mouth arms as long as bell radius, laterally compressed with numerous flat branches which bear mouths. With small club-shaped appendages and filaments (only on ventral side);
- Rhopalar canals broad without anastomoses. Interradial canals narrow, with anastomoses;
- 8 rhopalia with small exumbrellar sensory pits, without furrows;
- Colour of live specimens: dull brownish red exumbrellar grooves, the rest a pale creamy pink to milky white. Purplish brown mouth frills, dull brownish yellow muscles and gonads.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Malayan Archipelago, Philippines, Indian Ocean. Oceanic species.
Toxicity: sting painful but not dangerous.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880245&lvl=0

184 Intracircular mesh-work of canals never communicating with the rhopalar canals 185

184 Intracircular mesh-work of canals usually communicating with the rhopalar canals 187

185 Terminal appendages nearly as long as the oral arms

Phyllorhiza pacifica, (Light 1921)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Phyllorhiza* (Agassiz, 1862)
Phyllorhiza pacifica (Light, 1921)

Synonims: *Cotylorhizoides pacificus* (Mayer, 1915)

Morpho-anatomical characteristics
Genus *Phyllorhiza* (Agassiz, 1862):

- Bell up to 500mm wide, more or less hemispherical;

- Exumbrella with granular surface;
- 8 mouth arms, broad, leaf-shaped, with large window-like openings in the lateral membranes. Lower portions with numerous filaments. Without terminal clubs;
- Intracircular network of canals never communicating with perradial rhopalar canals;
- Subumbrellar circular musculature interrupted in the 8 radii.

Phyllorhiza pacifica (Light, 1921):
- Bell 20-30mm wide, dome-shaped;
- Exumbrella finely granular;
- 80 marginal lappets;
- 8 mouth arms, with a very long terminal club of a solid consistency;
- Rhopalar canals large and distinct, inter-rhopalar canals much smaller and anastomosing;
- Ring canal small;
- 8 rhopalia, with small but deep exumbrellar sensory pit;
- Subgenital cavity wide and unitary;
- Subumbrellar circular musculature well developed, radial musculature absent;
- Colour of live specimens: purple.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.

185 Terminal appendages very long, with distal expansion 186

186 Oral filaments without a triple heart-shaped knob; bell diameter far larger than 25 cm

Phyllorhiza punctata (von Lendenfeld, 1884)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Phyllorhiza* (Agassiz, 1862)
Phyllorhiza punctata (Von Lendenfeld, 1884)

Synonims: *Cotylorhizoides pacificus* (Light, 1921)
Vernacular name: Australian Spotted Jellyfish

Morpho-anatomical characteristics
Genus *Phyllorhiza* (Agassiz, 1862):
- Bell up to 500mm wide, more or less hemispherical;
- Exumbrella with granular surface;
- 8 mouth arms, broad, leaf-shaped, with large window-like openings in the lateral membranes. Lower portions with numerous filaments. Without terminal clubs;
- Intracircular network of canals never communicating with perradial rhopalar canals;
- Subumbrellar circular musculature interrupted in the 8 radii.



Phyllorhiza punctata (Von Lendenfeld, 1884):
- Bell 250-500mm wide, voulted. Mesoglea thick, firm but flexible;
- Exumbrella surface finely granular, shallowly grooved radially between lappets;
- Subumbrella with numerous filaments and gastrula-stage embryos adhering between them;
- 80 marginal lappets, typically in each octant 4 truncated or notched velar ones centrally flanked on each side by narrower pointed ones and a single rhopalar lappet on each side. The central lappets partly fused basally by a membranous web;
- 8 mouth arms, large, bushy. With numerous frilled mouths and stalked suckers, 2-3 long filaments with a terminal triple-heart shaped appendages;
- 80-104 anastomosed canals;
- 8 rhopalia;
- Subgenital ostia oval, large;
- Colour of live specimens: bell brown with conspicuos white spots. Arm disc, main stems, mouths arms branches, mesoglea colourless. Mouths brown, filaments colourless.

Life cycle: *Phyllorhiza punctata* (Von Lendenfeld, 1884) is known to have a scyphistoma stage in its life cycle, but little has yet been published on this polypoid stage.
Geographical and seasonal distribution: Brazil (Alien), Caribbean sea (Alien), Gulf of Mexico (Alien), Mediterranean Sea (Alien), North Atlantic Ocean (Alien), Pacific Ocean.
GENBANK:http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=493932&lvl=0

186 Oral filaments with a triple heart-shaped knob; bell of ca. 25 cm of diameter

Phyllorhiza peronlesueuri (Goy 1990)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Phyllorhiza* (Agassiz, 1862)
Phyllorhiza peronlesueri (Goy, 1990)

Morpho-anatomical characteristics
Genus *Phyllorhiza* (Agassiz, 1862):

- Bell up to 500mm wide, more or less hemispherical;
- Exumbrella with granular surface;
- 8 mouth arms, broad, leaf-shaped, with large window-like openings in the lateral membranes. Lower portions with numerous filaments. Without terminal clubs;
- Intracircular network of canals never communicating with perradial rhopalar canals;
- Subumbrellar circular musculature interrupted in the 8 radii.

Phyllorhiza peronlesueri (Goy, 1990):

- Bell 150mm wide, dome –shaped;
- Exumbrella without warts on apex;
- 80 marginal lappets;
- 8 mouth arms, 3-winged, with frilled mouths and stalked suckers. With filaments between the mouths. With a triple heart shaped terminal appendage;
- 8 radial canals in connection with a network of anastomosing canals;
- 8 rhopalia
- Subumbrellar circular musculature well developed;
- With very large subgenital ostia.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Australia.
Notes: Specimens collected from hypersaline water associated with stromatolites in Shark Bay, Western Australia.

187 Mouth arms twice as long as disk radius 188

187 Not as above 189

188 In each octant more than 10 canal-roots

Mastigias pantherinus, Haeckel 1880

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Mastigias* (Agassiz, 1862)
Mastigias pantherinus (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Mastigias* (Agassiz, 1862):

- Mouth arms 3-winged, terminating in a naked, club-shaped extremity. With small club-shaped appendages and filaments between the mouths. Mouths located not only along the 3 edges of the mouth arms but also on their flat, expanded sides;
- 8 rhopalia;
- A central stomach gives rise to 8 rhopalar canals and numerous interrhopalar canals, all of which anastomose and connect with the ring canal;
- Exumbrellar sensory pits without furrows;
- With unitary subgenital cavity.

Mastigias pantherinus (Haeckel, 1880):

- Bell size unknown;
- Exumbrella with “eye spots” consisting in white circles with brown center and brown rim;
- 128 marginal lappets;
- 8 Mouth arms as long as bell diameter. Upper portion half as on gas the 3-winged lower portion. with very long terminal clubs;
- Colour of live specimens: bell dark brown with “eye spots”, bell margin black.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean. Pelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=322613&lvl=0
Notes: according to Mayer (1910) and Stiasny (1921), the species has been only seen by Haeckel, but it seems well characterized.

188 In each octant up to 10 canal-roots

Mastigias sidereus, Chun 1896

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Mastigias* (Agassiz, 1862)
Mastigias siderea (Chun, 1896)

Morpho-anatomical characteristics
Genus *Mastigias* (Agassiz, 1862):

- Mouth arms 3-winged, terminating in a naked, club-shaped extremity. With small club-shaped appendages and filaments between the mouths. Mouths located not only along the 3 edges of the mouth arms but also on their flat, expanded sides;
- 8 rhopalia;
- A central stomach gives rise to 8 rhopalar canals and numerous interrhopalar canals, all of which anastomose and connect with the ring canal;
- Exumbrellar sensory pits without furrows;
- With unitary subgenital cavity.

Mastigias siderea (Chun, 1896):

- Bell 70mm wide, flatly rounded;
- Exumbrella with deep radial furrows on the surface between the lappets;
- 56-64 marginal lappets;
- 8 mouth arms as long as bell diameter, upper portion longer than lower portion. with club shaped terminal filaments;
- 7 radial canals. Intracircular network of canals with large open meshes. Rhopalar canals with anastomoses;
- Colour of live specimens: bell light yellowish-brown with round white spots, which are largest over the ring-canal and smaller near the margin. 8 blackish streaks along the 8 rhopalar radial-canals on the subumbrella, and also white specks in each octant of the subumbrella between the stomach-pouches and the circular furrow. Mouth arms brown with small white spots. Filaments yellowish.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean. Pelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=322613&lvl=0

189 Mouth arms shorter than disk radius 190

189 Mouth arms long as disk radius 192

190 In each octant more than 10 canal-roots

Mastigias ocellatus, (Modeer 1791)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Mastigias* (Agassiz, 1862)
Mastigias ocellatus (Haeckel, 1880)

Synonims: *Medusa ocellata* (Madeer, 1791)
Vernacular name: Golden Medusa

Morpho-anatomical characteristics
Genus *Mastigias* (Agassiz, 1862):

- Mouth arms 3-winged, terminating in a naked, club-shaped extremity. With small club-shaped appendages and filaments between the mouths. Mouths located not only along the 3 edges of the mouth arms but also on their flat, expanded sides;
- 8 rhopalia;
-

- A central stomach gives rise to 8 rhopalar canals and numerous interrhopalar canals, all of which anastomose and connect with the ring canal;
- Exumbrellar sensory pits without furrows;
- With unitary subgenital cavity.

Mastigias ocellatus (Haeckel, 1880):

- Bell 100mm wide, can reach 190mm;
- Exumbrella with nematocyst warts in polygonal patterns;
- 96 marginal lappets;
- Arm disc with few filaments. 8 Mouth arms shorter than bell radius, broad with firm laterla branches. With club-shaped appendages and filaments;
- 120-160 radial canals. Rhopalar canals bottle shaped, without anastomoses;
- Colour of live specimens: reddish. Exumbrella with numerous white spots with brown centre and rim, resembling “eye spots”, plus other simple brown spots. Tips of terminal club blue.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean, in October. Pelagic species.
Toxicity: harmless sting.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=322613&lvl=0

190	In each octant up to 10 canal-roots	191
191	Vaulted bell, thin at margin but very thick at apex	

Mastigias gracilis, (Vanhöffen 1888)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Mastigias* (Agassiz, 1862)
Mastigias gracilis (Vanhöffen, 1888)

Vernacular name: Golden Medusa

Morpho-anatomical characteristics
Genus *Mastigias* (Agassiz, 1862):

- Mouth arms 3-winged, terminating in a naked, club-shaped extremity. With small club-shaped appendages and filaments between the mouths. Mouths located not only along the 3 edges of the mouth arms but also on their flat, expanded sides;
- 8 rhopalia;
- A central stomach gives rise to 8 rhopalar canals and numerous interrhopalar canals, all of which anastomose and connect with the ring canal;
- Exumbrellar sensory pits without furrows;
- With unitary subgenital cavity.

Mastigias gracilis (Vanhöffen, 1888):

- Bell 35mm wide, vaulted, thin at margin but very thick at apex;
- Exumbrella with irregularly placed clusters of small nematocyst warts;
- 40-80 marginal lappets. Margin irregularly lobed;
- Arm disc with long filaments. 8 Mouth arms rarely as long as bell radius. Lower portion 3-4 times as long as upper portion. with short, gelatinous knob-like appendages between the mouths and with a short rounded terminal appendage;
- 64 main radial canals which anastomose with a network of slender canals;
- Subgenital ostia broad and appearing double, giving the false appearance of 8 instead of 4 genitasl pits. The 4 gonads are separated into 2 lateral rays by a central gelatinous flap which divides the subgenital ostium into 2 side-openings;
- Subumbrellar circular musculature wide and well developed, but confined to the peripheral part of the subumbrella.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Red Sea, in September. Pelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=322613&lvl=0

191	Doubtful species, flat and hat-shaped bell, average size unknown	

Mastigias roseus (Reynaud 1830)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Mastigias* (Agassiz, 1862)
Mastigias roseus (Reynaud, 1830)

Morpho-anatomical characteristics
Genus *Mastigias* (Agassiz, 1862):

- Mouth arms 3-winged, terminating in a naked, club-shaped extremity. With small club-shaped appendages and filaments between the mouths. Mouths located not only along the 3 edges of the mouth arms but also on their flat, expanded sides;
- 8 rhopalia;
- A central stomach gives rise to 8 rhopalar canals and numerous interrhopalar canals, all of which anastomose and connect with the ring canal;
- Exumbrellar sensory pits without furrows;
- With unitary subgenital cavity.

Mastigias roseus (Reynaud, 1830):

- Bell size unknown, flat, hat-shaped;
- Exumbrella with deep radial furrows on the surface between the lappets;
- 56-64 marginal lappets, small and elongated;
- 8 “separated” mouth arms as long as bell radius. Upper portion cylindrical, lower portion pyramidal and 3-winged. Outer surfaces of the 3 wings with deep furrows and complexly folded. With numerous appendages between the mouths. With a club shaped gelatinous terminal appendage on each arm;
- 4 horseshoe shaped gonads;
- Colour of specimens: bell margin and mouths deep rose. Gonads paler.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Atlantic Ocean. Pelagic species.
Notes: NOMEN DUBIUM. Mayer (1910) isn’t certain even of the generic position of this medusa, while Stiasny (1920) considers it as a doubtful species.

192	In each octant up to 10 canal-roots	193
192	In each octant more than 10 canal-roots	194
193	Umbrella not flat	

Mastigias papua, (Lesson 1830)



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Mastigias* (Agassiz, 1862)
Mastigias papua (Lesson, 1830)

Synonims: *Cephea papua* (Lesson, 1829)
Vernacular name: Golden Medusa, Spotted Jelly, Tako Kurage (Japan)

Morpho-anatomical characteristics
Genus *Mastigias* (Agassiz, 1862):

- Mouth arms 3-winged, terminating in a naked, club-shaped extremity. With small club-shaped appendages and filaments between the mouths. Mouths located not only along the 3 edges of the mouth arms but also on their flat, expanded sides;
- 8 rhopalia;
- A central stomach gives rise to 8 rhopalar canals and numerous interrhopalar canals, all of which anastomose and connect with the ring canal;
- Exumbrellar sensory pits without furrows;
- With unitary subgenital cavity.

Mastigias papua (Lesson, 1830):

- Bell 30-80mm wide, hemispherical. Firm mesoglea;
- Exumbrella finely granular;
- 80 marginal lappets. Velar lappets round with deep furrows. Rhopalar lappets small and pointed;
- 8 Mouth arms as long as bell radius. Upper simple portion longer than the 3-winged lower portion. with club-shaped terminal filaments which may be as long as bell

- diameter, sometimes reduced in size or even wholly absent. With many small, club-shaped appendages between the mouths;
- 56-72 straight radial canals, all connected by a wide ring canal;
- 4 gonads;
- Subumbrellar circular muscles widely interrupted in the 8 rhopalar radii;
- Colour of live specimens: greenish-blue, olive green with yellow, white or brown spots. Colours given by symbiont algae.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean, Kenya, Red Sea, South Africa in coastal habitats.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=596313&lvl=0
Notes: this species swims incessantly and often swarms. It obtains 70% of nourishment thank to symbiont zooxanthellae. The remaining comes from phytoplankton, zooplankton and small invertebrates.

193 Umbrella flat, disk-shaped

Phyllorhiza lutzoni, Mayer 1915

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Phyllorhiza* (Agassiz, 1862)
Phyllorhiza luzoni (Mayer, 1915)

Morpho-anatomical characteristics
Genus *Phyllorhiza* (Agassiz, 1862):
- Bell up to 500mm wide, more or less hemispherical;
- Exumbrella with granular surface;
- 8 mouth arms, broad, leaf-shaped, with large window-like openings in the lateral membranes. Lower portions with numerous filaments. Without terminal clubs;
- Intracircular network of canals never communicating with perradial rhopalar canals;
- Subumbrellar circular musculature interrupted in the 8 radii.

Phyllorhiza luzoni (Mayer, 1915):
- Bell 60mm wide, flat;
- Exumbrella finely granular;
- 88 marginal lappets. Velar lappets rounded. Rhopalar lappets sickle shaped;
- Arm disc cruciform. 8 mouth arms slender and strongly compressed laterally. Upper portion naked and somewhat longer than 3-winged lower portion. Appendages probably lost;
- 8 main rhopalar radial canals anastomosed with 48-72 inter-rhopalar canals;
- Ring canal gives rise to a fine-meshed network of canals on its outer side which extends through the lappets;
- 8 rhopalia, without exumbrellar sensory pit;
- Subgenital cavity wide and unitary;
- Subumbrellar circular musculature weakly developed, broad and not interrupted;
- Colour of live specimens: light green with grayish white spots.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Philippines.
Notes: Nomen Dubium, systematic position uncertain. Mayer (1915) described two specimens captured in 1908, both of which became macerated in the preservative fluid. Stiasny (1921) considers it as a doubtful species.

194 Perradial rhopalar canals not bottle-shaped

Mastigias albipunctatus, Stiasny 1920

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Mastigias* (Agassiz, 1862)
Mastigias albipunctatus (Stiasny, 1920)

Vernacular name: Golden Medusa

Morpho-anatomical characteristics

Genus *Mastigias* (Agassiz, 1862):

- Mouth arms 3-winged, terminating in a naked, club-shaped extremity. With small club-shaped appendages and filaments between the mouths. Mouths located not only along the 3 edges of the mouth arms but also on their flat, expanded sides;
- 8 rhopalia;
- A central stomach gives rise to 8 rhopalar canals and numerous interrhopalar canals, all of which anastomose and connect with the ring canal;
- Exumbrellar sensory pits without furrows;
- With unitary subgenital cavity.

Mastigias albipunctatus (Stiasny, 1920):

- Bell 145mm wide, faintly vaulted;
- Exumbrella with a network of nematocyst warts. With a whitish accumulation of nematocysts at apex;
- 48-112 marginal lappets;
- Arm disc with one very long filament, surrounded by very short ones. 8 mouth arms as long as bell radius, with terminal appendages of different lenght and shape;
- 96-112 radial canals. Rhopalar canals shorter and broader than the others, with few or no anastomoses.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean. Pelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=322613&lvl=0

194 Perradial rhopalar canals bottle-shaped

Mastigias andersoni, Stiasny 1926

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Kolpophorae
Familia Mastigiidae (Stiasny, 1921)
Genus *Mastigias* (Agassiz, 1862)
Mastigias andersoni (Stiasny, 1926)

Vernacular name: Golden Medusa

Morpho-anatomical characteristics

Genus *Mastigias* (Agassiz, 1862):

- Mouth arms 3-winged, terminating in a naked, club-shaped extremity. With small club-shaped appendages and filaments between the mouths. Mouths located not only along the 3 edges of the mouth arms but also on their flat, expanded sides;
- 8 rhopalia;
- A central stomach gives rise to 8 rhopalar canals and numerous interrhopalar canals, all of which anastomose and connect with the ring canal;
- Exumbrellar sensory pits without furrows;
- With unitary subgenital cavity.

Mastigias andersoni (Stiasny, 1926):

- Bell up to 90mm wide, vaulted;
- Exumbrella with a polygonal network of nematocyst warts;
- 48 marginal lappets, broad. The two median ones of every octant usually split;
- Arm disc quadratic with one long central filament and 4 peripheral ones. Mouth arms as long as bell radius. Witohout filaments, with long terminal appendages with a club-shaped swelling at their end;
- 96-120 radial canals. Rhopalar canals bottle shaped, without anastomoses.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Australia. Pelagic species.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=322613&lvl=0

195 Oral arms with filaments 196

195 Oral arms without filaments 199

196 Intracircular anastomosing network in communication with the rhopalar canals 197

196 Intracircular anastomosing network not in communication with the rhopalar canals 198

197 Oral arms narrow with short filaments

Acromitus flagellatus, (Maas 1903)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Acromitus* (Light, 1914)
Acromitus flagellatus (Maas, 1903)

Morpho-anatomical characteristics
Genus *Acromitus* (Light, 1914):

- 8 Mouth arms with a terminal whip-like appendage, usually whip-like filaments;
- Broad intracircular anastomosing network in direct communication with the ring canal and the rhopalar canals only (not with the interrhopalar canals);
- 4 gonads.

Acromitus flagellatus (Maas, 1903):

- Bell 120-200mm wide, hemispherical;
- Exumbrella slightly pointed, with smooth to finely granulated surface;
- Mouth arm about as long as diameter of bell, narrow, with basal regions joined by membrane, tapering to blunt point. With many short lateral filaments and a long terminal filament (about 2/3 mouth arm lenght). In some specimens, filaments missing;
- Intracircular anastomosing network richly branched;
- Subgenital papillae hammer to heart shaped;
- Colour of live specimens: near white bell with or without irregular brown spots, especially peripherally.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: West Indian Ocean to Central Pacific Ocean. Coastal habitat, sometimes in brackish or silty waters.

197 Oral arms thick and broad with long filaments

Acromitus maculosus, Light 1914

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Acromitus* (Light, 1914)
Acromitus maculosus (Light, 1914)

Synonims: *Acromitus hardenbergi* (Stiasny, 1934), *Acromitus rabanchatu* (Annadale, 1915), *Acromitus tankahkeei* (Light, 1924)
Vernacular name: Lambuh Merah, River Type (trade name)

Morpho-anatomical characteristics
Genus *Acromitus* (Light, 1914):

- 8 Mouth arms with a terminal whip-like appendage, usually whip-like filaments;
- Broad intracircular anastomosing network in direct communication with the ring canal and the rhopalar canals only (not with the interrhopalar canals);
- 4 gonads.

Acromitus maculosus (Light, 1914):

- Bell 150mm wide,50mm high, relatively flat. Mesoglea relatively thin around apex, thick in middle portion and thin again toward margin;
- Exumbrella with smooth to finely granulated surface;
- Marginal lappets small, with rounded edges, 8 per octant but sometimes 6 between neighbouring rhopalia;
- Mouth arms not coalesced, each with 3 wings, without terminal filament but with numerous tiny filamentous appendages on each wing;
- 16 radial canals, 1 ring canal. Intracircular anastomosing network richly branched with forked extracircular canals;
- 4 gonads. Subgenital papillae pear or egg shaped. Genital ostia half ellipse-shaped;
- Subumbrellar muscle well developed. Muscle fields interrupted over rhopalar canals;
- Colur in life white or slightly brown, faintly pink or purple in some specimens.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean.
Notes: Edible species.

198 Distal three-winged portion of oral arms about twice as long as proximal simple portion

Crambione bartschi, (Mayer 1910)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Crambione* (Maas, 1903)
Crambione bartschi (Mayer,1910)

Morpho-anatomical characteristics
Genus *Crambione* (Maas, 1903):

- Smooth exumbrella;
- 8 3-winged mouth arms, each wing bears secondary branches. Both wings and branches bear mouths, among which there are clubs and whip-shaped filaments, without terminal appendages;
- With narrow, wide-meshed,intracircular anastomosing network, not stretching far towards the centre and communicating only with the ring canal;
- Circular muscles not interrupted;
- 8 rhopalia with a pair of ocelli;
- Unitary subgenital cavity.

Crambione bartschi (Mayer,1910):

- Bell 74mm wide. Mesoglea thick but not very rigid;
- 80 marginal lappets,bluntly pointed;
- Mouth arms as long as bell radius. Lower 3-winged portion twice as long as upper simple portion. With numerous simple flattened, tapering filaments between the mouths. Without club-shaped appendages;
- Extracircular network of canals not extending into velar lappets, intracircular system with almost quadratic meshes.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Philippines.

198 Distal three-winged portion of oral arms as long as proximal simple portion

Crambione mastigophora, Maas 1903



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Crambione* (Maas, 1903)
Crambione mastigophora (Maas,1903)

Vernacular name: Sea Tomato (Australia), Prigi Type (trade name)

Morpho-anatomical characteristics
Genus *Crambione* (Maas, 1903):

- Smooth exumbrella;
- 8 3-winged mouth arms, each wing bears secondary branches. Both wings and branches bear mouths, among which there are clubs and whip-shaped filaments, without terminal appendages;
- With narrow, wide-meshed,intracircular anastomosing network, not stretching far towards the centre and communicating only with the ring canal;
- Circular muscles not interrupted;
- 8 rhopalia with a pair of ocelli;
- Unitary subgenital cavity.

Crambione mastigophora (Maas,1903):

- Bell 250-400mm wide, highly arched and rounded. Mesoglea thick at centre, margin thinner;
- 80 marginal lappets. Velar lappets wide with rounded margin, rhopalar lappets short with rounded tips;
- Mouth arms with massive upper part, nearly circular in cross section. Lower parts with 3 wings which meet at their lower end, giving a pyramidal general outline to the

- outer half of each mouth arm. With many small club-shaped and some long filamentous appendages;
- Extracircular canal system fine meshed, not extending into velar lappets. Intracircular system with few meshes, partly elongated, radiating;
- Large, heart-shaped sensory pits on exumbrella with prominent radiating furrows;
- Genital ostia as narrow slits, withput gelatinous projection around its margin. The 4 gonads form a cross following the lines of the stomach. With unitary subgenital cavity which is used as brood-sac for the planula larvae;
- Colour in live specimens: white or faintly brown. Mesoglea transparent and milky. Frilled mouths whitish, clubs reddish. Gonads flesh coloured, pinkish or reddish.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=880226&lvl=0
Notes: edible species.

199	Oral arms with terminal clubs	200
199	Oral arms without terminal clubs	202
200	In each octant 10 velar lappets	

Leptobrachia leptopus, (Chamisso & Eysenhardt 1821)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Leptobrachia* (Brandt, 1838)
Leptobrachia leptopus (Chamisso & Eysenhardt, 1821)

Synonims: *Leonura terminalis* (Haeckel, 1880), *Rhizostoma leptopus* (Chamisso & Eysenhardt, 1821)

Morpho-anatomical characteristics
Genus *Leptobrachia* (Brandt, 1838):
- 8 3-winged mouth arms, linear, long, without frilled mouths near the middle of their lenght, terminating in a naked, pointed end;
- Near the point of origin of the arm disc there is a ventral row of mouths. Beyond the naked mid region there are 3 lines of mouths, one ventral and 2 dorsal ones.

Leptobrachia leptopus (Chamisso & Eysenhardt, 1821):
- Bell 80mm wide, flatter than a hemisphere;
- Exumbrella covered with regularly arranged polygonal elevations bordered by furrows;
- 80 marginal lappets, sharply pointed and largest at the middle of each octant. Converging furrows extend up the sides of the exumbrella from the clefts between the lappets;
- Mouth arms as long as bell diameter, triangular in cross section, ending in a triangular pointed naked extremity, ¼ as long as the entire arm itself. 8 rows of frilled mouths radiate towards from a raised rosette of frills at the centre of the arm disc and extend down the ventral angle of each mouth arm for a distance of about ¼ of its lenght. Below the arm is naked for about ¼ of its lenght. Below this naked region there are 3 double rows of frilled mouths, till a naked terminal club;
- A network of anastomosing canals connects the ring canal with the radial canals on its inner side. On its outer side the ring canal gives off a forked canal into each velar lappet and a network of anastomosing canals which connects all the canals in the lappets;
- Bell light violet, margin and frilled mouths darker. 32 reddish-violet spots on exumbrella near the margin. Gonads yellow.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: New Zealand.
Notes: Kramp (1961) considers it as a doubtful species.

200	Not as above	201
201	In each octant 16 velar lappets	

Crambionella orsini, (Vanhoffen 1888)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae

Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Crambionella* (Stiasny, 1921)
Crambionella orsini (Vanhöffen, 1888)



Morpho-anatomical characteristics
Genus *Crambionella* (Stiasny, 1921):

- Marginal lappets separated by a deep furrow, free of any anastomosing canal;
- 8 3-winged mouth arms, with terminal appendages, pyramidal in shape, without whip-like filaments;
- Intracircular anastomosing canal system communicates only with ring canal (not stomach), occasionally with adjacent radial canals.

Crambionella orsini (Vanhöffen,1888):

- Bell 100-200mm wide, plump, massive, hard and cartilaginous, edged with a skirt furrowed between the fused lappets;
- Exumbrella smooth;
- 128 velar lappets, sharp pointed, smooth, separated by colourless furrows extending upwards on exumbrella;
- Mouth arms as long as bell radius, upper portion short, 3-winged lower portion large, prismatic, with a short gelatinous pyramidal, bluntly pointed, 3 cornered terminal knob;
- Colour in live specimens: bell colour varies from chocolate through yellowish brown to milky yellow, with purple brown blotches especially peripherally.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: West Indian Ocean, Arabian Gulf to India. Coastal habitat, sometimes in estuaries. Can bloom seasonally.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=493927&lvl=0

201 In each octant 12 velar lappets

Crambionella stuhlmanni, (Chun 1896)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Crambionella* (Stiasny, 1921)
Crambionella stuhlmanni (Chun, 1896)

Synonims: *Crambessa stuhlmanni* (Chun, 1896), *Catostylus stuhlmanni* (Mayer, 1910), *Crambionella annadalei* (Rao, 1931)
Vernacular name: Ball Type (Trade name)

Morpho-anatomical characteristics
Genus *Crambionella* (Stiasny, 1921):

- Marginal lappets separated by a deep furrow, free of any anastomosing canal;
- 8 3-winged mouth arms, with terminal appendages, pyramidal in shape, without whip-like filaments;
- Intracircular anastomosing canal system communicates only with ring canal (not stomach), occasionally with adjacent radial canals.

Crambionella stuhlmanni (Chun, 1896):

- Bell 120-140mm wide, 80-90mm high, hemispherical. Central part thick, relatively thin at margin;
- Exumbrella with minute wrinkles;
- 112-120 till 128-152 marginal lappets, triangular with bluntly rounded tips. Marginal grooves running vertically from between neighbouring lappets with a median row of sharp, pointed projections in central 1/3 between adjacent marginal grooves. Some marginal grooves located on both sides of each rhopalium connected to each other;
- Mouth arms longer than bell height, 3-winged lower portion with many small foliaceous appendages, large on the 2 outer wings, small on inner wing. One large, long, triangular terminal appendage with a blunt tip;
- 4 genital ostia, crescent-shaped with a narrow opening, without projections around margin.
- Subumbrellar muscle well developed;
- Colour in life: exumbrella, mouth arms and terminal clubs transparent white, light brown mouths and appendages, gonads cream.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Indian Ocean.
GENBANK: http://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=888173&lvl=0
Notes: edible species.

202 Intracircular anastomosing network not in communication with the rhopalar canals 203

202 Intracircular anastomosing network in communication with the rhopalar canals 204

203 In each octant 4 cleft velar lappets

Acromitoides purpurus, (Mayer 1910)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Acromitoides* (Mayer, 1910)
Acromitoides purpurus (Mayer, 1910)

Synonims: *Catostylus purpurus* (Mayer, 1910)

Morpho-anatomical characteristics
Genus *Acromitoides* (Mayer, 1910):

- 3 mouth arms, stocky, bluntly ending, tight curly, without appendages;
- Stomach cross-shaped, short and wide;
- Exumbrellar sensory pits with radial folds;
- 16 radial canals: 8 rhopalar ones arrive till the bell margin, 8 interrhopalar ones till the ring canal;
- Subgenital ostia as wide as the arm pillar, with or without subgenital papillae;
- 8 rhopalia;
- Ring muscle present.

Acromitoides purpurus (Mayer, 1910):

- Bell 115mm wide, 35mm high;
- Exumbrella smooth;
- 32 clefts and 16 simple velar lappets;
- Mouth arms shorter than radius of bell. Lower 3-winged portion 5-7 times as long as upper cylindrical portion;
- Uniform dark brownish purple colour.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Indo Pacific Ocean.
Notes: according to Kitamura & Omori (2014), although *Acromitoides purpurus* (Mayer, 1910) and *Acromitoides stiphropterus* (Schultze, 1897) are included in the genus *Acromitoides*, morphological differences between the two species are not clear. Edible jellyfish.

203 In each octant at least 5 cleft velar lappets

Acromitoides stiphropterus, (Schultze 1897)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Acromitoides* (Mayer, 1910)
Acromitoides stiphropterus (Schultze, 1897)

Morpho-anatomical characteristics
Genus *Acromitoides* (Mayer, 1910):

- 3 mouth arms, stocky, bluntly ending, tight curly, without appendages;
- Stomach cross-shaped, short and wide;
- Exumbrellar sensory pits with radial folds;
- 16 radial canals: 8 rhopalar ones arrive till the bell margin, 8 interrhopalar ones till the ring canal;
- Subgenital ostia as wide as the arm pillar, with or without subgenital papillae;
- 8 rhopalia;
- Ring muscle present.

Acromitoides stiphropterus (Schultze, 1897):

- Bell 100mm wide;
- Exumbrella smooth;
- 40 large cleft velar lappets, 10mm long;
- Mouth arms shorter than radius of bell. Lower 3-winged portion 5-7 times as long as upper cylindrical portion;
- Exumbrella with 4 perradial areas of brown spots.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Central Indo Pacific Ocean.
Notes: according to Kitamura & Omori (2014), although *Acromitoides purpurus* (Mayer, 1910) and *Acromitoides stiphropterus* (Schultze, 1897) are included in the genus *Acromitoides*, morphological differences between the two species are not clear.

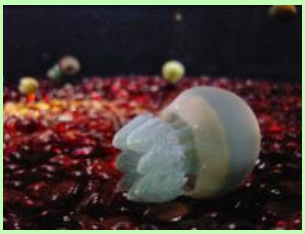
204 Distal three-winged portion of oral arms 1/6 as long as proximal simple portion

Catostylus mosaicus, (Quoy & Gaimard 1824)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Catostylus* (Agassiz, 1862)
Catostylus mosaicus (Quoy & Gaimard, 1824)

Vernacular name: Blubber Jellyfish, Blue Jelly

Morpho-anatomical characteristics
Genus *Catostylus* (Agassiz, 1862):
- 8 Mouth arms without appendages;
- With intracircular anastomosing canal system communicating with rhopalar, interrhopalar and ring canals;
- Subumbrellar muscles well developed;
- 8 rhopalia;
- Unitary subgenital cavity with 4 gonads.



Catostylus mosaicus (Quoy & Gaimard, 1824):
- Bell 250-300mm wide, flatter than a hemisphere;
- Exumbrella covered with coarse granulations;
- 128 Marginal lappets, long and oval;
- Mouth arms 1,5 times as long as bell radius, tapering to a pinted end. The 3 winged lower parts are 120° apart ad their free outer edges branch profusely and bear frilled mouths. Mouth bordered by small knobbed tentacles which wave incessantly;
- 8 rhopalia without ocelli;
- 1 gelatinous papilla upon each subgenital ostium;
- Subumbrellar muscle well developed. Muscle fields interrupted over rhopalar canals;
- Colur in life cobalt blue, if infested with zooxanthellae uniform creamy or brownish yellow except along upper edges of wings on mouth arms, which are deep blue.

Life cycle: asexual reproduction: podocysts, polyp buds, longitudinal/transverse fission. Sexual reproduction: brooded planulae, polyp with 2-20 tentacles, short stalk, large and flexible manubrium. Up to 5 ephyrae per strobila, often monodisc.
Geographical and seasonal distribution: South Pacific Ocean.

204 Not as above 205

205 Distal three-winged portion of oral arms 6 times as long as proximal simple portion

Catostylus perezi, Ranson 1945

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Catostylus* (Agassiz, 1862)
Catostylus perezi (Ranson, 1945)

Morpho-anatomical characteristics
Genus *Catostylus* (Agassiz, 1862):
- 8 Mouth arms without appendages;
- With intracircular anastomosing canal system communicating with rhopalar, interrhopalar and ring canals;

- Subumbrellar muscles well developed;
- 8 rhopalia;
- Unitary subgenital cavity with 4 gonads.

Catostylus perezi (Ranson, 1945):

- Bell 230mm wide;
- Exumbrella with smooth central part, with rows of prominent rigged papillae radiating towards the margin;
- 96-128 marginal lappets, pointed. Velar lappets connected to each other by a thin membrane. All with numerous warts or papillae. Rhopalar lappets pointed but smaller, without papillae ;
- Mouth arms about 1,5 times as long as bell radius, subcylindrical. Lower 3-winged portion about 6 times as long as upper simple portion;
- Sensory pit on exumbrella with furrows;
- Intracircular canal system with fairly open irregular meshes. Communicating with rhopalar, interrhopalar canals, central stomach and ring canal;
- Subgenital ostia wide, without any structure.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South coast of Arabian Peninsula and Persian Gulf.

205	Not as above	206
206	Distal three-winged portion of oral arms 5 times as long as proximal simple portion	**Catostylus viridescens, (Chun 1896)**

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Catostylus* (Agassiz, 1862)
Catostylus viridescens (Chun,1896)

Morpho-anatomical characteristics
Genus *Catostylus* (Agassiz, 1862):

- 8 Mouth arms without appendages;
- With intracircular anastomosing canal system communicating with rhopalar, interrhopalar and ring canals;
- Subumbrellar muscles well developed;
- 8 rhopalia;
- Unitary subgenital cavity with 4 gonads.

Catostylus viridescens (Chun,1896):

- Bell 80mm wide, hemispherical;
- Mouth arms as long as bell radius. Lower 3-winged portion 5 times as long as upper simple porion. Terminal ends bluntly rounded;
- Colour in live specimens: bell sea green, mouth arms colourless, frilled mouths dark violet.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: East Africa, in autumn.
Notes: Mayer (1910) considers the species as doubtful as it has been described from a single specimen which appeared to be quite abnormal.

206	Not as above	207
207	Distal three-winged portion of oral arms half as long as proximal simple portion	**Catostylus tripterus, (Haeckel 1880)**

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Catostylus* (Agassiz, 1862)
Catostylus tripterus (Haeckel, 1880)

Morpho-anatomical characteristics
Genus *Catostylus* (Agassiz, 1862):

- 8 Mouth arms without appendages;

- With intracircular anastomosing canal system communicating with rhopalar, interrhopalar and ring canals;
- Subumbrellar muscles well developed;
- 8 rhopalia;
- Unitary subgenital cavity with 4 gonads.

Catostylus tripterus (Haeckel, 1880):

- Bell 50mm wide, hemispherical;
- 48 marginal lappets. In each octant, 4 wide, quadratic velar lappets, 2 rhopalar lappets, smaller but longer;
- Mouth arms longer than bell radius. Upper simple part stout, long, nearly cylindrical, twice as long as the 3-winged lower part. Mouths only slightly folded. Without appendages;
- 4 horse shoe-shaped gonads.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.

207	Not as above	208
208	Distal three-winged portion of oral arms as long as proximal simple portion	

Catostylus ornatellus, (Vanhöffen 1888)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Catostylus* (Agassiz, 1862)
Catostylus ornatellus (Vanhöffen, 1888)

Morpho-anatomical characteristics
Genus *Catostylus* (Agassiz, 1862):

- 8 Mouth arms without appendages;
- With intracircular anastomosing canal system communicating with rhopalar, interrhopalar and ring canals;
- Subumbrellar muscles well developed;
- 8 rhopalia;
- Unitary subgenital cavity with 4 gonads.

Catostylus ornatellus (Vanhöffen, 1888):

- Bell 550mm wide, flatly rounded. Mesoglea thick;
- Exumbrella finely and evenly granulated. Granules fuse into rows upon the marginal lappets;
- 80 Marginal lappets. Velar lappets blunt pointed, nearly rounded. Ocular lappets very small, sharp pointed, lancet-shaped;
- Mouth arms 2/3 times as long as bell radius, very thick, ending in a blunt point. Upper half short, lower half gives rise to 2 dorsal wall-like lamellae which bear the mouths on their free outer edge. The ventral side of each mouth arm also gives rise to a similar lamella. Without filaments or appendages among the mouths;
- Intracircular network of canals with very broad anastomosing canals. Ring canal not clearly defined;
- The openings of genital ostia are blocked by a triangular pointed flap of the arm disc which projects over the middle of the ostia, so that each ostium appears as if constricted into 2-sides openings.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.

208	Distal three-winged portion of oral arms 2-4 times as long as proximal simple portion	209
209	Oral arms 1-1,5 times the length of bell radius	

Catostylus cruciatus, (Lesson 1830)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Catostylus* (Agassiz, 1862)
Catostylus cruciatus (Lesson, 1830)

Morpho-anatomical characteristics

Genus *Catostylus* (Agassiz, 1862):

- 8 Mouth arms without appendages;
- With intracircular anastomosing canal system communicating with rhopalar, interrhopalar and ring canals;
- Subumbrellar muscles well developed;
- 8 rhopalia;
- Unitary subgenital cavity with 4 gonads.

Catostylus cruciatus (Lesson, 1830):

- Bell 120-150mm wide, hemispherical;
- Exumbrella with 32 deep radial furrows;
- 48 marginal lappets, velar lappets large and triangular, ocular lappets very small;
- Mouth arms 1,5 times as long as belle radius. Upper part short, cylindrical and simple, lower part 4 times as long and tapering to a point, 3-winged in cross section and thickly covered with frilled mouths;
- Colour in life: when infested with zooxanthellae yellowish white with rose-red gonads and ring canal, otherwise bell bluish white with deep blue marginal lappets and carmine mouths.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: South Pacific Ocean.
Notes: Morandini (2009) considers *Catostylus cruciatus* (Lesson, 1830) as a synonym of *Lychnorhiza lucerna* (Haeckel, 1880). After examination of type specimens, the conclusion is that they're conspecific. Morandini proposed to keep *Lychnorhiza lucerna* as valid, as it has been used more and in more recent papers.

209 Not as above 210

210 Oral arms as long as bell diameter

Catostylus tagi, (Haeckel 1869)

Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Catostylus* (Agassiz, 1862)
Catostylus tagi (Haeckel, 1880)

Morpho-anatomical characteristics

Genus *Catostylus* (Agassiz, 1862):

- 8 Mouth arms without appendages;
- With intracircular anastomosing canal system communicating with rhopalar, interrhopalar and ring canals;
- Subumbrellar muscles well developed;
- 8 rhopalia;
- Unitary subgenital cavity with 4 gonads.



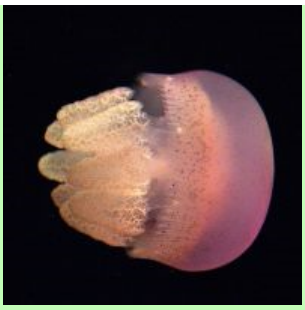
Catostylus tagi (Haeckel, 1880):

- Bell 500-650mm wide, hemispherical. Mesoglea flexible but firm;
- Exumbrella with smooth central part, with dendritically branched ridges which extend upward from the outer pointed ends of marginal lappets;
- 80 marginal lappets. Velar lappets oval, pointed. Rhoapalr lappets small, pointed;
- Mouth arms with shallow dendritically branching furrows near the bell margin. Lower 3-winged portion complexly folded with numerous mouths bordered by a row of small tentacles, tapering to a point. Without filaments or appendages;
- Rhopalia with ocelli on the aboral side. Sensory pits with radiating furrows;
- Circular muscles of the marginal zone of subumbrella interrupted in the 8 principal radii;
- Colour in live specimens opalesscent yellowish or milky bluish white, sometimes brown. Rideges on exumbrella reddish or brownish purple. Gonads yellowish.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Atlantic Ocean, in summer.

210 Oral arms 2/3 the length of bell diameter

Catostylus townsendi, Mayer 1915



Systematic position:
Classis Scyphozoa
Subclassis Discomedusae
Ordo Rhizostomeae
Subordo Daktyliophorae
Familia Catostylidae (Gegenbaur, 1857)
Genus *Catostylus* (Agassiz, 1862)
Catostylus townsendi (Mayer, 1915)

Morpho-anatomical characteristics
Genus *Catostylus* (Agassiz, 1862):

- 8 Mouth arms without appendages;
- With intracircular anastomosing canal system communicating with rhopalar, interrhopalar and ring canals;
- Subumbrellar muscles well developed;
- 8 rhopalia;
- Unitary subgenital cavity with 4 gonads.

Catostylus townsendi (Mayer, 1915):

- Bell 97mm wide, flatter than a hemisphere. Mesoglea of a horny rigidity;
- Exumbrella finely granulated;
- Rhopalar lappets small and oval, velar lappets about as twice as wide as long;
- Mouth arms tapering to pointed ends. Without appendages. Upper 3 simple portion long, from ½ to ¼ of lenght of the 3 winged lower part;
- Rhopalia without ocelli. Sensory pits with deep, dark coloured furrows;
- Colour in preserved specimens: exumbrella milky, besprinkled irregularly with numerous conspicuos purple brown spots.

Life cycle: reproductive strategies unknown.
Geographical and seasonal distribution: Borneo.