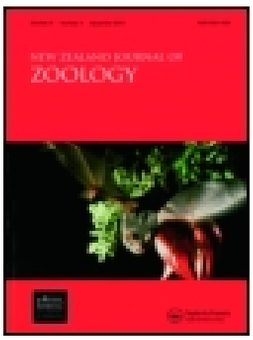

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Hydromedusae of the New Zealand Oceanographic Institute (Hydrozoa, Cnidaria)

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Abstract The collection of Hydromedusae of the New Zealand Oceanographic Institute comprises 47 species, 15 of which are new records for New Zealand waters. A new genus and two new species are described (*Boeromedusa auricogonia* and *Bougainvillia vervoorti*), and a new family of Tubularioidea, the Boeromedusidae, is proposed. Several specific diagnoses are revised.

Resumé La collection d'hydroméduses du "New Zealand Oceanographic Institute" comprend 47 espèces différentes, dont 15 sont nouvelles pour les eaux de la Nouvelle-Zélande. Un nouveau genre et deux nouvelles espèces sont décrites: *Boeromedusa auricogonia* et *Bougainvillia vervoorti*; une nouvelle famille de Tubularioidea les Boeromedusidae est proposée. Plusieurs diagnoses spécifiques sont revues.

Keywords Hydromedusae; New Zealand; *Boeromedusa auricogonia* n. gen., n. sp.; *Bougainvillia vervoorti* n. sp.

INTRODUCTION

The material reported below was received from the New Zealand Oceanographic Institute (NZOI). The collection comprises material mostly from localities near the continental shelf of New Zealand, roughly between 34°39'–48°26'S and 165°83'–178°82'E. The purpose of this report is to provide a taxonomic account on the species new to science or to the New Zealand fauna; zoogeographical conclusions will be published elsewhere.

Previous studies of the hydroidomedusan fauna of New Zealand have been strongly biased towards the polyp stages of Leptomedusae. The classical works of Ralph (1957, 1958, 1961a, b) on the thecate hydroids are standard papers for the New Zealand hydroid fauna, whereas the short paper by Ralph (1953) on athecate hydroids provides only a glimpse of what that fauna could contain. The medusa stages of Hydroidomedusae received scant attention too (see Barnett 1985 for a review). At the present stage of knowledge, therefore, there is an unnatural imbalance in favour of thecate hydroids in the recorded composition of the New Zealand hydroidomedusan fauna. New studies on groups and stages of Hydroidomedusae other than thecate hydroids are thus greatly needed and will probably reveal a rich fauna.

The collections of the New Zealand Oceanographic Institute start to fill the existing gaps in our knowledge of New Zealand Hydrozoa. Many of the specimens of the present collection were in a very bad state of preservation and could not be properly identified. The holotypes have been deposited in the New Zealand Oceanographic Institute, the other specimens in the Institut Royal des Sciences Naturelles de Belgique under the No. 27838.

LIST OF THE HYDROMEDUSAE OF THE NZOI COLLECTIONS

* = New species or new records for New Zealand discussed in the text; number of specimens observed in the samples are indicated in brackets.

ANTHOMEDUSAE

FILIFERA

Bougainvilliidae

1. *Bougainvillia fulva* Agassiz & Mayer, 1899 (3)
2. *Bougainvillia macloviania* Lesson, 1843 (2)
3. *Bougainvillia muscoides* (Sars, 1846) (2)*
4. *Bougainvillia platygaster* (Haeckel, 1879) (3) (two with polypodial buds on manubrium)*

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5. *Bougainvillia vervoorti* nov. sp. (9)*
6. *Koellikerina maasi* (Browne, 1910) (2)*

Calycopsidae
7. *Bythotiara huntsmani* (Fraser, 1911)? (2)

Clavidae
8. *Oceania armata* Kölliker, 1853 (2)
9. *Turritopsis nutricula* von Lendenfeld, 1884 (4)

Pandeidae
10. *Amphinema rugosum* (Mayer, 1900) (2)
11. *Annatiara affinis* (Hartlaub, 1913) (1)
12. *Leuckartiara octona* (Fleming, 1823) (1)
13. *Neoturris papua* (Lesson, 1843) (1)*
14. *Pandea conica* (Quoy & Gaimard, 1827) (1)

Protiaridae
15. *Halitiara formosa* Fewkes, 1882 (12)*
16. *Halitiara inflexa* Bouillon, 1980 (5)*

CAPITATA

Boeromedusidae nov. fam.
17. *Boeromedusa auricogonia* nov. gen., nov. sp. (1)*

Corynidae
Corynidae: indeterminable
Corynidae: juv. indeterminable
18. *Sarsia* sp. (18)

Tubulariidae
19. *Hybocodon prolifer* L. Agassiz, 1862 (1)

LEPTOMEDUSAE

Leptomedusae juv. and indeterminable (many)

PROBOSCOIDA

Campanulariidae
20. *Clytia gregaria* (L. Agassiz, 1862) (28)*
21. *Clytia hemisphaerica* (L.) (many)
22. *Clytia simplex* Browne, 1902 (3)
Clytia non-indentifiable (many)
23. *Obelia* spp. (many)

CONICA

Cirrholoveniidae
24. *Cirrholovenia polynema* Kramp, 1959 (4)

Eirenidae
25. *Eirene menoni* Kramp, 1953 (3)*
26. *Eutima curva* Browne, 1905 (1)*
27. *Eutima mira* McCrady, 1857 (2)

Eucheilotidae
28. *Eucheilota paradoxica* Mayer, 1900 (11)

Laodiceidae
29. *Laodicea indica* Browne, 1905 (3)

Malagazziidae
30. *Malagazzia carolinae* (Mayer, 1900) (13)*
31. *Octophialucium indicum* Kramp, 1958 (1)

Mitrocomidae
32. *Cosmetirella davisi* (Browne, 1902) (1)*
33. *Mitrocomella frigida* (Browne, 1910) (1)*

Phialellidae
34. *Phialella quadrata* (Forbes, 1848) (many)

Tiarannidae
35. *Chromatonema rubrum* Fewkes, 1882 (1)*

TRACHYMEDUSAE

Halicreatidae
36. *Botrynema brucei* Browne, 1908 (1)
37. *Halicreas minimum* Fewkes, 1882 (1)
38. *Haliscera bigelowi* Kramp, 1947 (1)

Rhopalonematidae
39. *Aglaura hemistoma* Péron & Lesueur, 1910 (54)
40. *Pantachogon haeckeli* Maas, 1893 (1)
41. *Rhopalonema velatum* Gegenbaur, 1856 (4)
42. *Sminthea eurygaster* Gegenbaur, 1856 (1)

NARCOMEDUSAE

Aeginidae
43. *Aegina citrea* Eschscholtz, 1829 (2)
44. *Solmundella bitentaculata* (Quoy & Gaimard, 1833) (6)

Solmarisidae
45. *Pegantha clara* R. P. Bigelow, 1909 (1)
46. *Pegantha martagon* Haeckel, 1879 (1)
47. *Solmaris rhodoloma* (Brandt, 1838) (many)
+ Eudoxia of Siphonophorae
+ Ephyrae of Scyphomedusae

STATION LIST

(Co-ordinates in decimal degrees, haul depth in metres)

B76- 10/09/58; –20.9783°S, 175.1683°E; depth 44: *Aegina citrea* (1) + non-determinable remains.

B705- 13/09/62; –41.2900°S, 174.7850°E; depth 9: *Bougainvillia vervoorti* (1) + *Phialella quadrata* (many in bad state) + *Obelia* spp. (3) + *Sarsia* sp. (many).

B706- 13/09/62; –41.2900°S, 174.7850°E; depth 9: *Bougainvillia vervoorti* (2) + *Phialella quadrata* (many in bad state + juveniles) + *Sarsia* sp. (14) + *Bythotiara huntsmani*? (2), in bad shape.

B707- 13/09/62; –41.2900°S, 174.7850°E; depth 9: *Bougainvillia vervoorti* (2) + *Halicreas minimum* (1) + *Malagazzia carolinae* (4, in bad state of preservation) + many remains of medusae (*Phialella quadrata*?).

Z3258- 14/04/64; –42.4333°S, 173.8083°E; depth 200: *Bougainvillia vervoorti* (1) + *Clytia gregaria* (1, in good state of preservation) + remains of Siphonophorae.
Z3259- 30/04/64; –42.4333°S, 173.8083°E; depth 200: *Aglaura hemistoma* (many) + *Rhopalonema velatum* (3) + remains of Hydromedusae and Siphonophorae.
Z3260- 16/05/64; –42.4333°S, 173.8083°E; depth 200: *Rhopalonema velatum* (1) + remains of indeterminable jellyfish.
Z3264- 12/07/64; –42.4333°S, 173.8083°E; depth 200: nothing.
N333- 03/12/74; –40.5042°S, 176.6333°E; depth 38: remains of Siphonophorae.
N336- 03/12/74; –40.6067°S, 176.7983°E; depth 200: remains of indeterminable jellyfish.
N339- 04/12/74; –39.2500°S, 177.3000°E; depth 50: *Obelia* spp. (1).
N340- 04/12/74; –39.4300°S, 177.5100°E; depth 100: *Aglaura hemistoma* (1).
N341- 04/12/74; –39.6300°S, 177.7317°E; depth 204: *Rhopalonema velatum* (1) + 1 indeterminable jellyfish.
N342- 04/12/74; –39.7500°S, 177.9100°E; depth 500: indeterminable Leptomedusae.
N343- 05/12/74; –37.7350°S, 178.5550°E; depth 26: *Obelia* spp. (2).
N344- 05/12/74; –37.7417°S, 178.5883°E; depth 51: nothing.
N345- 05/12/74; –37.7283°S, 178.6950°E; depth 101: *Obelia* spp. (12).
N346- 05/12/74; –37.7367°S, 178.8233°E; depth 211: *Obelia* spp. (6).
N347- 05/12/74; –37.7367°S, 178.0233°E; depth 500: *Obelia* spp. (2 juv) + 1 indeterminable Leptomedusae + 1 Siphonophorae.
N349- 06/12/74; –37.7617°S, 176.6767°E; depth 51: *Obelia* spp. (1) + *Solmaris rhodoloma* (10).
N350- 06/12/74; –37.6800°S, 176.7333°E; depth 101: *Obelia* spp. (2).
N356- 07/12/74; –36.5217°S, 175.2933°E; depth 50: *Amphinema rugosum* (1) + *Leuckartiara octona* (1) + *Turritopsis nutricula* (1).
N359- 07/12/74; –35.7350°S, 175.7367°E; depth 180: nothing.
N360- 08/12/74; –35.2267°S, 174.1067°E; depth 24: *Eucheilota paradoxica* (3) + *Obelia* spp. (2).
N361- 08/12/74; –35.1833°S, 174.1725°E; depth 51: *Eirene menoni* (3) + *Eucheilota paradoxica* (9) + *Obelia* spp. (8).
N365- 08/12/74; –35.1233°S, 174.2733°E; depth 200: *Clytia gregaria* (2) + remains of jellyfish.
N370- 10/12/74; –34.3917°S, 172.1000°E; depth 204: *Aglaura hemistoma* (4) + *Botrynema brucei* (1).
N371- 10/12/74; –34.3900°S, 171.9083°E; depth 200: *Aglaura hemistoma* (3) + *Annatiara affinis* (1) + *Clytia simplex* (3) + 1 remain of Hydromedusae (*Rhopalonema velatum*?).
N372- 11/12/74; –36.3250°S, 173.9800°E; depth 25: Ephyrae of Scyphomedusae.
N373- 11/12/74; –36.3350°S, 173.9350°E; depth 51: Ephyrae of Scyphomedusae.
N374- 11/12/74; –36.3683°S, 173.8408°E; depth 100: *Aglaura hemistoma* (4).
N375- 11/12/74; –36.3933°S, 173.7583°E; depth 200: *Aglaura hemistoma* (5).
N376- 11/12/74; –36.4817°S, 173.5667°E; depth 500: *Laodicea indica* (3) + ephyrula of Scyphomedusae.
N377- 12/12/74; –37.8083°S, 174.7633°E; depth 25: *Aegina citrea* (1) + ephyrula of Scyphomedusae.
N378- 12/12/74; –37.8150°S, 174.6567°E; depth 50: *Pegantha martagon* (1) + *Solmaris rhodoloma* (5) + 1 ephyrula of Scyphomedusae.
N382- 13/12/74; –39.2500°S, 173.7233°E; depth 25: *Eutima mira* (2) + *Obelia* spp. (6) + ephyrula of Scyphomedusae.
N383- 13/12/74; –39.2617°S, 173.7100°E; depth 50: Ephyrula of Scyphomedusae.
N384- 13/12/74; –39.2650°S, 173.6567°E; depth 100: *Hybocodon prolifer* (1) + *Turritopsis nutricula* (1).
N387- 14/12/74; –40.4800°S, 173.5033°E; depth 565: 2 remains of Leptomedusae.
N388- 14/12/74; –40.7383°S, 173.3800°E; depth 55: *Obelia* spp. (1).
N391- 15/12/74; –41.2100°S, 173.8650°E; depth 36: *Obelia* spp. (1).
N396- 15/12/74; –40.9300°S, 174.0583°E; depth 100: *Obelia* spp. (2) + 3 indeterminable Leptomedusae.
N397- 15/12/74; –40.9183°S, 174.1400°E; depth 40: *Obelia* spp. (3).
N399- 16/12/74; –40.4550°S, 175.1867°E; depth 25: nothing.
N400- 16/12/74; –40.4465°S, 175.1533°E; depth 53: *Clytia hemisphaerica* (5) + *Neoturris papua* (1) + *Obelia* spp. (4) + *Turritopsis nutricula* (1) + 1 ephyrula of Scyphomedusae.
N401- 16/12/74; –40.4000°S, 174.8667°E; depth 100: *Aglaura hemistoma* (1). N401 bis. idem: *Halitiara formosa* (7).
N403- 17/12/74; –41.6200°S, 175.3067°E; depth 21: *Eutima curva* (1) + *Obelia* spp. (11).
N404- 17/12/74; –41.6333°S, 175.3133°E; depth

51 m: *Bougainvillia platygaster* (3) + *Cirrholovenia polynema* (4) + *Halitiara inflexa* (5) + *Obelia* spp. (1) + *Oceania armata* (2).
N405- 17/12/74; –41.6417°S, 175.3217°E; depth 100: *Obelia* spp. (6) + *Turritopsis nutricula* (1) + Scyphomedusae(?).
N406- 17/12/74; –41.6533°S, 175.3367°E; depth 200: *Clytia gregaria* (4: 3 in more or less good state and 1 in good state of preservation) + *Obelia* spp. (1).
N407- 17/12/74; –41.7333°S, 175.3817°E; depth 500: indeterminable Leptomedusae.
N408- 17/12/74; –41.8100°S, 175.4067°E; depth 500: *Obelia* spp. (1) + *Sminthea eurygaster* (1).
N409- 18/12/74; –42.4383°S, 173.6683°E; depth 25: 1 juvenile unidentifiable jellyfish.
N410- 18/12/74; –42.4458°S, 173.6833°E; depth 53: 1 indeterminable jellyfish (*Clytia* sp?).
N413- 18/12/74; –42.5417°S, 173.8317°E; depth 500: *Halitiara formosa* (5) + *Obelia* spp. (1).
N416- 19/12/74; –41.3142°S, 174.1600°E; depth 22: *Malagazzia carolinae* (9, several in bad state of preservation) + *Phialella quadrata* (2).
N420- 19/12/74; –41.4867°S, 174.6367°E; depth 191: *Amphinema rugosum* (1) + *Octophialucium indicum* (1).
N421- 19/12/74; –41.4067°S, 174.7500°E; depth 100: *Bougainvillia fulva* (3) + *Turritopsis nutricula* (1) + remains of jellyfish + Siphonophorae.
N422- 19/12/74; –41.3800°S, 174.7767°E; depth 50: *Clytia gregaria* (1, in bad state of preservation).
N423- 19/12/74; –41.3583°S, 174.8250°E; depth 25: remains of non-identifiable jellyfish.
N433- 30/01/75; –41.7683°S, 171.4317°E; depth 25: *Boeromedusa auricogonia* (1)* + *Bougainvillia vervoorti* (3)* + *Clytia hemisphaerica* (7).
N435- 30/01/75; –41.7267°S, 171.3450°E; depth 111: *Clytia hemisphaerica* (?).
N439- 31/01/75; –43.3450°S, 169.9500°E; depth 25: *Obelia* spp. (2).
N440- 31/01/75; –43.3300°S, 169.9183°E; depth 51: 1 juvenile non-identifiable Leptomedusae + 1 *Clytia* spp.
N441- 31/01/75; –43.3050°S, 169.8767°E; depth 100: 1 *Clytia* spp. in bad state of preservation.
N445- 01/02/75; –44.6600°S, 167.9117°E; depth 176: *Aglaura hemistoma* (?).
N446- 01/02/75; –44.6200°S, 167.8767°E; depth 290: *Aglaura hemistoma* (6).
N447- 01/02/75; –44.5917°S, 167.8150°E; depth 135: *Aglaura hemistoma* (2).
N448- 01/02/75; –44.5317°S, 167.7350°E; depth 83: 3 non-identifiable Leptomedusae.
N449- 01/02/75; –44.4817°S, 167.6433°E; depth 200: *Bougainvillia muscoides* (2) + *Pandea conica* (1) + *Solmundella bitentaculata* (6).
N452- 02/02/75; –45.9467°S, 166.6567°E; depth 372: *Clytia gregaria* (4, in bad state of preservation).
N453- 02/02/75; –46.0133°S, 166.6067°E; depth 351: *Bougainvillia macloviania* (2) + *Clytia gregaria* (16, in bad state of preservation).
N454- 02/02/75; –46.0667°S, 166.5750°E; depth 70: *Obelia* spp. (2) + 1 juvenile Pandeidae + 1 non-identifiable Leptomedusae.
N456- 03/02/75; –46.0683°S, 166.2867°E; depth 172: *Aglaura hemistoma* (6) + *Pegantha clara* (1).
N459- 04/02/75; –46.6900°S, 167.9233°E; depth 44: 1 non-identifiable Corynidae + 1 non-identifiable Leptomedusae.
N460- 04/02/75; –46.6133°S, 167.9800°E; depth 38: Corynidae: juveniles.
N462- 04/02/75; –46.4617°S, 168.0700°E; depth 28: *Obelia* spp. (3) + *Phialella quadrata* (17).
N465- 05/02/75; –47.6783°S, 167.0200°E; depth 154: *Chromatonema rubrum* (1) + *Koellikerina maasi* (2) + *Mitrocomella frigida* (1) + Eudoxia of Siphonophorae.
N466- 05/02/75; –47.5083°S, 167.2617°E; depth 152: *Cosmetirella davisi* (1) + *Haliscera bigelowi* (1) + Eudoxia of Siphonophorae (?).
N467- 05/02/75; –47.3117°S, 167.5150°E; depth 96: Eudoxia of Siphonophorae.
N471- 06/02/75; –46.5150°S, 170.2433°E; depth 255: Eudoxia of Siphonophorae.
N474- 07/02/75; –45.2033°S, 171.3767°E; depth 100: Eudoxia of Siphonophorae.
N475- 07/02/75; –45.2617°S, 171.6533°E; depth 50: *Sarsia* sp. (4).
N476- 08/02/75; –43.6650°S, 172.9017°E; depth 0: 2 non-identifiable Leptomedusae.
N482- 08/02/75; –43.5967°S, 174.3600°E; depth 200: *Pantachogon haeckeli* (1) + remains of Hydromedusae.

RESULTS

ANTHOMEDUSAE

FILIFERA

Bougainvilliidae Lütken, 1850

Bougainvillia muscoides (M. Sars, 1846).

REFERENCES: Rees 1938, p. 2, fig. 1; Kramp 1961, p. 79, as *Bougainvillia nordgaardi* (Browne, 1903); Edwards 1964, p. 736–749, fig. 5, 6; Edwards 1966, p. 126, 146; Kramp 1968, p. 33, 141, tab. II, fig. 85;

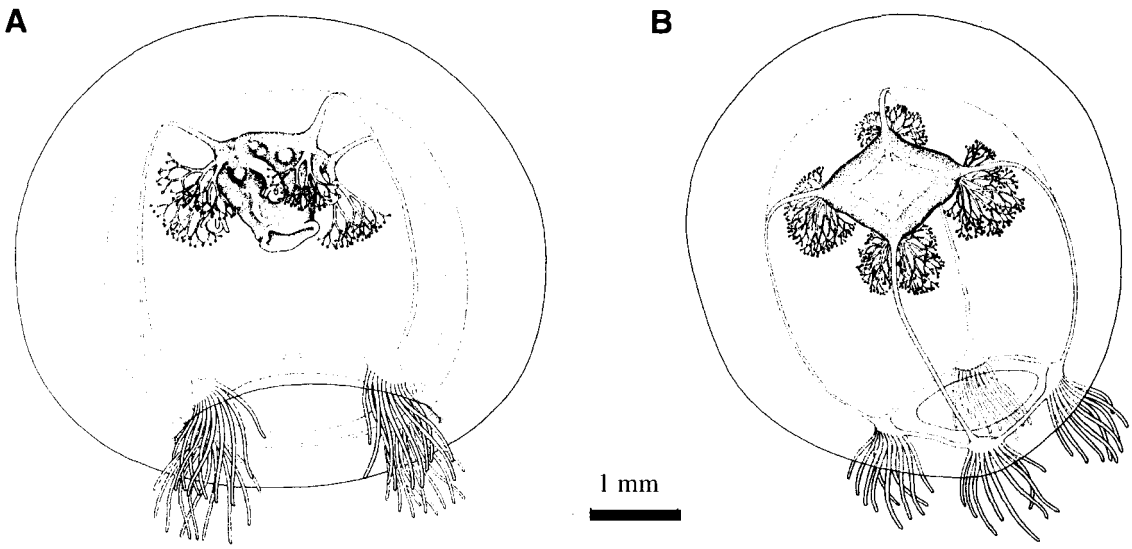

Fig. 1 **A**, Lateral view of a medusa of *Bougainvillia platygaster* (Haeckel, 1879). Note the short oral arms, the long mouth tube, and the presence of several medusa buds and of a hydranth on the stomach wall. **B**, Latero-apical view of a sexually ripe *B. platygaster* medusa showing the interradial flat gonads and the shorter stomach.

Bouillon 1980, p. 308; Bouillon, Claereboudt & Seghers 1986, p. 135; Van der Spoel & Bleeker 1988, p. 166.

MATERIAL EXAMINED: N449: 01/02/75; –44.4817°S, 167.6433°E; depth 200: number of specimens 2.

DESCRIPTION (after Kramp 1961 and Edwards 1966): Umbrella 4–5 mm high and wide, oval, walls not very thick; a peduncle may be indicated. Stomach fairly small; oral tentacles divided 4–5 times, basal trunk short but distinct; 4 interradial gonads, well separated in the perradii. Marginal bulbs small globular, with 5–7 tentacles; no ocelli.

DISTRIBUTION: North-western Europe, Gulf of Siam, Bismarck Sea. New record for New Zealand.

Bougaivillia platygaster (Haeckel, 1879) (Fig. 1)

REFERENCES: Kramp 1961, p. 80; Kramp 1968, p. 34, 173, 177, tab. VII, fig. 86; Bouillon 1980, p. 308; Winkler 1982, p. 30, 32, 33, fig. 3, 4; Bouillon, Claereboudt & Seghers 1986, p. 135; Bleeker & Van der Spoel 1988, p. 230, 231, fig. 8, 9; Goy, Lakkis & Zeidane 1991, p. 108, fig. 20; Pagès, Gili & Bouillon 1992, p. 4, fig. 2.

MATERIAL EXAMINED: N404: 17/12/74; –41.6333°S, 175.3133°E; depth 51: number of specimens 3.

DESCRIPTION (after Kramp 1961; Pagès et al. 1992; and present material): Umbrella globe-shaped to cubical, slightly flattened at the apex and on the sides, jelly thick. Height: 12 mm, width: 11.2 mm. Stomach quadrangular, large and short, no peduncle; mouth tubular, long, simple, with 4 oral short tentacles arising well above mouth opening, each dichotomously divided 5 or 6 times immediately from base. Marginal bulbs triangular bearing 10–13 tentacles; ocelli adaxial, crescent-shaped. Gonads flat, short, interradial. Medusa buds produced directly from stomach walls or from polypoid structures developed on stomach walls.

DISTRIBUTION: Tropical parts of the Atlantic and Indian Ocean; Malayan Archipelago, Bismarck Sea; Fiji Islands; Benguela Current; Mediterranean? New record for New Zealand.

REMARKS: No good illustration emphasising the specific characters of this species exists in the literature. Those characters are: a more or less cubical form; the large, very short and quadrangular stomach; the very distinct interradial position of the gonads; the short basal trunk of the oral tentacles which appear divided immediately from their base; the absence of a peduncle (Fig. 1). The formation of medusae by gemmation is not specific to *B. platygaster*, as other bougainvillids show the same feature, particularly: *B. aurantiaca*, *B. niobe*, *B. prolifera*.

The presence of *B. platygaster* in Mediterannean is subject to confirmation: the young specimen

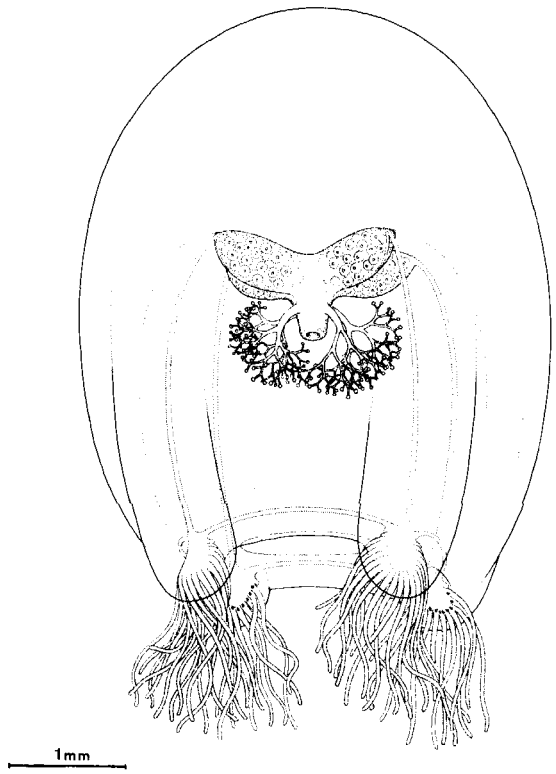

Fig. 2 Medusa of *Bougainvillia vervoorti* nov. sp.

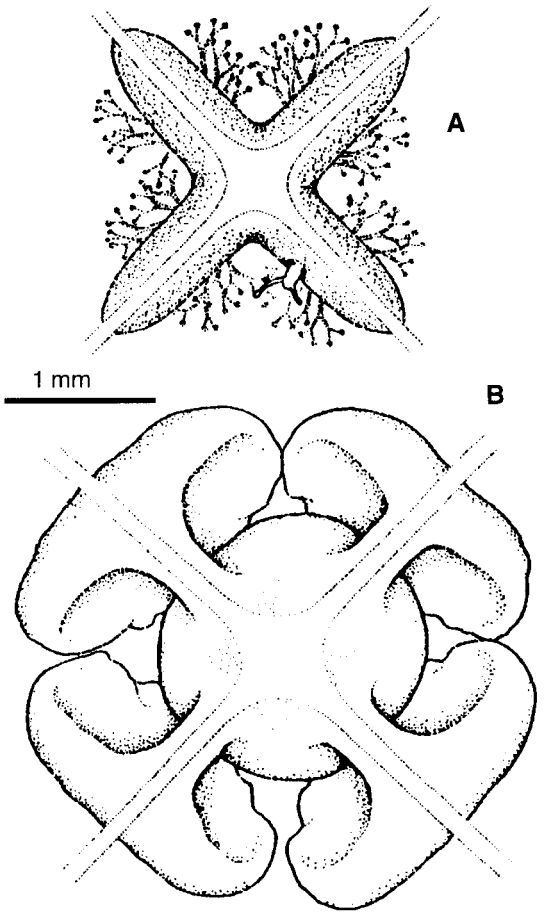

Fig. 3 **A**, Partial apical view of *Bougainvillia vervoorti* showing the stomach lobes covered by the interradial gonads. Note the small polyp budding off from the gonads. **B**, Partial apical view of *Boreomedusa auricogonia* nov. gen., nov. sp., showing the peduncles of the gonads following the proximal part of the course of the radial canals.

described by Goy et al. (1991) had oral tentacles with a long basal trunk and a long flask-shaped manubrium. Details given above show that the presence of medusae buds is not in itself a sufficient specific character.

Bougainvillia vervoorti nov. sp. (Fig. 2, 3A)

MATERIAL EXAMINED: Stations B705 (paratype, NZOI P–970), B706 (holotype, NZOI H–619), B707 (paratype, NZOI P–971): 13/09/62; –41.2900°S, 174.7850°E; depth 9: number of specimens 1, 2, 2. Station Z3258: 14/04/64; –42.4333°S, 173.8083°E; depth 200: number of specimens 1. Station N433: 30/01/75; –41.7683°S, 171.4317°E; depth 25: number of specimens 3.

ETYMOLOGY: This new species is dedicated to my colleague and friend Professor Wim Vervoort in honour of his eminent work on Hydrozoa.

DIAGNOSIS: Medusa subglobular, 7 mm high, 6 mm wide; mesoglea thick; stomach short, cruciform with 4 well-developed perradial lobes; gonads on stomach wall and perradial lobes; oral tentacles divided 5–7 times, with rather short trunk; marginal bulbs rounded triangular to broad U-shaped; up to 30 marginal tentacles; 1 ocellus at base of each tentacle.

DESCRIPTION: Umbrella slightly higher than wide, 5–7 mm high, 4–6 mm wide; almost subglobular, with rounded top; jelly thick, mainly in the upper part of the umbrella but thinning down towards the umbrella margin. Stomach short, 1/4 of bell cavity, conical, cruciform in section, with 4 well-developed perradial lobes along the course of the radial canals; no peduncle; mouth simple; 4 perradial oral tentacles arising well above mouth opening, not extending beyond umbrella margin, each oral tentacle

branching dichotomously 5–7 times, basal trunk of oral tentacles moderately short. Gonads situated on interradii of the stomach and extending largely on the perradial lobes forming the arms of a perradial cross. Radial canals (4), ring canal and velum moderately wide. 4 rather large perennial marginal bulbs, rounded triangular to broad U-shape, less than half as wide as interradial space. In preserved specimens marginal bulbs appear to be situated on 4 exumbrellar lobes (artefact due to fixation?). Usually 20, but up to 30, marginal solid tentacles on each marginal bulb; tentacles in live specimens twice as long as bell length (Schuchert pers. comm). 1 conspicuous black round adaxial ocellus, situated on marginal bulbs below the base of each tentacle. Nematocysts: desmonemes and euryteles.

DISCUSSION: This species can easily be distinguished from the other species of *Bougainvillia* by two combined characters: absence of peduncle and presence of interradial gonads extending largely on perennial stomach lobes. Other less specific characters are the shape of the umbrella, the shape of the marginal bulbs, and the length of the tentacles when alive.

The envelope of the eggs of *B. vervoorti* is armed with cnidocysts. This feature has already been observed in several other medusae, especially in some other bougainvilliids (*B. flavida*, *B. muscus*, *B. multitentaculata*), in a pandeid medusa (*Halitholus cirratus*) and in *Margelopsis heackeli*. Such a cnidocyst armature directly connected to the egg surface has also been reported in Hydroidomedusae with fixed gonophores, particularly *Clavopsella michaeli*, *Dicoryne conferta*, and *Dynamena pumila* (see Piraino 1992 for a review). The gonads of some specimens present polypoidal structures (Fig. 3A), which have also been observed in *B. platygaster*.

Koellikerina maasi (Browne, 1910).

REFERENCES: Kramp 1961, p. 85; Kramp 1968, p. 36, 149, 165, 166, 169, tab. V, fig. 93; Bouillon, Claereboudt & Seghers 1986, p. 135, 150.

MATERIAL EXAMINED: Station N465: 05/02/75; –47.6783°S, 167.0200°E.; depth 154: number of specimens 2.

DESCRIPTION (after Kramp 1968): Umbrella 10 mm high, 9 mm wide, walls very thick, no peduncle; stomach fairly large and high, about half as long as bell cavity, cross-shaped. Gonads in 4 masses covering nearly the whole interradial wall of stomach, separated perradially, smooth; oral tentacles with short thick basal trunk, divided 7–8 times; 8 marginal bulbs, triangular, with 5–7 tentacles decreasing in length from the median one towards both sides; no ocelli.

DISTRIBUTION: Antarctica; Madagascar; Bismarck Sea. New record for New Zealand.

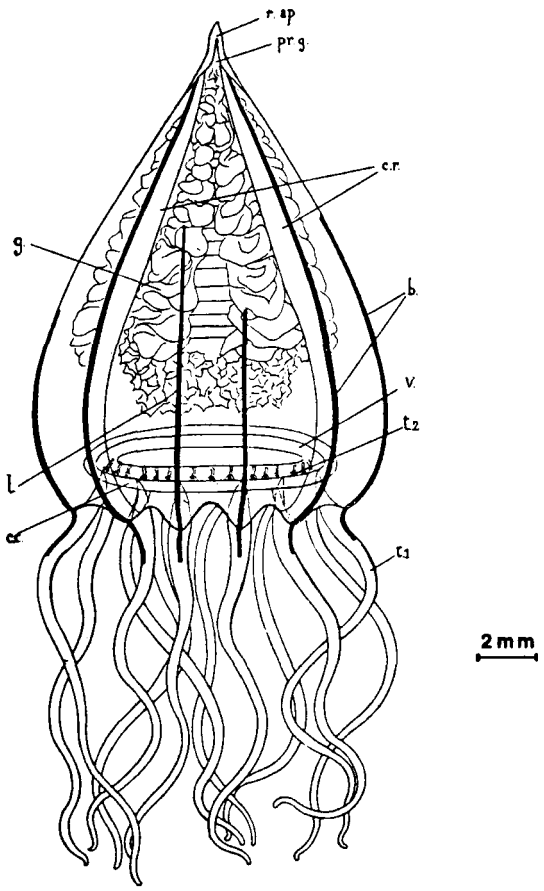

Fig. 4 Medusa of *Neoturris papua* (Lesson, 1843) (after Ranson 1929). b, longitudinal exumbrellar pigmented ridges; c.c., circular canal; c.r., mesenteries; g, gonads; l, lips; pr.g, apical canal; r.ap, apical projection; t1, marginal tentacles; t2, tentaculae; v, velum.

Pandeidae Haeckel, 1879

Neoturris papua (Lesson, 1843) (Fig. 4)

REFERENCES: Ranson 1929, p. 209–215; Kramp 1961, p. 105, 108, 109; Kramp 1968, p. 49, tab. VI, VII, fig. 126; Bouillon 1980, p. 309; Van der Spoel & Bleeker 1988, p. 167, fig. 11, 12.

MATERIAL EXAMINED: Station N400: 16/12/74; –40.4465°S, 175.1533°E; depth 53: number of specimens 1.

DESCRIPTION (after Ranson 1929, Kramp 1968, and personal material from Papua New Guinea): Umbrella pyramidal, mitre-shaped up to 18 mm high and 15 mm wide, thin walls; a small, conical apical projection with an apical canal; 8–12 distinct longitudinal pigmented ridges on exumbrella; manubrium wide, about 2/3 of the height of the umbrella cavity, lips considerably frilled, pink in fresh or newly preserved material; gonads in series of transverse folds separated in the interadii; radial canals wide, with smooth edges, ring canal stout; 8–12 marginal tentacles, the perradial ones larger than the others, tentacular bulbs triangular, well developed, laterally compressed and slightly clasping the exumbrella margin; 3 small tentaculae, with reduced basal bulbs, between successive marginal tentacles; abaxial ocelli on the base of each tentacular bulb and tentaculae.

REMARKS: There are no good descriptions and illustrations of this beautiful species except those of Ranson (1929), whose observations seem to have been almost completely ignored. Ranson's description agrees perfectly with our material from Papua New Guinea (Bouillon 1980).

DISTRIBUTION: Tropical parts of Indo-West Pacific, from East Africa and Arabia to southern Japan, Banda Sea, Bismarck Sea, east Australia. New record for New Zealand.

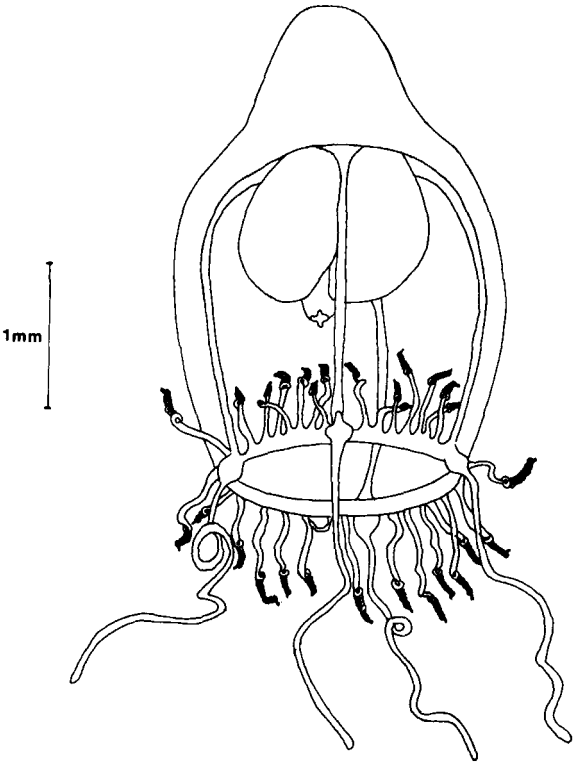

Fig. 5 Medusa of *Halitiara formosa* Fewkes, 1882.

Protiaridae Haeckel, 1879

Halitiara formosa Fewkes, 1882 (Fig. 5)

REFERENCES: Kramp 1961, p. 102; Kramp 1968, p. 140, 173, tab. VII, fig. 102; Brinckmann-Voss 1970, pl. II, fig. 1; Goy 1972, p. 983, 984, fig. 7; Bouillon 1980, p. 322; Goy, Lakkis & Zeidane 1991, p. 110, fig. 26.

MATERIAL EXAMINED: Station N401: 16/12/74; –40.4000°S, 174.8667°E; depth 100: number of specimens 7. Station N413: 18/12/74; –42.5417°S, 173.8317°E; depth 500: number of specimens 5.

DESCRIPTION (after Kramp 1961 and Bouillon 1980): Umbrella about 3 mm high, pear shaped, with a solid apical projection. Manubrium pyriform, about half as long as bell cavity, mouth a simple cruciform opening. 4 long hollow marginal tentacles and 24–35 solid tentacles, tightly coiled, cirrus-like. Gonads interradial; no mesenteries; no ocelli.

REMARKS: This species has often been confused with *Halitiara inflexa* Bouillon, 1980. Its distinctive characters are: the presence of a solid apical projection and the absence of mesenteries and distinct lips (cf. Fig. 5 and 6).

DISTRIBUTION: Tropical parts of the Indo-Pacific; NE Pacific; Tortugas; Bahamas; Mediterranean. New record for New Zealand.

Halitiara inflexa Bouillon, 1980 (Fig. 6)

REFERENCES: Uchida 1971, p. 71, fig. 1, as *Halitiara* sp. juvenile?; Bouillon 1980, p. 324, 325, fig. 9; Bouillon, Claereboudt & Seghers 1986, p. 133, 137; Goy, Lakkis & Zeidane 1991, p. 110, fig. 27.

MATERIAL EXAMINED: Station N404: 17/12/74; –41.6333°S, 175.3133°E; depth 51: number of specimens 5.

DESCRIPTION (after Bouillon 1980): Umbrella conical, 3 mm high, 2. 4 mm wide, without solid conical apical projection. Manubrium quadrangular, attached to the radial canals by well-developed mesenteries, mouth cruciform, with 4 distinct simple lips. Gonads, interradial, large, triangular. 4 hollow marginal tentacles, 28- 40 short solid tentacles, cirrus-like; no ocelli.

REMARKS: See *H. formosa*.

DISTRIBUTION: Bismarck Sea; Mediterranean; Antarctica? New record for New Zealand.

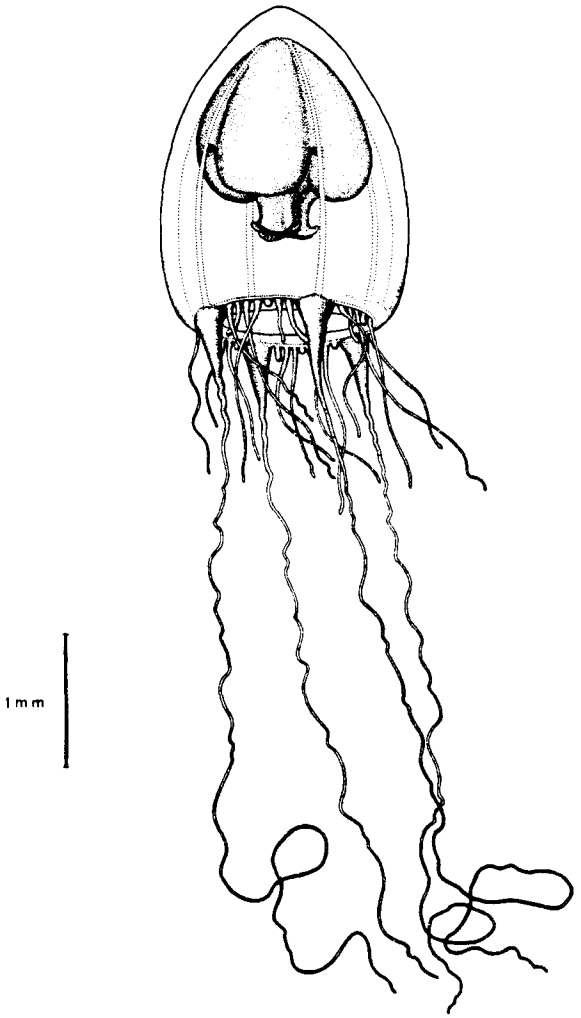

Fig. 6 Medusa of *Halitiara inflexa* Bouillon, 1980.

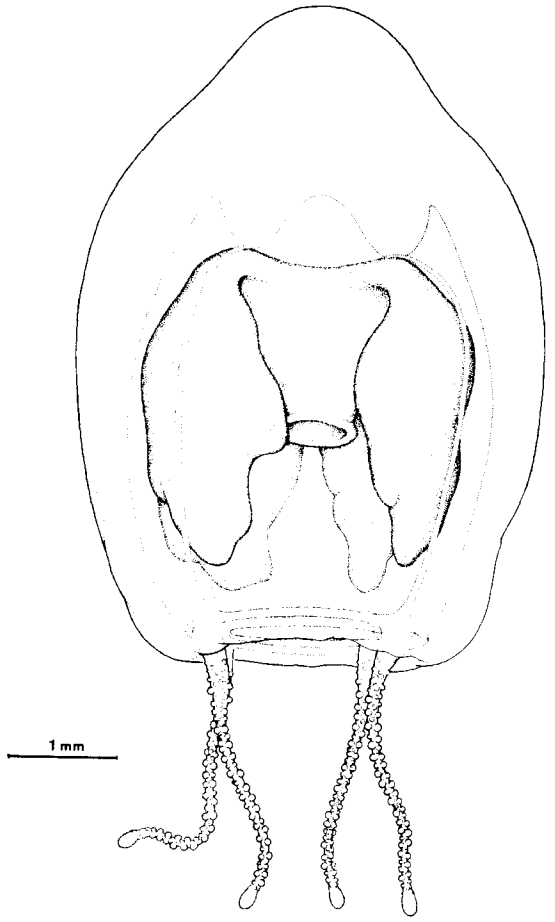

Fig. 7 Medusa of *Boreomedusa auricogonia* nov. gen., nov. sp.

CAPITATA

Boeromedusidae fam. nov.

Boeromedusa auricogonia nov. gen.; nov. sp. (Fig. 3B, 7)

MATERIAL EXAMINED: Station N433: holotype, NZOI H–620 30/01/75; –41.7683°S, 171.4317°E; depth 25: number of specimens 1.

ETYMOLOGY: This genus is dedicated to my dear friend and colleague Ferdinando Boero in remembrance of the enthusiastic moments we have spent together arguing about Hydroidomedusae. The species name refers to the shape of the gonads, which look like the ears of dachshund dogs.

DIAGNOSES: Umbrella pyriform, 6 mm high, 4 mm wide; jelly thick, mainly in the upper part, a slight rounded apical projection; stomach cylindrical, mouth tubular; gonads forming 4 large pouches hanging free in the bell cavity and linked apically by a radial peduncle to the aboral part of the stomach, each looking like a dachshund's ear. Bulbs small, conical, 4 short stiff capitate tentacles covered by prominent cnidocyst clusters and ending in a large ovoid cluster. Cnidocysts: stenoteles, desmonemes, and microbasic euryteles.

DESCRIPTION: Umbrella pyriform to nearly ovoid, higher (6 mm) than wide (4 mm), with a slightly rounded apical projection. Jelly thick, mainly at the aboral pole, thinning gradually towards umbrella margin. Umbrella margin somewhat 4-cornered, and

of smaller diameter (3.5 mm) than the middle of the umbrella (4 mm). Subumbrella cavity spacious, presenting 4 apical interradial conical projections into the apical mesoglea (subumbrella projections). Stomach barrel-shaped, circular in section, about half the length of subumbrellar cavity; mouth tubular, simple, without lips, surrounded by an inconspicuous ring of cnidocysts. Velum moderately broad. The 4 radial canals and ring canal conspicuous: radial canals simple, ribbon-like, smooth and slightly enlarged at their entrance in the ring canal. Gonads forming 4 large perradial flattened sac-like pouches hanging free in the subumbrella cavity. Each pouch is incurved adaxially, twice as long as wide, reaching almost the bell margin, and connected to the ceiling of the stomach by a short radial apical peduncle following the course of the proximal part of the radial canals. The outline of each gonadal pouch resembles a dachshund's ear. 4 marginal bulbs, small, conical, elongated, extending nearly without any transition into stiff short, hollow, marginal capitate tentacles covered with numerous prominent cnidocyst clusters more or less disposed along a spiral and ending in a large ovoid terminal cnidocyts cluster. No ocelli observed; colour: orange. Cnidocysts: stenoteles, desmonemes, and microbasic euryteles.

REMARKS: Tentacle structure and cnidome composition of *Boeromedusa* allows its inclusion in the Capitata. Inside this order it appears nevertheless quite impossible to assign *Boeromedusa* to an existing family (see Bouillon 1985 and Petersen 1990 for family diagnoses). Many capitate superfamilies contain genera with interradial gonads extending to radial stomach pouches (the Moerisioidea, some Tubularioidea and Corynoidea) but none have such peculiar perradial freely hanging, peduncled, large gonadal sacs. The shape of the umbrella, the presence of a slight rounded apical chamber, the appearance of the short and stiff tentacles, and even to a point the structure of the gonads could suggest affinities with some Moerisioidea.

But the members of this superfamily have by definition a prismatic or square stomach and a cruciform mouth, whereas *Boeromedusa* possess a cylindrical stomach and a tubular, circular mouth, both characters proper to the Tubularioidea and Corynoidea. As the Corynoidea have usually abaxial ocelli on their tentacular bulbs, *Boeromedusa* is here assigned to the Tubularioidea.

Two solutions seem conceivable: to create a new family in the Tubularioidea, the Boeromedusidae, to accommodate this genus, or to put *Boeromedusa* in the Tubularioidea or Capitata "incertae sedis" until the hypothetical discovery of the hydroid stage. The first solution has disadvantages but seems to us preferable. Labelling a "nov. gen., nov. sp." under the "incertae sedis" would be sinking it into oblivion!

The possession of four subumbrella projections, extending in preserved animals into the apical mesoglea, has often been interpreted as an upwards contraction of the aboral region of the stomach, probably indicating the presence of a small peduncle. Could this be the situation for *Boeromedusa* too?

Definition of the Boeromedusidae

Anthomedusae with cylindrical manubrium, with simple tubular mouth, 4 radial canals, 4 hollow marginal tentacles. Gonads forming 4 large pouches hanging free in the bell cavity, each linked perradially to the aboral part of the stomach by a short peduncle.

Systematic position of *Urashimea*

During our investigations on the Anthomedusae with sac-like gonads, we had the opportunity to examine, besides others, the medusae of *Urashimea globosa* Kishinouye, 1910 (specimens from Japan, B.M.N.H.) which has gonads formed on large sac-like outgrowths of the lateral walls of the stomach, winding dextrally (Uchida & Nagao 1961). This species has been classified among the coryniids by Uchida (1927) and Naumov (1960). Since then, owing to its manubrial and mouth structure, it has been considered as a pandeid by Uchida & Nagao (1961), Kramp (1961, 1968), and Bouillon (1985).

The cnidome of this species has three types of cnidocysts—stenoteles, desmonemes, and a third one probably belonging to the microbasic eyryteles. Therefore, *Urashimea* must be included in the Capitata and not in the Filifera, which never contain stenoteles. It must also be remembered that Uchida & Nagao (1961) reared the young hydranth of *Urashimea*, which has tentacles with a distinct terminal cnidocysts knob. Here again the placement of this genus into one or another superfamily of the Capitata is not obvious. This genus has very special tentacles covered with numerous stalked cnidocyst knobs of unusual structure. The core of the stalks of the knobs are packed with mesoglea and are not in contact with the endoderm of the hollow marginal tentacles (Uchida & Nagao 1961), a structure more or less resembling the cnidophores of the Zancleoidea (see Bouillon 1974). For this reason, Naumov (1960) placed *Urashimea* in the genus *Gemmaria* (= *Zanclea*) and Stepantjants & Sheiko (1989) in the Zancleidae. But incorporating

Urashimea in the Zancleoidea is quite wrong. The square manubrium, cruciform mouth with crenulated prominent lips, and radial stomach pouches show that the affinities of this genus are clearly with the Moerisioidea, but in which family? *Urashimea* also possesses four apical subumbrella projections extruding in the upper umbrella mesoglea, which as we have seen above could indicate the presence of a small peduncle. For this reason this genus could tentatively be placed in the Polyorchidae.

LEPTOMEDUSAE

PROBOSCOIDA

Campanulariidae Johnston, 1836

Clytia gregaria (L. Agassiz, 1862)

REFERENCES: As *Phialidium gregarium* (L. Agassiz, 1862): Kramp 1961, 167, 444; Kramp 1968, 78, tab. II, fig. 206; Roosen-Runge 1970, p. 203–221, fig. 1–25; Hamond 1974, p. 559; Arai & Brinckmann-Voss 1980, p. 104–106, 111, fig. 59–60.

MATERIAL EXAMINED: Station N365: 08/12/74; –35.1233°S, 174.2733°E; depth 200: number of specimens 2. Station N406: 17/12/74; –41.6533°S, 175.3367°E; depth 200: number of specimens 4. Station N422: 19/12/74; –41.3800°S, 174.7767°E; depth 50: number of specimens 1. Station N452: 02/02/75; –45.9467°S, 166.6567°E; depth 372: number of specimens 4. Station N453: 02/02/75; –46.0133°S, 166.6067°E; depth 351: number of specimens 16. Station Z3258: 14/04/64; –42.4333°S, 173.8083°E; depth 200: number of specimens 1.

DESCRIPTION (after Kramp 1968 and Arai & Brinckmann-Voss 1980): Umbrella hemispherical to lens-shaped, up to 22 mm wide. Stomach hanging on a very short peduncle; manubrium with 4 very long curved, fringed lips. Stomach walls extending on radial canals, cruciform in appearance when seen from above. Gonads linear, on up to 2/3 of distal radial canals, not reaching the ring canal. Testes elipsoid in cross-section. Tentacles and bulbs standing closely together on the bell margin, averaging 12–19 tentacles and bulbs per quadrant in adult specimens. Marginal bulbs nearly globular. 1 or 2, rarely 3, statocysts between tentacles or tentacle bulbs, each with 1 concretion. Variable amounts of black or dark brown pigment on margins of the lips, gonads, marginal bulbs, and ring canal, which fades if specimens are preserved longer than a year; gonads pale yellow to salmon.

DISTRIBUTION: Pacific coast of North America; Indian Ocean? New record for New Zealand.

CONICA

Eirenidae (Haeckel, 1879)

Eirene menoni Kramp, 1953

REFERENCES: Kramp 1961, p. 189; Kramp 1968, p. 90, tab. VI, VII, fig. 242; Bouillon 1984b, p. 27, 41, fig. 7; Bouillon, Claereboudt & Seghers 1986, p. 139.

MATERIAL EXAMINED: Station N361: 08/12/74; –35.1833°S, 174.1725°E; depth 51: number of specimens 3.

DESCRIPTION (after Kramp 1961 and Bouillon 1984b): Umbrella up to 20 mm wide, somewhat higher than hemispherical. Peduncle not particularly broad at the base, narrowing towards the tip. 4 prominent lips with folded margins, 4 interradial green dark spots between the bases of successive lips which fade if specimens are preserved for a long time. Gonads highly variable in length. About 40–54 tentacles all alike; no excretory papillae, no rudimentary bulbs. 1, sometimes 3 statocysts between tentacles, with 1 concretion each.

DISTRIBUTION: Indo-West Pacific. New record for New Zealand.

Eutima curva Browne, 1905

REFERENCES: Kramp 1961, p. 195; Kramp 1968, p. 95–96, tab. VII, fig. 259; Bouillon 1978, p. 126; Mills 1982, *Eutima curva*?; Bouillon 1984b, p. 27, 45, 47; Bouillon, Claereboudt & Seghers 1986, p. 139.

MATERIAL EXAMINED: Station 403: 17/12/74; –41.6200°S, 175.3067°E; depth 21: number of specimens 1.

DESCRIPTION (after Kramp 1961 and Bouillon 1984b): Umbrella up to 20 mm wide, slightly flatter than a hemisphere; jelly rather thick. Peduncle about as long as bell diameter, pyramidal above, prismatic below; 4 gonads, on prismatic portion of the peduncle only. 4 tentacles, with lateral cirri; tentacle bulbs curved upwards over bell margin, with black pigment; 120–140 marginal warts with cirri; 8 statocysts.

DISTRIBUTION: Indo-West Pacific; Sea of China. New record for New Zealand (but indicated in a pictorial key with a question mark in an unpublished report by Mills 1982).

Malagazziidae Bouillon 1984a

Malagazzia carolinae (Mayer, 1900)

REFERENCES: Kramp 1961, p. 185, 186 and Kramp 1968, p. 86, 164, 173, tab. VII, p. 229, 230, as

Phialucium carolina Mayer, 1900; Bouillon 1984a, p. 1, 2; Bouillon 1984b, p. 28, 77, 78; Bouillon, Claereboudt & Seghers 1986, p. 140; Bouillon, Boero & Seghers 1991, p. 395, 399, 400, fig. 5.

MATERIAL EXAMINED: Station N416: 19/12/74; –41.3142°S, 174.1600°E; depth 22: number of specimens 9. Station B707: 13/09/62; –41.2900°S, 174.7850°E; depth 9: number of specimens 4.

DESCRIPTION (after Kramp 1961 and Bouillon et al. 1991): Umbrella not quite hemispherical, 14–20 mm wide, 6–8 mm high, jelly fairly thick. Stomach flask-shaped to quadrangular, rather long; 4 short simple slightly folded lips; usually 4 but sometimes up to 10 simple radial canals; gonads linear along distal half of the radial canals; 16–36 well-developed marginal tentacles, tentacular bulbs large, conical; between successive tentacles *1–3 knob-like* rudimentary bulbs (depending on age), the median one the largest and 4–6 statocysts each with 2 concretions. Excretory papillae present on tentacular and rudimentary bulbs. Very polymorphic species.

DISTRIBUTION: Indo-West Pacific, W Atlantic (see remarks in Bouillon et al. 1991). New record for New Zealand.

Mitrocomidae Torrey, 1909

Cosmetirella davisi (Browne, 1902)

REFERENCES: Kramp 1932, p. 360–362, fig. 4, 34, 46; Kramp 1961, p. 152; Kramp 1968, p. 72, 146, 148, 149, tab. IV, V, fig. 191; Navas-Pereira 1981, p. 237, 252.

MATERIAL EXAMINED: Station N466: 05/02/75; –47.5083°S, 167.2617°E; depth 152: number of specimens 1.

DESCRIPTION (after Kramp 1932, 1968): Umbrella up to 60 mm wide, larger in subantarctic (18–60 mm) than in antarctic (c. 18 mm) waters; almost hemispherical; stomach small, lips somewhat folded; gonads linear, sinuous, along 1/2–2/3 of radial canals; number of tentacles very variable, up to 180 (48–64 in antarctic, up to 180 in subantarctic forms); without marginal cirri; normally 8 open marginal vesicles with several concretions.

DISTRIBUTION: Antarctic and subantarctic, circumpolar; South Africa; Chili; Brazil. New record for New Zealand.

Mitrocomella frigida (Browne, 1910)

REFERENCES: Kramp 1932, p. 345, 346, fig. 23, pl. X; Kramp 1961, p. 56; Kramp 1968, p. 71, 149, tab. V, fig. 187.

MATERIAL EXAMINED: Station N465: 05/02/75; –47.6783°S, 167.0200°E; depth 154: number of specimens 1.

DESCRIPTION (after Kramp 1961, 1968): Diameter 13–17 mm, umbrella almost hemispherical, with thin walls. Stomach broad and short, mouth rim sligthly folded, with indication of lips. Gonads along greater part of the radial canals, leaving both ends free, curtain-like, hanging down in large vertical folds; 32–72 tentacles, about 8 marginal spiral cirri between successive tentacles; 8 open marginal vesicles.

DISTRIBUTION: Antarctica; west of Cape of Good Hope. New record for New Zealand.

Tiarranidae Russell, 1940

Chromatonema rubrum Fewkes, 1882

REFERENCES: Russell 1953, p. 223–226, fig. 120, 121; Kramp 1961, p. 128, 145; Kramp 1968, p. 61, 171, 182, fig. 160; Winkler 1982, p. 39, 40, fig. 12; Bleeker & Van der Spoel 1988, p. 234, 236, 237, fig. 20–22.

MATERIAL EXAMINED: Station N465: 05/02/1975; –47.6783°S, 167.0200°E; depth 154: number of specimens 1.

DESCRIPTION: (after Russell 1953 and Kramp 1968): Umbrella somewhat higher than a hemisphere, up to 27 mm wide and 22 mm high; jelly very thick, thinning towards umbrella margin, apex evenly rounded; manubrium broad, quadrangular, with 4 perradial lobes extending for 1/2–2/3 the distance toward bell margin; mouth with 4 short, slightly crenulated lips, 10–16 sac-like gonads on each side of each stomach lobe; 20–24 tentacles with conical bulbs; between successive tentacles 2, rarely only 1, minute cordylus-like appendages with a distal bundle of nematocysts.

DISTRIBUTION: Atlantic Ocean; Atlantic and Indian sectors of Antarctica. New record for New Zealand.

FINAL REMARKS

Forty-seven species have been identified in the collection of Hydromedusae from the NZOI collection. Nineteen were assigned to the Anthomedusae, 16 to the Leptomedusae, seven to the Trachymedusae, and five to the Narcomedusae. Fifteen species are new records for the New Zealand waters (eight Anthomedusae and seven Leptomedusae), which brings the total of known species of Hydromedusae of New Zealand to 90 (see Table 1) comprising: 37

Table 1 New Zealand Hydromedusae. Species list based on Barnett (1985), completed and modified. Bold type shows new species or new records for New Zealand.

Order: ANTHOMEDUSAE (37 species)
FILIFERA
Fam. **BOUGAINVILLIIDAE**
Bougainvillia aurantiaca
Bougainvillia fulva
Bougainvillia macloviana
Bougainvillia muscoides
Bougainvillia muscus (=*Bougainvillia ramosa*)
Bougainvillia platygaster
Bougainvillia superciliaris
Bougainvillia vervoorti
Koellikerina maasi

Fam. **CALYCOPSIDAE**
Bythotiara huntsmani

Fam. **CLAVIDAE**
Oceania armata
Turritopsis nutricula

Fam. **HYDRACTINIIDAE**
Podocoryne bella
Podocoryne minima
Podocoryne sp. (1)
Podocoryne sp. (2)

Fam. **PANDEIDAE**
Amphinema rugosum
Annatiara affinis
Leuckartiara octona
Leuckartiara sp.
Neoturris papua
Pandea conica
(Unknown pandeids)

Fam. **PROTIARIDAE**
Halitiara formosa
Halitiara inflexa
Halitiarella sp.
?*Protiara* sp.

Fam. **RATHKEIDAE**
Rathkea formosissima
Rathkea octopunctata

CAPITATA
Fam. **BOEROMEDUSIDAE**
Boeromedusa auricogonia

Fam. **CLADONEMATIDAE**
Cladonema novae-zelandiae

Fam. **CORYNIDAE**
Dipurena ophiogaster
Sarsia eximia
Sarsia gracilis
Sarsia sp.

Fam. **ELEUTHERIIDAE**
Staurocladia hodgsoni
Staurocladia vallentini

Fam. **MARGELOPSIDAE**
Pelagohydra mirabilis

Fam. **PENNARIIDAE**
Pennaria rosea

Fam. **TUBULARIIDAE**
Ectopleura minerva
Eucodonium brownei
Hybocodon forbesi
Hybocodon prolifer
Plotocnide sp.
Steenstrupia sp.
Unknown Tubulariidae Sp. A.

Fam. **ZANCLEIDAE**
Zanclea cosata

Order: LEPTOMEDUSAE (29 species)
CONICA
Fam. **AEQUORIDAE**
Aequorea macrodactyla

Fam. **CIRRHOLOVENIIDAE**
Cirrholovenia polynema

Fam. **EIRENIDAE**
Eirene ceylonensis
Eirene menoni
Eirene tenuis
Eirene sp.
Eutima curva
Eutima mira (*E. orientalis*)

Fam. **EUCHEILOTIDAE**
Eucheilota menoni
Eucheilota paradoxica
Eucheilota tropica
Eucheilota sp.

Fam. **LAODICEIDAE**
Laodicea sp.
Laodicea indica
Staurodiscus sp.
Toxorchis polynema

Fam. **LOVENELLIDAE**
Lovenella assimilis

Fam. **MALAGAZZIIDAE**
Malagazzia caroline
Octophialucium indicum

(*continued*) ➤

Table 1 *(continued)*

Fam. **MITROCOMIDAE**
Cosmetirella davisi
Cosmetira sp.
Mitrocomella brownei
Mitrocomella frigida

Fam. **PHIALELLIDAE**
Phialella falklandica
Phialella quadrata

Fam. **TIARANNIDAE**
Chromatonema rubrum

Fam. **TIAROPSIDAE**
Tiaropsidium japonicum
Tiaropsis ?multicirrata

PROBOSCOIDA
Fam. **CAMPANULARIIDAE**
Clytia gregaria
Clytia hemisphaericum
Clytia malayense
Clytia rangiroae
Clytia simplex
Obelia spp.
Orthopyxis crenata (= *Eucopella bilabiata* and *Eucopella crenata*)

Order: LIMNOMEDUSAE (1 species)
Fam. **OLINDIASIDAE**
Craspedacusta sowerbyi

Order: TRACHYMEDUSAE (15 species)
Fam. **GERYONIIDAE**
Liriope tetraphylla

Fam. **HALICREATIDAE**
Botrynema brucei
Halicreas minimum
Haliscera bigelowi
Haliscera racovitzae
Halitrephes maasi

Fam. **RHOPALONEMATIDAE**
Aglaura hemistoma
Amphogona apicata
Colobonema sericeum
Crossota brunnea
Pantachogon haeckeli
Rhopalonema funerarium
Rhopalonema velatum
Sminthea eurygaster
Tetrorchis erythrogaster

Order: NARCOMEDUSAE (8 species)
Fam. **AEGINIDAE**
Aegina citrea
Aeginura grimaldii
Solmundella bitentaculata

Fam. **SOLMARISIDAE**
Pegantha clara
Pegantha martagon
Solmaris rhodoloma

Fam. **CUNINIDAE**
Solmissus incisa
Solmissus marshalli

species of Anthomedusae, 29 species of Leptomedusae, one species of Limnomedusae, 15 of Trachymedusae, and eight of Narcomedusae.

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