

A Field Guide to

OCTOCORALS

in Southern and Western Waters of Hong Kong

Part 1:

Family Acanthogorgiidae, Anthogorgiidae, Astrogorgiidae and Euplexauridae



Produced by:

Prof. Ling Ming TSANG

Simon F.S. Li Marine Science Laboratory,

School of Life Sciences,

The Chinese University of Hong Kong



**Marine Molecular Ecology &
Evolution Lab (MMEE)**



School of
Life Sciences
THE CHINESE UNIVERSITY OF HONG KONG

香港中文大學
生命科學學院

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INTRODUCTION

Study on the diversity and distribution of octocoral community and associated invertebrates in southern waters of Hong Kong

Octocoral communities are vital components of marine ecosystems, providing shelter and food resources for a diverse array of marine organisms. The last survey of octocorals in Hong Kong was conducted over a decade ago, revealing a highly diverse community in the southern waters. Unfortunately, despite their ecological importance, they are often understudied and overlooked due to the challenges associated with surveys and identification. In this project, comprehensive surveys were conducted at 30 sites across the southern and western waters of Hong Kong*. A total of 40 species of octocorals were identified using an integrated approach that combined morphological traits, including sclerites investigation, and DNA barcoding sequences. This approach successfully clarified some previously confused species and discovered six newly recorded species in Hong Kong. Additionally, several hotspots of octocoral richness were identified. Furthermore, 30 species of octocoral-associated invertebrates with one new record species were also documented, underscoring the critical role octocorals play in supporting marine life. To facilitate future monitoring programs and public education activities, this photographic catalogue that could be freely accessible online by the public was produced for the quick identification of octocorals and their associated invertebrates, promoting long-term citizen engagement in biodiversity conservation efforts.

香港南部水域八放珊瑚群落及無脊椎動物多樣性和分佈研究

八放珊瑚群落是海洋生態系統的重要組成部分，牠們為多種海洋生物提供棲息地和食物資源。上一次與香港八放珊瑚群落相關的調查已在十多年前進行，調查結果揭示了八放珊瑚群落在香港南部水域的高度多樣性。儘管八放珊瑚群落對生態系統有相當的重要性，水下調查和識別的難度時間往往令牠們被忽視。在本項目中，我們在香港南部和西部水域的30個地點進行了全面調查*。通過結合形態特徵（包括骨針調查）和分子生物學研究的方法，共識別出40種八放珊瑚。我們透過這一方法亦成功澄清了一些曾被混淆的物種，並從中發現了六個本地新記錄物種。此外，本項目還確定了八放珊瑚的熱點區域，以及記錄了30種與八放珊瑚相關的海洋無脊椎動物，其中包括一種香港新記錄物種，證明八放珊瑚在支持海洋生物方面起了關鍵的作用。我們亦製作了這份香港八放珊瑚及其相關無脊椎動物的圖鑑，以便公眾快速識別不同種類的八放珊瑚，公眾可於網上免費存取。這圖鑑有助大家日後於水底監察時快速辨認八放珊瑚及相關物種，並便利公眾教育活動，提高公眾對生物多樣性保育的認識的參與。

*This guidebook only covers the distribution of octocorals in the southern and western waters of Hong Kong. 本圖鑑中記錄的八放珊瑚分佈僅涵蓋香港南部及西部水域。

Clicking on the table of contents on this page and the image directory on pages P.4-6 allows for quick navigation to the corresponding pages.

Introduction ----- P. 2

ORDER MALACALCYONACEA

Family Acanthogorgiidae

Genus <i>Acanthogorgia</i> Gray, 1857 -----	P. 9
Genus <i>Bebryce</i> Philippi, 1842 -----	P. 14
Genus <i>Echinogorgia</i> Kölliker, 1865 -----	P. 16
Genus <i>Echinomuricea</i> Verrill, 1869 -----	P. 22
Genus <i>Guaiaogorgia</i> Grasshoff & Alderslade, 1997 -----	P. 28
Genus <i>Menella</i> Gray, 1870 -----	P. 34
Genus <i>Pseudoparacis</i> Matsumoto & van Ofwegen, 2023 -----	P. 42
Genus <i>Trimuricea</i> Gordon, 1926 -----	P. 44

Family Anthogorgiidae

Genus <i>Anthogorgia</i> Verrill, 1868 -----	P. 47
Genus <i>Muricella</i> Verrill, 1869 -----	P. 50

Family Astrogorgiidae

Genus <i>Anthoplexaura</i> Kükenthal, 1908 -----	P. 55
Genus <i>Astrogorgia</i> Verrill, 1868 -----	P. 60

Family Euplexauridae

Genus <i>Euplexaura</i> Verrill, 1869 -----	P. 67
---	-------

Reference ----- P. 74

TABLE OF CONTENTS



Acanthogorgia inermis P.10-11



Acanthogorgia vegae P.12-13



Guaiagorgia sp. P.32-33



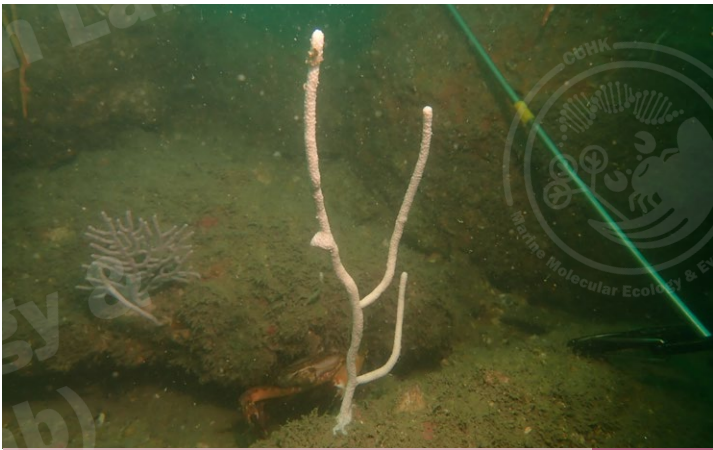
Menella sp. 1 P.36-39



Bebryce sp. P.14-15



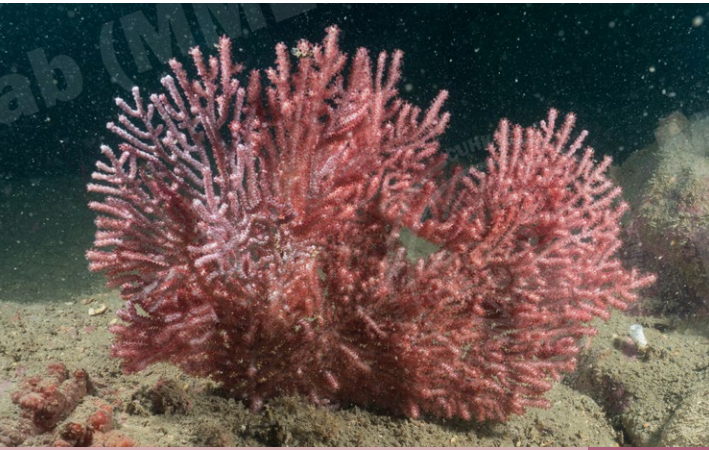
Echinogorgia pseudosassapo P.18-19



Menella sp. 2 P.40-41



Pseudoparacis erythraeensis P.42-43



Echinogorgia sp. P.20-21



Echinomuricea spinifera P.24-25



Trimuricea tuberculosa P.44-45



Anthogorgia divaricata P.48-49



Echinomuricea sp. P.26-27



Guaiagorgia anas P.30-31



Muricella sp. P.52-53



Anthoplexaura dimorpha P.56-57

*Anthoplexaura* sp.

P.58-59

*Astrogorgia sinensis*

P.62-63

*Astrogorgia* sp.

P.64-65

*Euplexaura robusta*

P.68-69

*Euplexaura* sp.

P.70-71

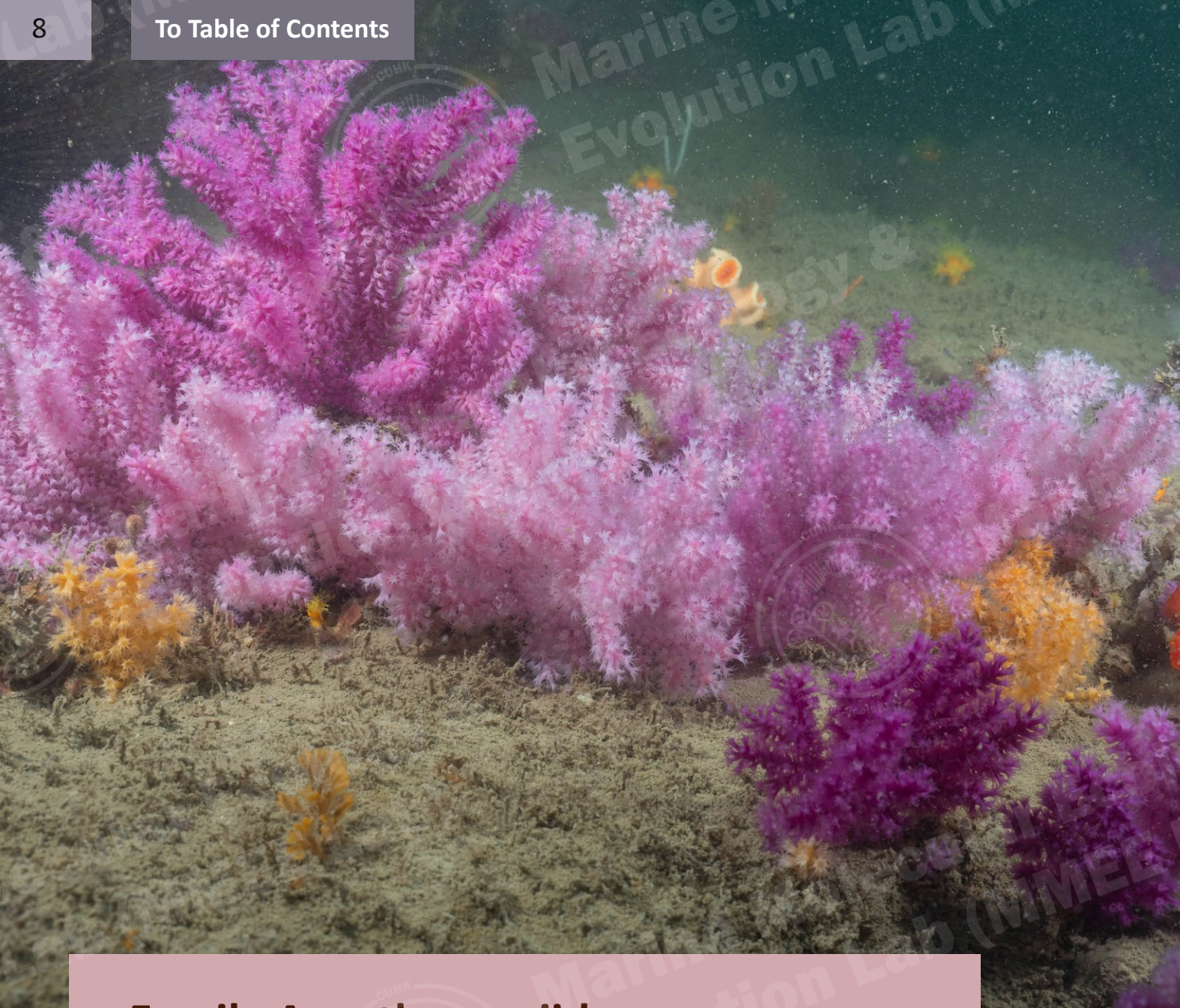


Unclassified Euplexauridae

P.72-73

Order Malacalcyonacea





Family Acanthogorgiidae

Genus *Acanthogorgia* Gray, 1857

Genus *Bebryce* Philippi, 1842

Genus *Echinogorgia* K  lliker, 1865

Genus *Echinomuricea* Verrill, 1869

Genus *Guaiaogorgia* Grasshoff & Alderslade, 1997

Genus *Menella* Gray, 1870

Genus *Pseudoparacis* Matsumoto & van Ofwegen, 2023

Genus *Trimuricea* Gordon, 1926

Genus *Acanthogorgia* Gray, 1857

Colony shape

Colonies are mostly planar and reticulate, and some can form bushy tangles, or loose, laterally branched fans. Branches are generally delicate and thin. Coenenchyme is usually so thin that the black axis can be visible.

Polyps

Monomorphic, contractile but not retractile. Contracted polyps often appear very tall and cylindrical, sometimes trumpet-shaped. Such contracted structures may show resemblance to calyces, but they are in fact the non-retractile polyps.

Sclerites

Polyps are covered with 8 double rows of warty spindles along the body wall. Spindles are commonly boomerang-shaped. The protruded tip of a spindle is generally smooth. In many species, the long projections of spindles form a conspicuous spiny "crown" at the top of the polyp, just below the tentacle bases. The backs of the tentacles are densely covered in small, flat, boomerang-shaped sclerites. The thin coenenchyme has small, warty spindles, thornstars or capstan derivatives. Sclerites are always colourless.



Species *Acanthogorgia inermis* Hedlund, 1890



Description

Colonies grow in one plane and are purple in color. Colonies can grow large in size, up to 20 cm in height by 25 cm in width. Branches often exhibit anastomosis. Crown sclerites 0.4 mm, boomerang-shaped, arranged *en chevron*. Polyps contain regular quadriradiate spicules. Tentacle sclerites ~0.15 mm.

Habitat

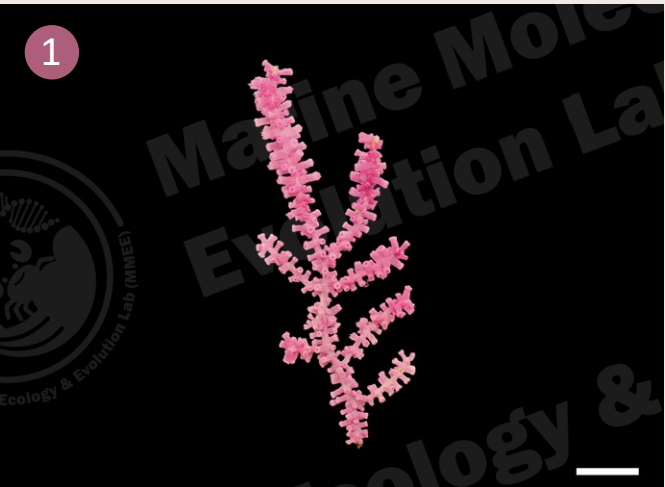
Rocky substrata.

Distribution in Hong Kong

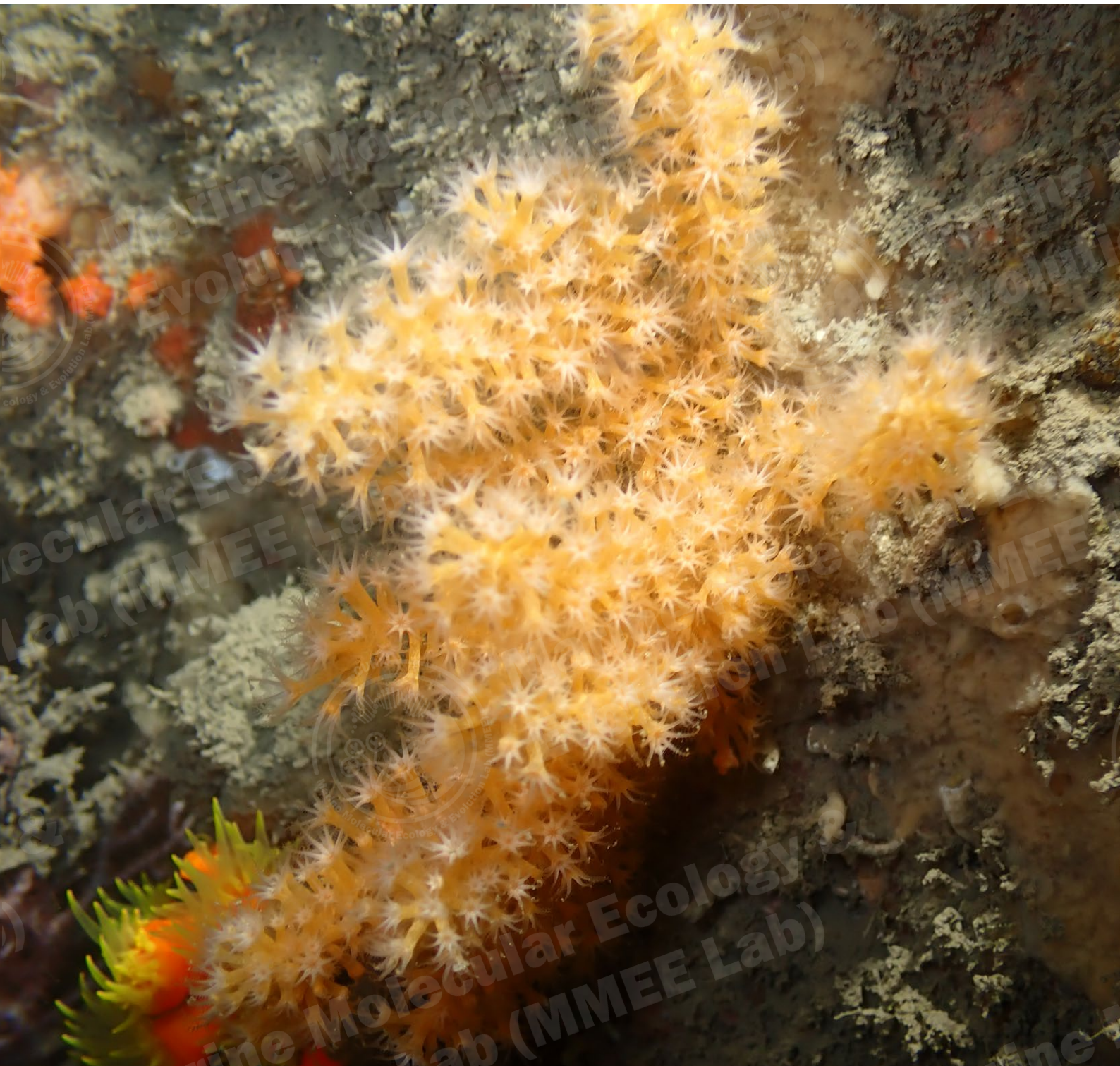
Waglan Island South, Sung Kong West, Bokhara Rock, Round Island.



- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 μ m)
- 3 Close-up photo of polyps
- 4 Associated invertebrate: *Hamodactylus boschmai*



Species *Acanthogorgia vegae* Aurivillius, 1931



Description

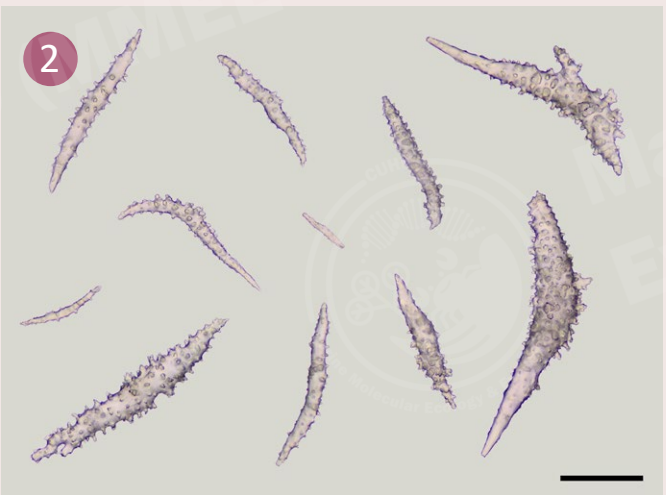
Colonies grow in one plane and are yellow in color. Thick branches arise at wide angles from a large, lobate basal disk. Polyps are large, cylindrical and project perpendicularly with size around 3 - 5 mm x 1.5 mm. Sclerites at polyp base are large, ~1.3 x 0.1 mm, and either plain or s-shaped. Crown sclerites smaller, 0.6 mm, arranged *en chevron*. Tentacle sclerites ~0.3 mm. Stem sclerites are fusiform and ~1 x 0.1 mm long. Axis is thick and brown.

Habitat

Rocky substrata.

Distribution in Hong Kong

Po Toi West.



- 1 Laboratory photo
- 2 Sclerite photo (scale = 200 μm)
- 3 Close-up photo of polyps
- 4 Field photo



Genus *Bebryce* Philippi, 1842

Colony shape

Colonies are usually fan- or bush-shaped, with irregular lateral branching. Branches are frequently adhered with debris. An encrusting sponge is often overgrown on colonies.

Polyps

Monomorphic and retractile within calyces.

Sclerites

The surface of coenenchyme and calyces contain the characteristic sclerites in the form of rosettes. These sclerites have a warty base with a clump of projecting thorns, antlers, spines, or bristles. Sclerites on the calyces may be modified as spiny clubs to fit the contours of the walls, while those in the surface are 3- to 6-rayed stellate plates, often disc-like with a warty central boss on one side. Polyp sclerites are curved or bow-shaped, and sometime develop a middle arm. Point sclerites generally have a thorny tip. Tentacle sclerites are bow-shaped and warty. Sclerites are always colourless.

Species *Bebryce* sp.

Description

Colonies are flabellate and brown in color. The colour is probably due to the adhering dirt or the overgrowing sponge. The colonies can grow up to 14 cm in length and 14 cm in width. Polyps are cylindrical, orange in color and irregularly distributed on the sides of the branches. The surface sclerites are in the form of rosettes, with size $\sim 0.14 \times 0.12$ mm.

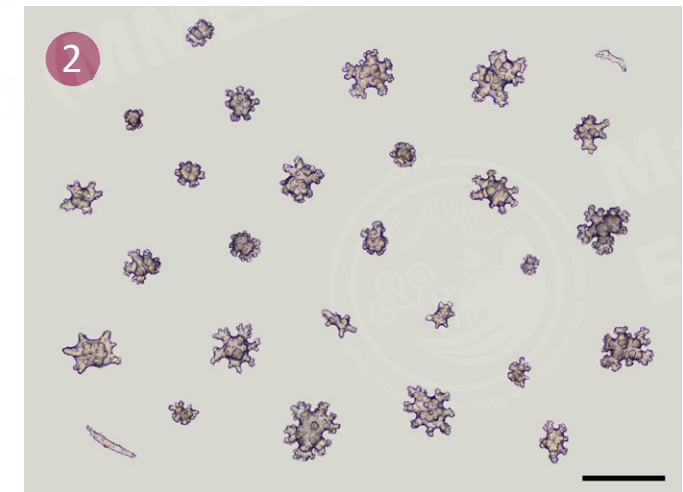
Habitat

Rocky substrata.

Distribution in Hong Kong

Waglan Island South, Sung Kong East, Sung Kong West, Po Toi South, Magazine Island, Round Island.

- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 μ m)
- 3 Close-up photo of polyps
- 4 Field photo





Genus *Echinogorgia* K  lliker, 1865

Colony shape

Colonies grow in one plane. The main branches always produce very short side branches, of which at least a few are nearly always fused together. Commonly many branches fuse to produce net-like fans. The branches are usually not very thick, but the colonies can grow quite large.

Polyps

Monomorphic, and completely retractile into spiny calyces that can be very prominent.

Sclerites

The calyces are formed from numerous, rather thick, well-formed thornscales. They generally have about three thorn-like or blade-like projections and a complex tuberculate root structure. The thornscales can range from small scales with a single projection to large ones with many. The polyps are armed with generally large sclerites in a collaret and points arrangement. The point sclerites are usually hockey stick-shaped, and the collaret sclerites are bow-shaped. Sometimes there is only a single point sclerite below a tentacle, in which case it usually has a bifurcate base. The surface of the branches contains sclerites that are often called rooted leaves. The outward pointing projections of rooted leaves can vary that be less leaf-like and more spine-like or pyramid-like. Some of these sclerites are thorny blocks that is large in size and there may be spindles with thorn-like projections on one side. Sometimes a few unusually large, tuberculate spindles are presence on the surface and distributed randomly. Small spindles, capstans and branched forms sclerites are present between and underneath the surface. Sclerites are usually red or colourless, occasionally yellow.



Species *Echinogorgia pseudosassapo* K  lliker, 1865



Description

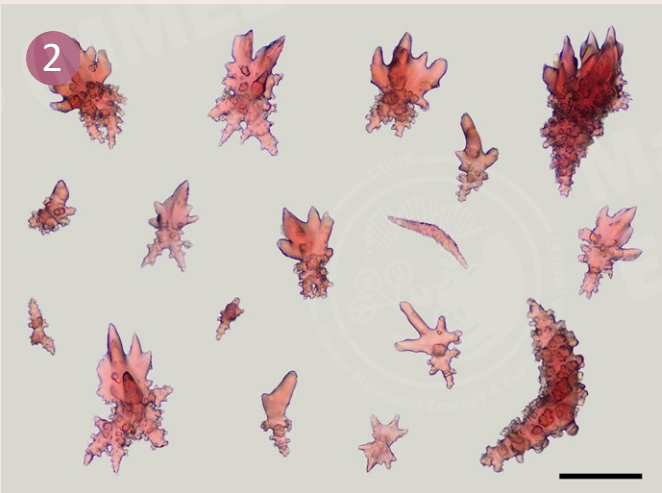
Colonies grow in one plane and are deep red in color. Branches grow at right angles and upwards from the main stem or the mother branch. Polyps are packed densely and irregularly over the colony surface. Polyps are strengthened by numerous, deep red, prominent, imbricated sclerites, which have long, sharp ends and irregularly branched bases. These sclerites are of ~0.5 x 0.5 mm. Axis light brown, slender and flexible.

Habitat

Rocky substrata.

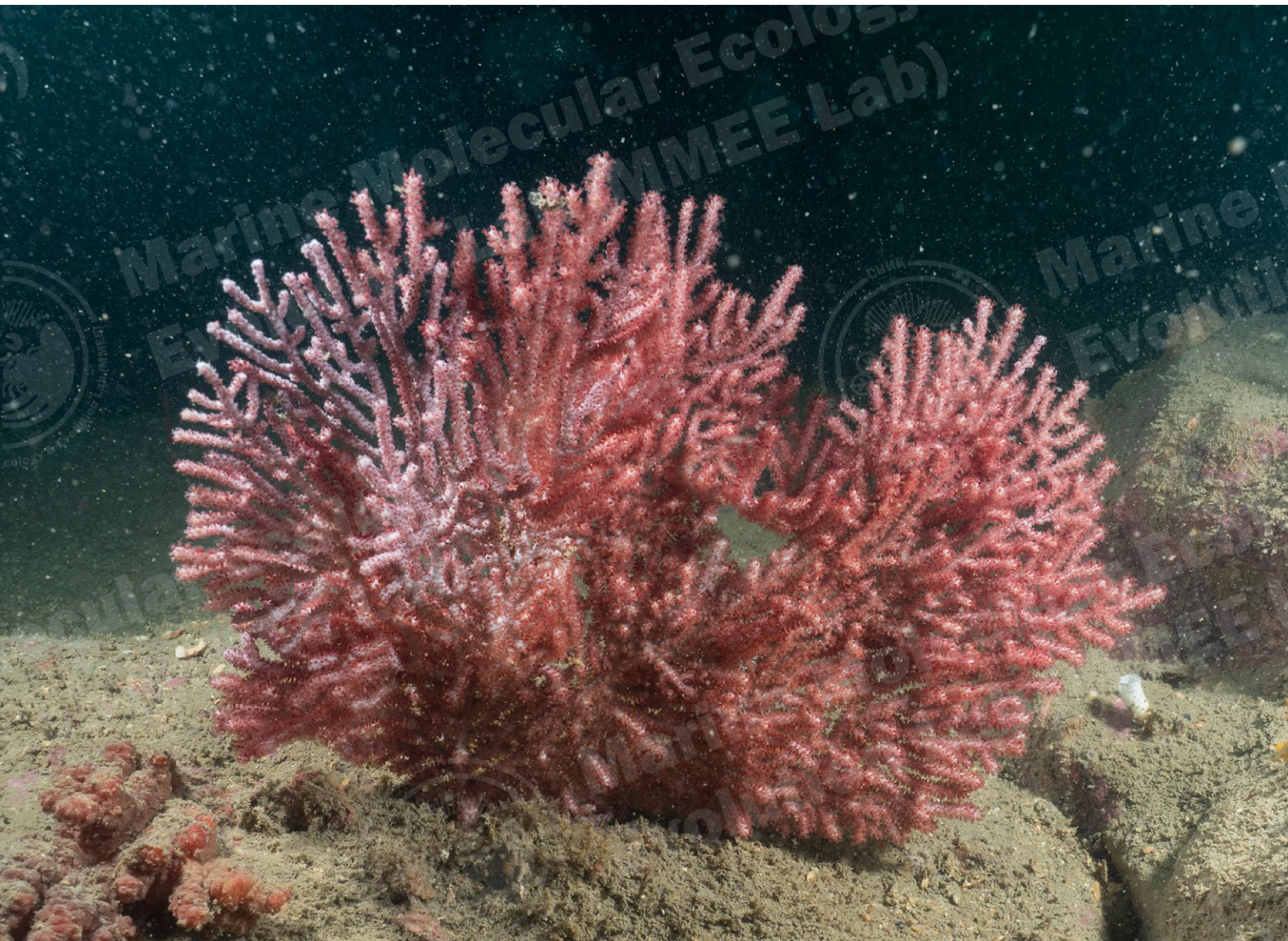
Distribution in Hong Kong

Waglan Island South, Fury Rock, Sung Kong West, Magazine Island, Siu A Chau, Shek Kwu Chau.



- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200   m)
- 3 Close-up photo of polyps
- 4 Field photo

Species *Echinogorgia sp.*



Description

Colonies grow in one plane with short, side branches that ramify into a fanlike, reticulate structure. The colony is pink with red monomorphic polyps. Calyx sclerites are thornscales with several blade-like projections and tuberculate base processes. These sclerites are of ~0.4 x 0.5 mm. Axis brown and flexible.

Habitat

Rocky substrata.

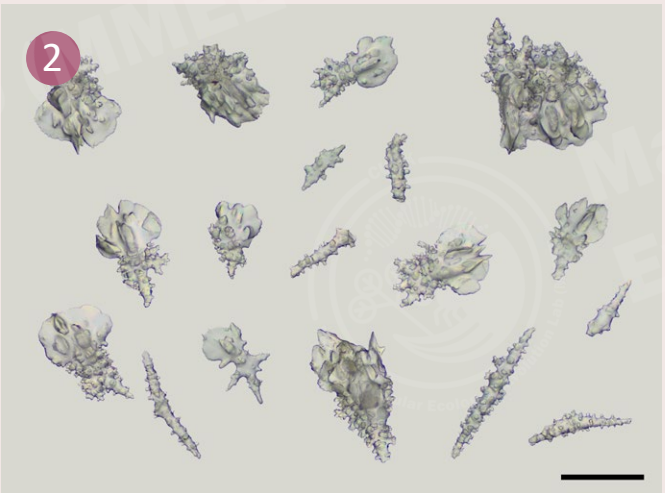


- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 μ m)
- 3 Close-up photo of polyps
- 4 Associated invertebrate: *Ergalatax contracta*



Distribution in Hong Kong

Waglan Island South, Sung Kong East, Fury Rock, Sung Kong West, Bokhara Rock, Kau Pei Chau, Beaufort Island North, Beaufort Island East, Po Toi South, Round Island, Magazine Island, Pak Kok Tsui, Yam O Wan, Siu Kau Yi Chau, Cheung Chau, Shek Kwu Chau, Tai A Chau.



Genus *Echinomuricea* Verrill, 1869

Colony shape

Colonies generally grow as in one plane or loose bushes with few, long and slender, whip-like branches that could up to about 50 cm in height. Branches often arise at nearly right angles and upward from the main stem or the mother branch. In a number of species, the branches are unusually thick.

Polyps

Monomorphic, and retractile into low or tall calyces.

Sclerites

The thornscales of the calyces are characterized to have a single, long spine arising from a spreading, warty base. Modified forms of thornscales with a large base, or a couple of spines are also presence in calyces and the colony surface, along with warty spindles and branched forms. The spine on the thornscales could be smooth or modified with tiny spines. The polyp head contains large spindles and rods in a collaret and points arrangement. Sclerites could be red or colourless.



Species *Echinomuricea spinifera* Nutting, 1910

Description

Colonies are white and flabellate. Few long branches are loosely and irregularly branched laterally from the lower portion of the main stem. Ultimate branches are swollen at tips. Long, flat, dagger-like spine of the thornscales form a crown around the calyx margin. The dagger-shaped thornscales are ~0.6 mm in length. Other sclerites are thin, curved spindles that ~0.45 mm in length. All sclerites are colorless. Axis dark brown and flexible.

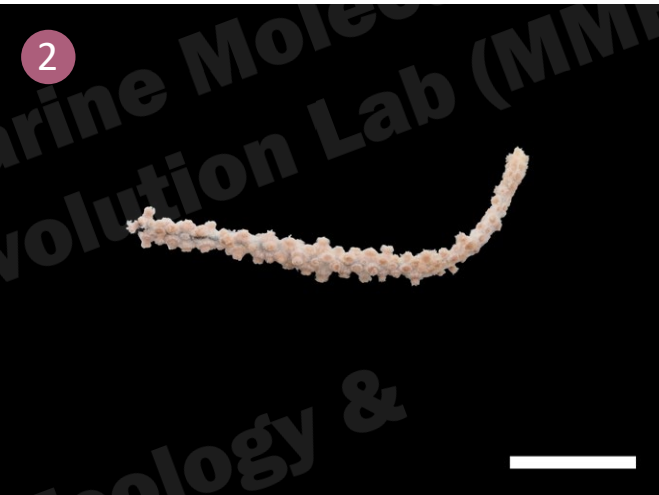
Habitat

Silty or sandy substrate.

Distribution in Hong Kong

Waglan Island North, Po Toi West, Po Toi South, Round Island, Magazine Island, Pak Kok Tsui, Picnic Bay, Siu Kau Yi Chau.

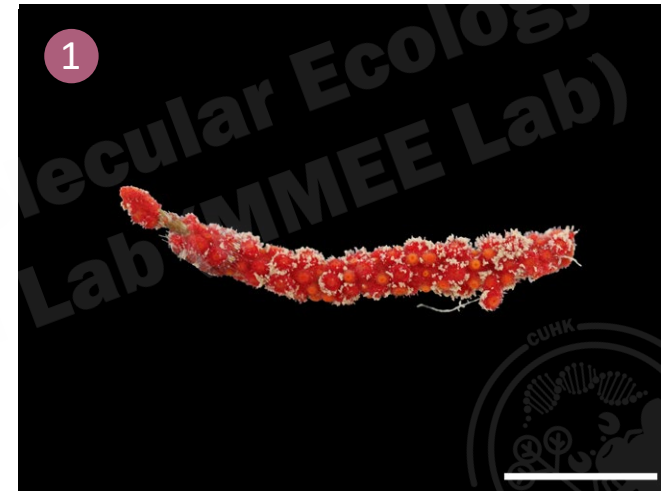
- 1 Field photo
- 2 Laboratory photo (scale = 1 cm)
- 3 Sclerite photo (scale = 200 μm)
- 4 Close-up photo of polyps



Associated invertebrates



Species *Echinomuricea* sp.



Description

Colonies grow in one plane generally, with long branches arise from the base. The branches are bright red with orange polyps. The long projection of thornscales is decorated with small spines that gives a more rugged appearance. The thornscales are ~0.6 mm in length and the spindles are ~0.45 mm in length. All sclerites are red in color. Axis dark brown and flexible.

Habitat

Rocky substrata.

Distribution in Hong Kong

Waglan Island South, Po Toi West, Tung O Wan, Siu Kau Yi Chau, Cheung Chau, Shek Kwu Chau.



1 Laboratory photo (scale = 1 cm)

3 Close-up photo of polyps

5 Associated invertebrate: *Ophiothela mirabilis*

2 Sclerite photo (scale = 200 μ m)

4 Associated invertebrate: *Pteria* sp. 3

6 Associated invertebrate: *Nemanthus nitidus*

Genus *Guaia**gorgia* Grasshoff & Alderslade, 1997

Colony shape

Colonies are loosely and straggling branched. Branches are long and thin. Branches usually arising almost at right angles from the stem and mother branch. Unbranched colonies have also been recorded. The diameter of all branches is similar. Most of the live specimens are blue in colour.

Polyps

Monomorphic, completely retractile. Polyps have long bodies when expanded.

Sclerites

The surface sclerites are narrow and plump spindles, sometimes clubs, with girdle-like or irregularly arranged warts. The polyp sclerites are small rods with loose collaret and points arrangement. Sclerites are always colourless.





Description

Colonies are generally fan-like with branches arise at nearly right angles and upward from the main stem or mother branch. While most colonies are blue in colour, instances of yellow and red individuals have been recorded. Polyps irregularly distributed on all sides of the branches. Polyps of blue colonies appearing cylindrical and blue. The observed colonies are 6 – 9 cm in length. Surface sclerites are plump spindles with belted or irregularly arranged warts. These sclerites are $\sim 0.09 - 0.2 \times 0.03 - 0.07$ mm. Polyp sclerites are small and thorny rods, with sized $\sim 0.15 - 0.02$ mm. All sclerites are colourless. Several invertebrates were found to associated with this species, including brittle star *Ophiothela mirabilis*, palaemonid shrimp *Hamodactylus boschmai*, and sea snail *Crenavolva trailii*.

Habitat

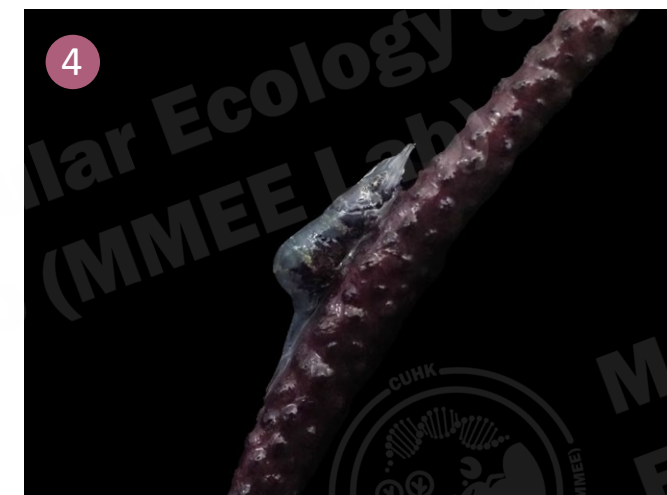
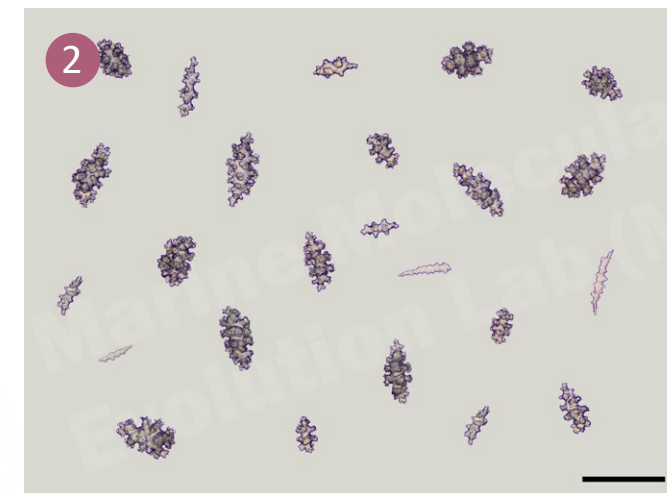
Rocky substrata.

Distribution in Hong Kong

Waglan Island South, Fury Rock, Po Toi West, Round Island, Magazine Island, Ma Wan, Siu Kau Yi Chau, Cheung Chau, Shek Kwu Chau, Siu A Chau, SW Lantau MP (Fan Lau E), SW Lantau MP (Fan Lau W).



Species *Guaiagorgia anas* Grasshoff & Alderslade, 1997



1 Laboratory photo (scale = 1 cm)

3 Close-up photo of polyps

5 Associated invertebrate: *Colochirus quadrangularis*

2 Sclerite photo (scale = 200 μ m)

4 Associated invertebrate: *Hamodactylus boschmai*

6 Associated invertebrate: *Ophiothela mirabilis*

Species *Guaiaigorgia* sp.



Description

Colonies are sparsely branched with pale blue colour. Branches arise at right angles and upward from the main stem or mother branch. Many of them were found to covered with thin brown membrane, probably are overgrowing sponge. Polyps are cylindrical and blue in color. The observed colonies are 4 – 8 cm in height. Surface sclerites have two derivatives. One is narrow spindles with irregularly arranged warts. Another is globular, ovals or plump spindles, which covered with complex warts. These sclerites are ~0.1 x 0.05 mm and ~0.09 x 0.06 mm respectively. All sclerites are colourless.

Habitat

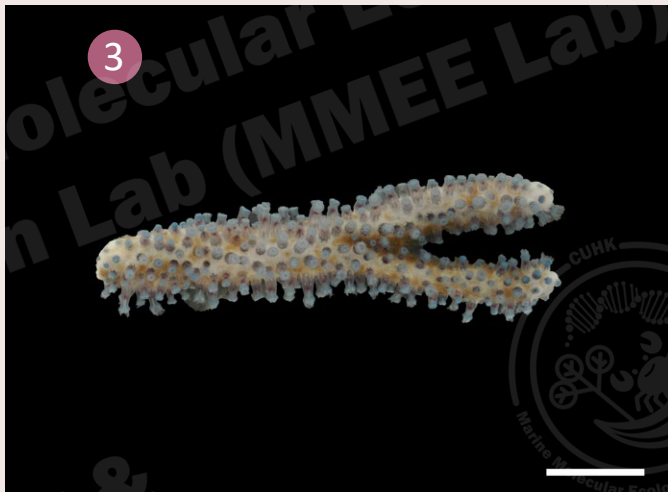
Rocky substrata.

Distribution in Hong Kong

SW Lantau MP (Fan Lau E),
Shum Wat Wan,
Lung Kwu Chau.



- 1 Field photo
- 2 Laboratory photo (scale = 1 cm)
- 3 Laboratory photo (scale = 1 cm)
- 4 Sclerite photo (scale = 200 µm)



Genus *Menella* Gray, 1870

Colony shape

Colonies are generally sparsely branched or unbranched and whip-like in appearance. Highly branched colonies are occasionally observed. Branches are thick, usually arising at nearly right angles and curving upward from the main stem or mother branch, without forming nets.

Polyps

Monomorphic, completely retractile. Polyps can retract within low to prominent, hemispherical calyces.

Sclerites

The surface and calyx contain the characteristic leaf-scale sclerites. These sclerites have fan-shaped upper part with tuberculated or bifurcated root lower part. The edge of fan-shaped portion can be entire or have varying degrees of serration. The root portion is ornamented with warts irregularly. Polyp sclerites have high variability in number, ranging from none to numerous. In the cases where polyp sclerites are present, their shape is diverse. Rod-shaped sclerites are frequently encountered, while tripod-shaped and curved-shaped sclerites are sometime observed. All sclerites are red or colourless.



Species *Menella* sp. 1 Gray, 1870



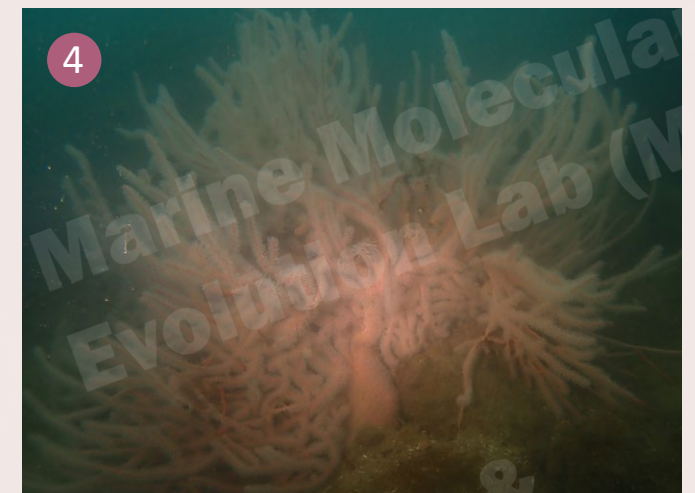
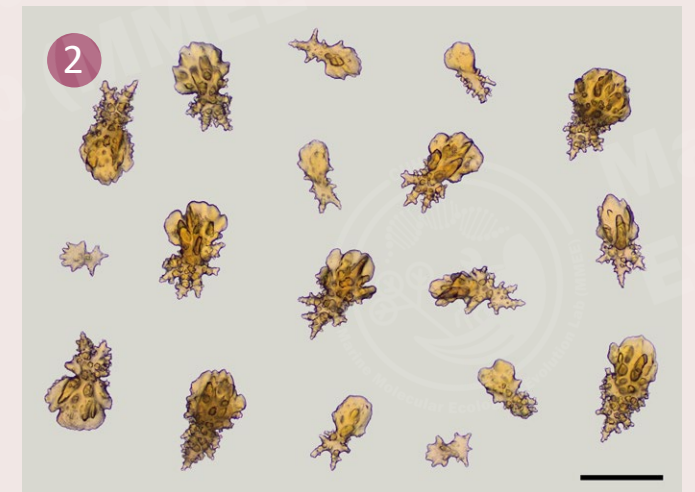
Description

Colonies are sparsely branched with orange colour. Branches emerge from the main stem nearly perpendicular, extending upwards and terminating in blunt points. Polyps are white in color and irregularly distributed on all sides of the branches. Colonies can reach lengths of up to 70 cm and widths of 100 cm. Prominent leaf-scale sclerites present in coenenchyme. The fan-shaped portions have irregular ribs down the sides, while the root portions have a few thorny basal processes. These sclerites are $\sim 0.17 - 0.25 \times 0.09 - 0.16$ mm. Sclerites are yellowish brown. Sea snail *Crenavolva traillii* is frequently observed climbing on the branches.

Habitat

Rocky substrata.

- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 μ m)
- 3 Close-up photo of polyps
- 4 A large individual with 70 cm (H) x 100 cm (W) found in Siu Kau Yi Chau



Distribution in Hong Kong

Waglan Island South, Fury Rock, Sung Kong West, Kau Pei Chau, Beaufort Island East, Po Toi West, Round Island, Magazine Island, Pak Kok Tsui, Picnic Bay, Ma Wan, Yam O Wan, Siu Kau Yi Chau, Cheung Chau, Shek Kwu Chau, Siu A Chau, Tai A Chau, SW Lantau MP (Fan Lau E).



Menella sp. 1 and its associated invertebrates



Egg capsules of of Sepiidae sp.



Caprella scauroides



Nemanthus nitidus



Pteria sp. 2



Crenavolva traillii



Ophiothela mirabilis



Ophiothela sp.



Crenavolva sp.



Phenacovolva rosea

Species *Menella* sp. 2

This is a potential new record in Hong Kong.



Description

Colonies are branched in one plane or unbranched and rod-like in appearance. Branches are white and emerge from the main stem mostly perpendicular. Polyps are white in color and irregularly distributed on all sides of the branches. The observed colonies are 10 – 20 cm in length, 6 – 17 cm in width. Surface sclerites are leaf-scale form, with size ~0.25 – 0.3 x 0.15 – 0.25 mm. Polyp sclerites have multiple derivatives, including angulated spindles, rod-shaped and tripod-shaped with warts. These sclerites are ~0.13 – 0.25 mm long. All sclerites are colourless.

Habitat

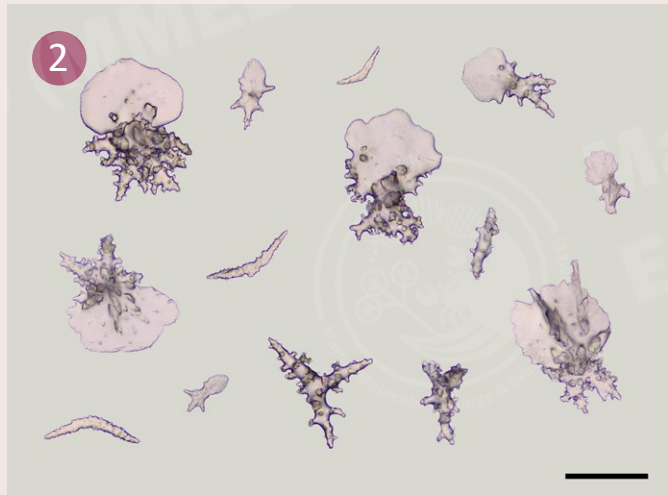
Rocky substrata.

Distribution in Hong Kong

Magazine Island, Ma Wan, Yam O Wan, Siu Kau Yi Chau, Cheung Chau, Shek Kwu Chau, Siu A Chau.



- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 µm)
- 3 Associated invertebrate: *Hamodactylus boschmai*
- 4 Associated invertebrate: *Ophiothela* sp.





Genus *Pseudoparacis*

Matsumoto & van Ofwegen, 2023

Colony shape

Colonies richly branched in one plane. Branches grow at around right angles and upwards from the main stem and the end branches are usually short. Polyps occur all around the end branches while more to one side on thicker branches.

Polyps

Monomorphic, and retractile into calyces.

Sclerites

The thornscales of the calyces are characterized with the plate-like appearances. Coenenchyme with surface layer of big spindles, with rounded tubercles on the outside. Below these big spindles lie smaller ones. Polyps with collaret and points in form of straight spindles. Sclerites red or colourless.

Species *Pseudoparacis erythraeensis* (Stiasny, 1938)

Description

This is a new record in Hong Kong.

Colonies grow in a busy bush and the surface of coenenchyme heavily covered with silt. White polyps extend in the current. The big spindles on the surface of coenenchyme is absent from the collection in Hong Kong. The thornscales are ~0.4 mm in length and the polyp spindles are ~0.1 – 0.2 mm in length.

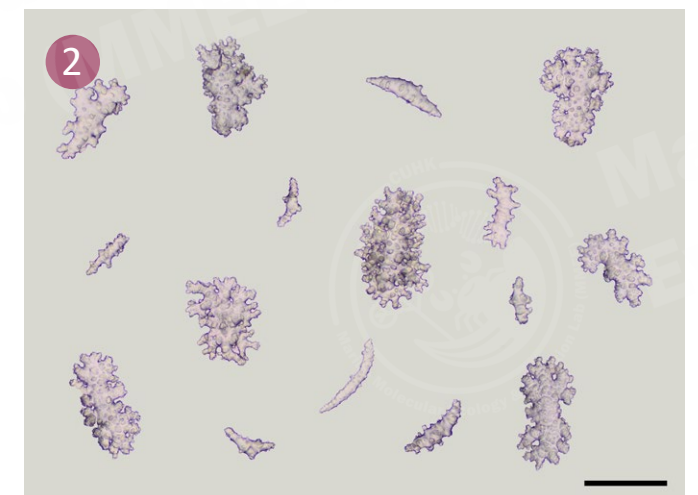
Habitat

Deep water.

Distribution in Hong Kong

Round Island.

- 1 Laboratory photo
- 2 Sclerite photo (scale = 200 μ m)
- 3 Field photo
- 4 Field photo





Genus *Trimuricea* Gordon, 1926

Colony shape

Colonies are irregularly branched in nearly one plane. Branches often fuse together which produce net-like appearance.

Polyps

Monomorphic and retractile. Polyps are closely packed with well-developed calyces.

Sclerites

Most of the polyp sclerites are triradiates, encircling the polyps and forming the distinctive configuration of collaret and points. Interspersed among the triradiates are unbranched curved sclerites that fit the gaps amongst them. Calyx sclerites are thornscales, with a relatively smooth central arm and 2 – 4 warty arms at a side. The sclerites in the coenenchyma are variable in shape. It contains spindles, thornspindles and irregular branched warty sclerites. Sclerites are colourless or yellowish.

Description

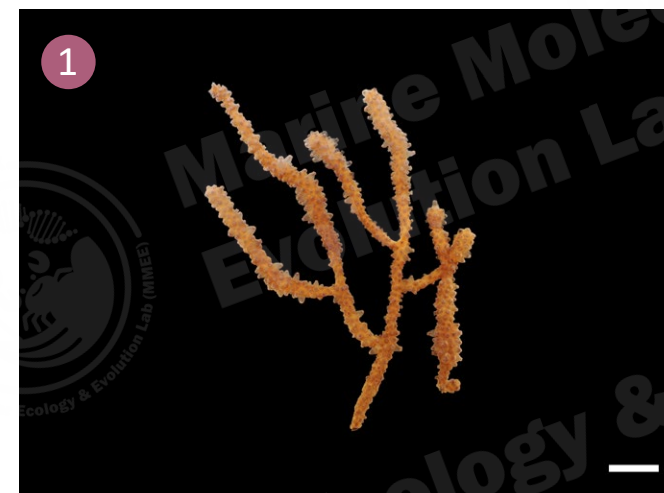
Colonies grow in one plane with numerous anastomoses. The branches are orange with white polyps. Polyps are closely and irregularly situated all around the branches. The polyp sclerites are point triradiates, point spindles or collaret spindles, with size $\sim 0.25 \times 0.07$ mm. Sclerites in the coenenchyma and calyx are thornscales, with a thick, heavily warted base, and single or multiple smooth or echinulate thorns. These sclerites are $\sim 0.28 \times 0.16$ mm. All sclerites are yellowish.

Habitat

Rocky substrata.

Distribution in Hong Kong

Round Island.



- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 μ m)
- 3 Close-up photo of polyps

Family Anthogorgiidae

Genus *Anthogorgia* Verrill, 1868

Genus *Muricella* Verrill, 1869

Genus *Anthogorgia* Verrill, 1868

Colony shape

Colonies are generally fan-like and commonly with free branches and a few branches may be fused to give a net-like structure. Large fans in strong currents may have their major branches fused together to develop many net-like joins.

Polyps

Monomorphic, non-retractile, cylindrical or dome shape. Tall, non-retractile polyp may show resemblance to calyces when contracted.

Sclerites

The polyps are covered with blunt spindles with large warts arranged *en chevron* and are more irregularly along the body wall. The tentacles contain small rods. Coenenchyme contains similar spindles with ovals, small capstans and capstan derivatives. Sclerites may be coloured.

Species *Anthogorgia divaricata* (Verrill, 1865)



Description

Colonies grow in one plane and are blue in color. Branches grow at approximately right angles from the main stem or the mother branch. Branchlets are slender, elongate and divaricate. Prominent polyps cover densely and irregularly on the branches. Thin coenenchyme filled with large, thick spindles of <0.8 mm. Polyp rods elongate, fusiform and around ~0.2 mm in size. Axis light grey, soft and flexible.

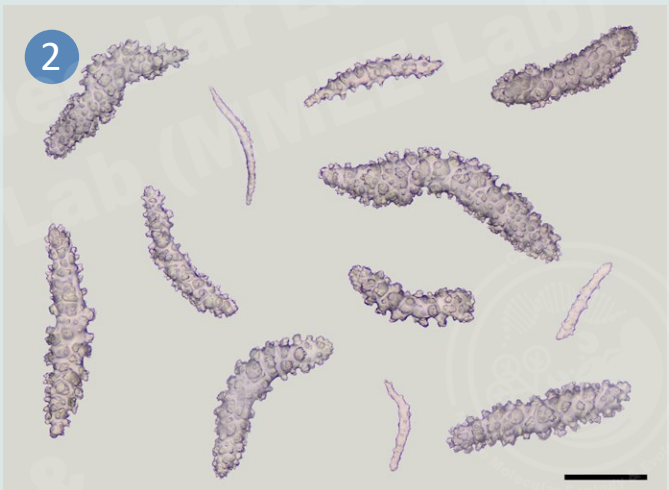
Habitat

Rocky substrata.

Remark

Type locality of this species is Hong Kong.

- 1 Laboratory photo
- 2 Sclerite photo (scale = 200 μm)
- 3 Close-up photo of polyps



Distribution in Hong Kong

Round Island.



Genus *Muricella* Verrill, 1869

Colony shape

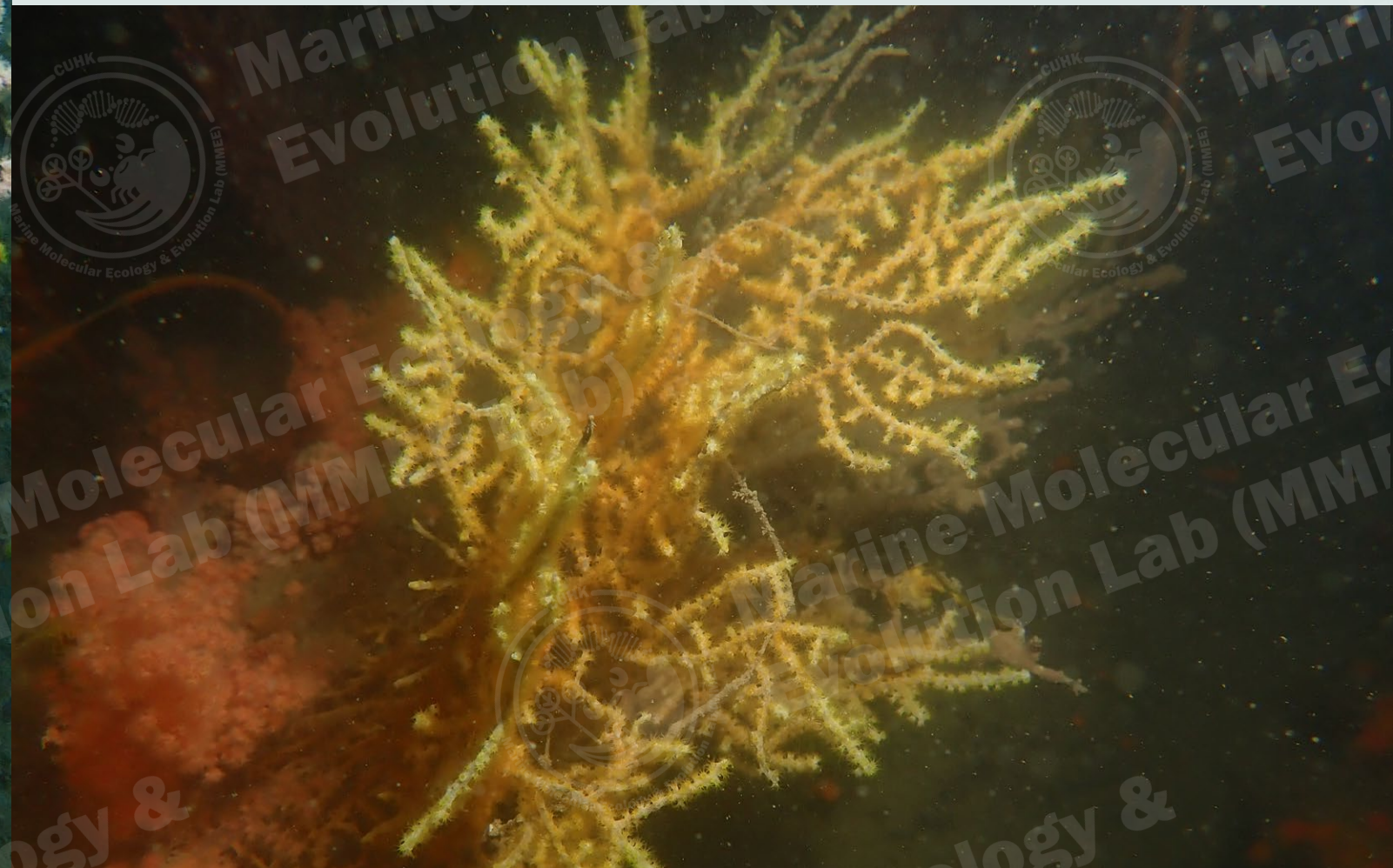
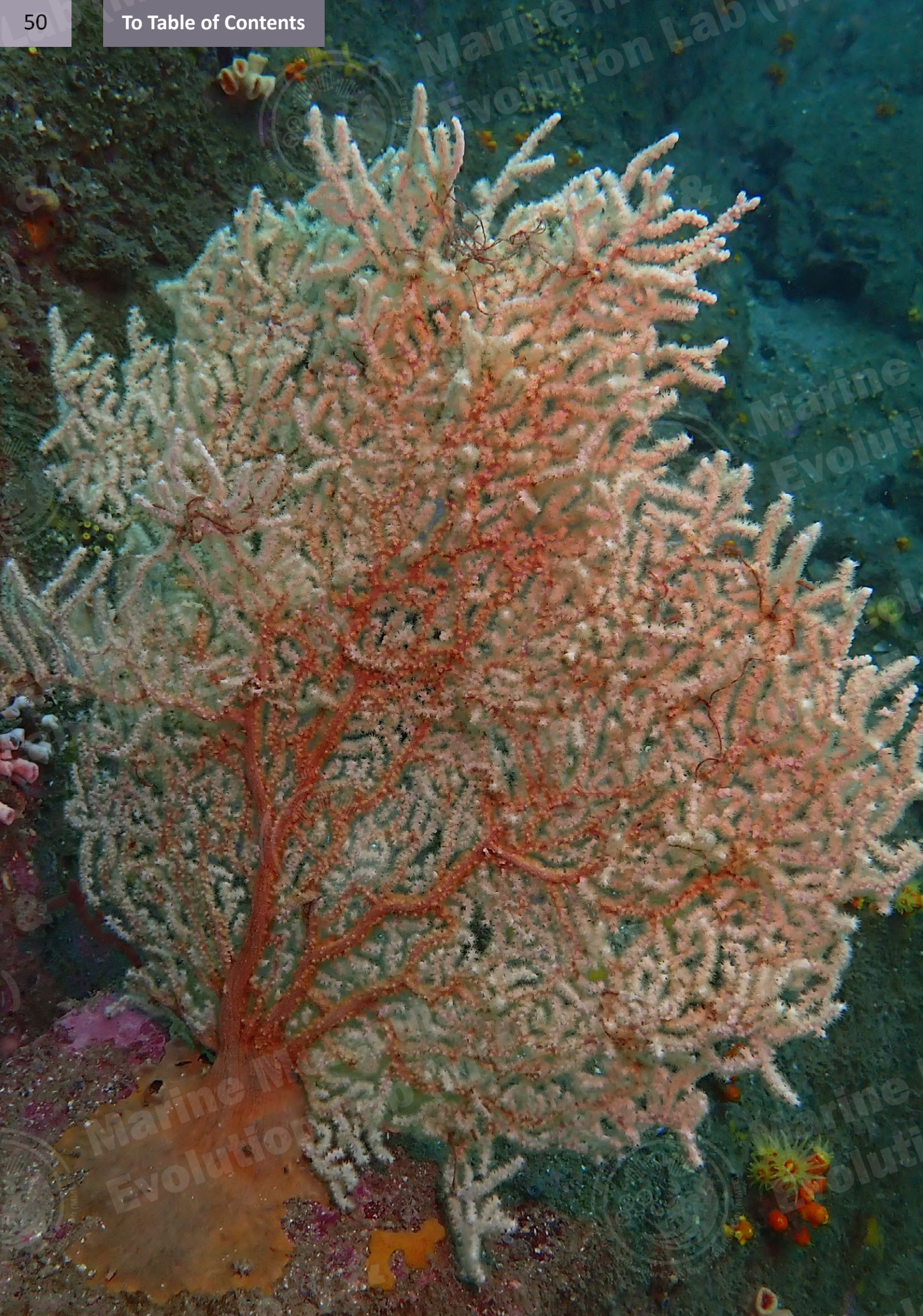
Colonies are mostly planar and net-like in appearance. Axis of the thicker branches is usually flattened and grows at right angle to the plane. Smaller branches arise perpendicular to the plane. Coenenchyme layer between the polyps is thick, obscuring the axis. Colonies can reach heights of at least a half meter tall.

Polyps

Monomorphic and nonretractile. Polyps are dome-shaped and relatively short in comparison to *Anthogorgia*. Polyps may be mistaken for calyces when contracted.

Sclerites

Polyp body is covered with blunt, warty spindles sclerites, arranged *en chevron*. Sclerites within the polyp tentacles are relatively small and rod-shaped. Coenenchyme contains small capstans and warty spindles that are similar to those in the polyps. These spindles are extremely large, generally exceeding the width of the branches where they are located. Sclerites may exhibit coloration.



Species *Muricella* sp.



Description

Colonies are bright yellow and flabellate. Branches emerge from the main stem or mother branches mostly perpendicular. Branching originates at the low region and the terminal branchlets are short. Polyps are short, dome-shaped and yellow in colour. The largest colony attains 26 cm in length and 24 cm in width. Both polyp and coenenchyme sclerites are blunt spindles with large warts. Polyp sclerites are smaller, with size $\sim 0.4 \times 0.07$ mm, and coenenchyme sclerites are ~ 1 mm long. Sclerites are colourless. Axis brown and flexible.

Habitat

Rocky substrata.

Distribution in Hong Kong

Fury Rock, Sung Kong West, Bokhara Rock, Kau Pei Chau, Beaufort Island North, Beaufort Island East, Po Toi West, Po Toi South, Round Island, Magazine Island, Pak Kok Tsui.



- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 μ m)
- 3 Close-up photo of polyps
- 4 Associated invertebrate: *Colochirus quadrangularis*



Genus *Anthoplexaura* Kükenthal, 1908

Colony shape

Colonies are sparsely and irregularly branched to form open fans. Small colonies stand upward, while high colonies bend downward at tips of branches. Branches arising at 50 – 90 degrees from the stem and mother branches, without forming nets.

Polyps

Monomorphic and retractile. Polyps can retract into low or tall calyces. Calyces are elliptical in shape, frequently arranged in two rows, with one row along each edge of a branch, but they can also occur irregularly around stems and branches. It was thought to have dimorphic polyps initially, with larger autozooids and smaller siphonozooids. However, these supposed siphonozooids were later identified as hydranths of a symbiotic hydroid.

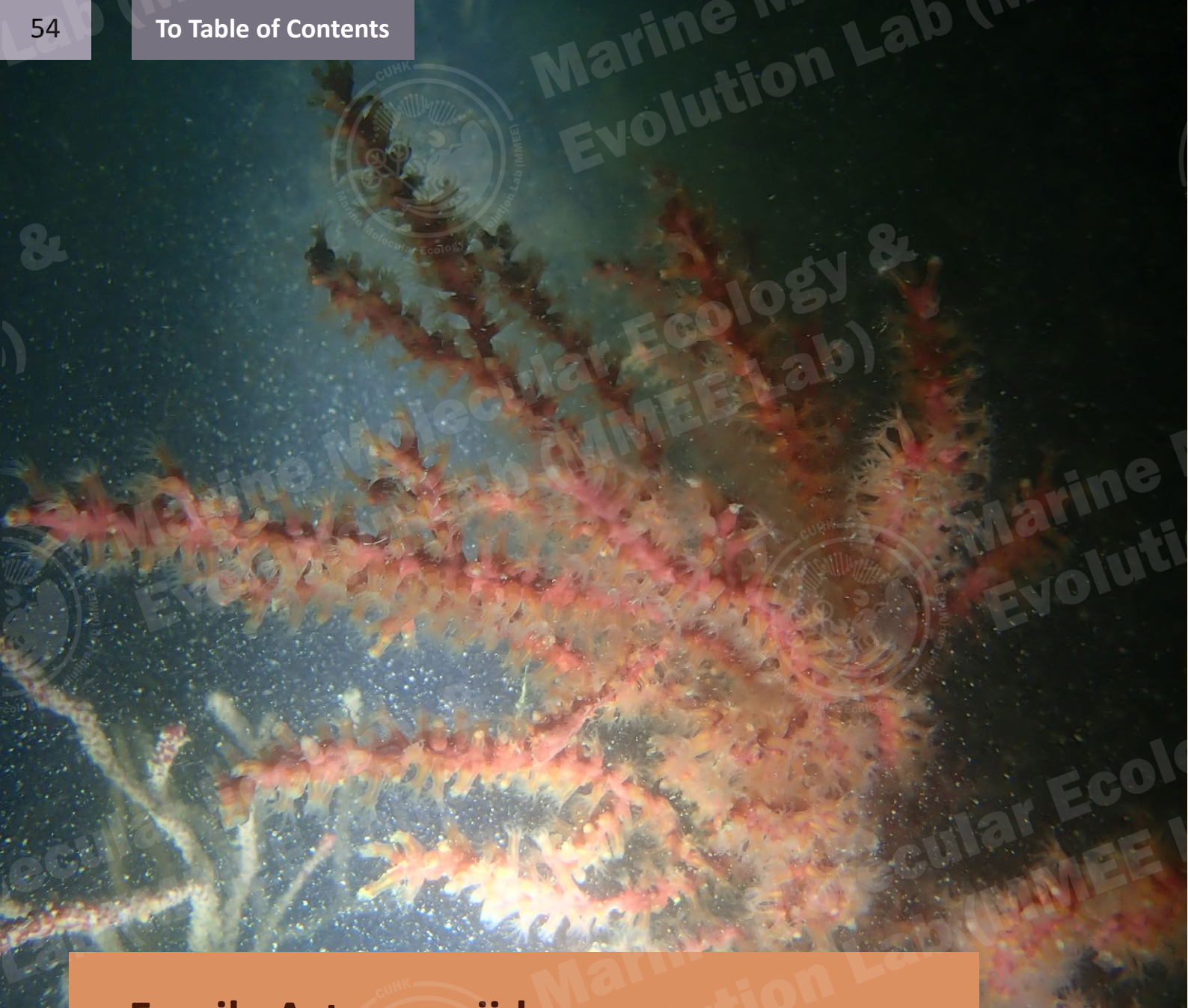
Sclerites

Sclerites in the coenenchyma and calyx are thin warty spindles. Spindles are generally boomerang-shaped. Single colony may contain different size of spindle sclerites. Sclerites can be red or colourless.

Family Astrogorgiidae

Genus *Anthoplexaura* Kükenthal, 1908

Genus *Astrogorgia* Verrill, 1868



Species *Anthoplexaura dimorpha* Kükenthal, 1908

This is a new record in Hong Kong.



Description

Colonies are bright red and sparsely branched. Branches arise from main stem or mother branches at angles of 50 – 60 degrees. Polyps are colourless and irregularly distributed on all sides of branches. Polyp and coenenchyme sclerites are spindles, with size $\sim 0.1 - 0.3 \times 0.03 - 0.08$ mm. Sclerites are deep red. Axis dark brown at lower part and yellowish brown at upper part. Colonies are usually attached to symbiotic hydroid *Hydrichthella epigorgia*.

Habitat

Rocky substrata.

Distribution in Hong Kong

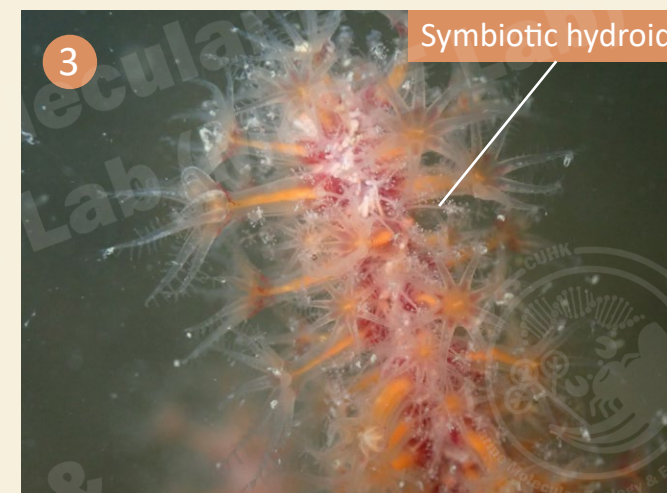
Ma Wan, Yam O Wan,
Siu Kau Yi Chau, Cheung Chau.



Remark

This species is commonly associated with parasitic or symbiotic hydroids. However, Kükenthal originally thought that it was dimorphic polyps and named this species as *Anthoplexaura dimorpha* in 1908.

- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 μ m)
- 3 Close-up photo of polyps and symbiotic hydroid
- 4 Associated invertebrate: *Phenacovolva rosea*



Species *Anthoplexaura* sp.

This is a potential new record in Hong Kong.



Description

Colonies are bright red and irregularly branched, without any anastomosis. Branches arise at angles of ~90 degrees from mother branches. Polyps are arranged biserially, forming two rows of polyps along branches. Polyps are cylindrical and colourless. Both polyp and surface sclerites are spindle-shaped, with size ~0.1 – 0.5 x 0.03 – 0.1 mm. Sclerites are deep red.

Habitat

Rocky substrata.

Distribution in Hong Kong

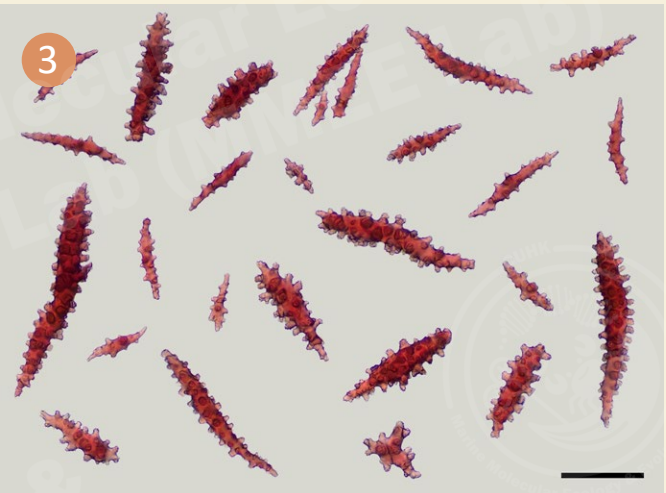
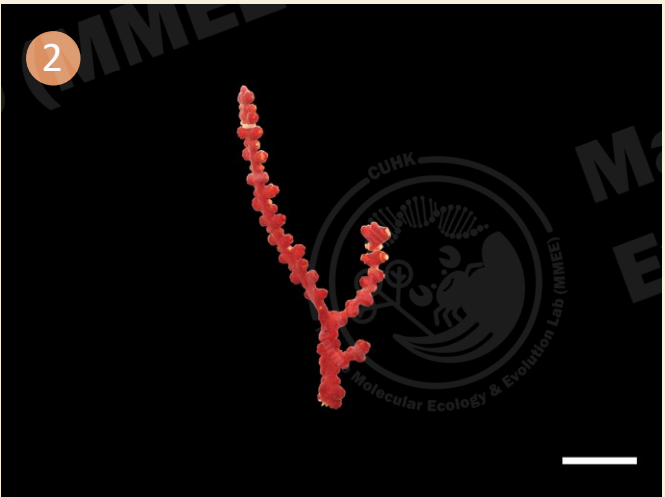
Round Island, Ma Wan.



Remark

The molecular record suggested that this species is sister to *Anthoplexaura dimorpha* despite the absence of symbiotic hydroid.

- 1 Field photo
- 2 Laboratory photo (scale = 1 cm)
- 3 Sclerite photo (scale = 200 µm)
- 4 Invertebrate associated: *Nemanthus nitidus*



Genus *Astrogorgia* Verrill, 1868

Colony shape

Colonies are irregularly branched in one plane. Branches seldom exhibit anastomosis. Branches usually arise at nearly right angles from the main stem or the mother branch.

Polyps

Monomorphic and retractile. Polyps can retract into raised calyces, although they generally preserved in the extended state. Calyxes arranged in two rows or irregularly.

Sclerites

All surface sclerites are spindle-shaped and ornamented with different structures, including complex tubercles and small prickles. These spindle sclerites vary in size and shape, ranging from short to long and thin to plump. Single colony may contain different size of spindle sclerites. Polyp sclerites also take the form of spindles, usually arranged in eight double rows around the walls of the calyx. Polyp heads are covered in short spindles and arranged in eight longitudinal groups. Sclerites can be red, orange, yellow or colourless.



Species *Astrogorgia sinensis* (Verrill, 1865)



Description

Colonies are deep red and branched in single plane. Branches grow at right angles from the mother branches. Transparent polyps are irregularly distributed on all sides of the branches. Polyp cells are verruciform and large. The observed colonies are ~11 cm in length, ~10 cm in width. Polyp and coenenchyme sclerites are spindles, with size ~0.1 – 0.4 x 0.02 – 0.1 mm. Sclerites are deep red. Axis dark brown and flexible.

Habitat

Rocky substrata.

Distribution in Hong Kong

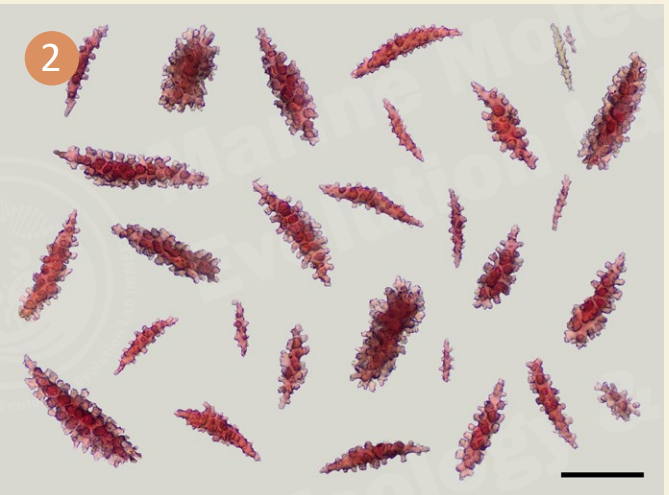
Sung Kong East, Fury Rock, Round Island.

Remark

Type locality of this species is Hong Kong.

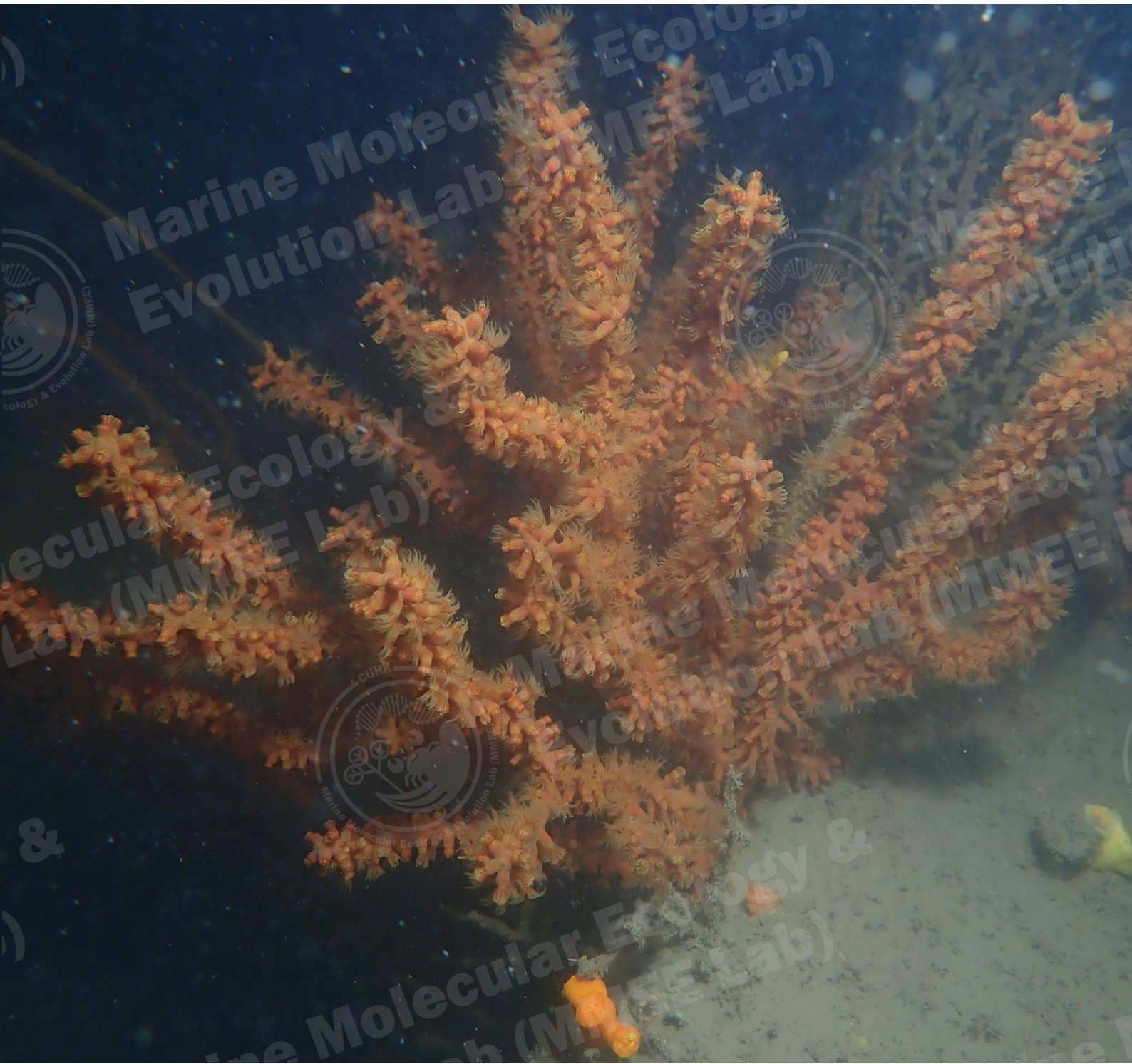


- 1 Laboratory photo (scale = 1cm)
- 2 Sclerite photo (scale = 200µm)
- 3 Close-up photo of polyps
- 4 Associated invertebrate: *Ophiothela mirabilis*
- 5 Associated invertebrate: *Phenacovolva rosea*



Species *Astrogorgia* sp.

This is a potential new record in Hong Kong.



Description

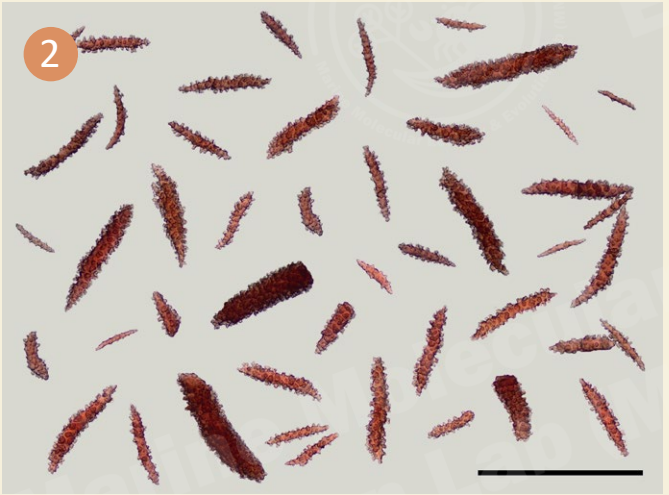
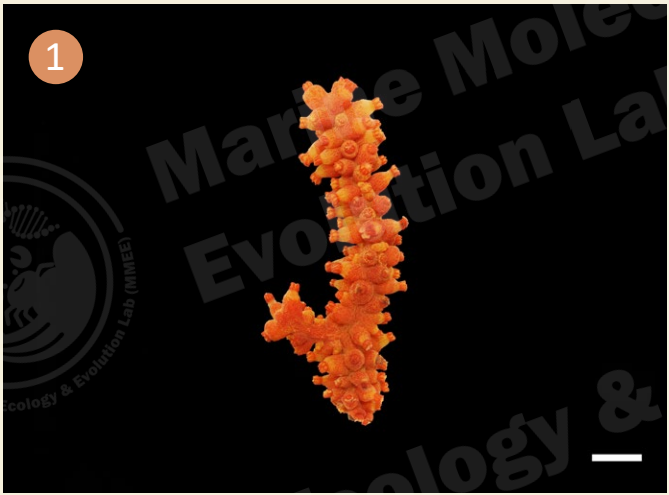
Colonies are orange and sparsely branched in one plane. Branches arise at right angles from the main stem, curving upward without forming nets. Polyps are long, dome-shaped and yellow in colour. Calyxes are irregularly arranged around of stems and branches. Polyp and coenenchyme sclerites are spindles, with size $\sim 0.2 - 0.8 \times 0.03 - 0.2$ mm. Sclerites are deep red. Occurrence of this species is rare and was observed only once throughout the study. This species is differentiated from *Astrogorgia sinensis* with the presence of long thick spindles in the surface of coenenchyma and also supported by molecular data.

Habitat

Rocky substrata.

Distribution in Hong Kong

Round Island.



- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 1 mm)
- 3 Close-up photo of polyps

Genus *Euplexaura* Verrill, 1869

Colony shape

Colonies generally fan-shaped, branching in one plane, although bushy growth forms and whip-like branches can be occasionally found. Stem, main branches and branchlets have similar diameter and are relatively thick. Branchlets are short, emerging at nearly right angles and pointing upward from the main branches. The tips of the branches are swollen.

Polyps

Monomorphic and retractile. Calyces can be large or completely absent.

Sclerites

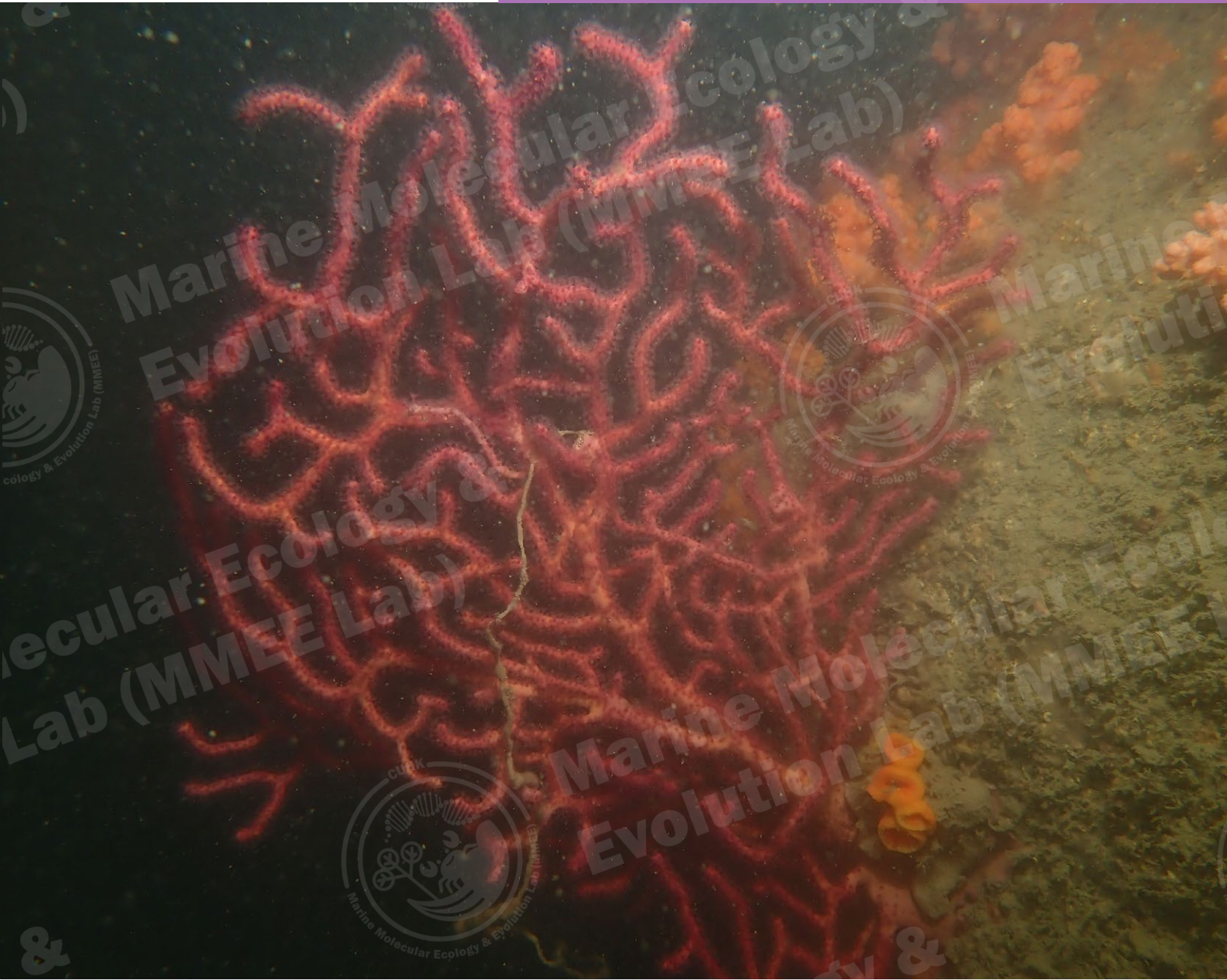
The surface of coenenchyme contains robust oval or subspheroidal sclerites and sometimes plump spindles. These sclerites are usually densely covered with large complex warts. Polyps generally have large spindles in a strong collaret and points arrangement or no sclerites at all. Sclerites are colourless.

Family Euplexauridae

Genus *Euplexaura* Verrill, 1869



Species *Euplexaura robusta* Kükenthal, 1908



Description

Colonies grow in one plane of pink branches with a knobbed end. Calyces are low with an eight-lobed margin. The crown of three transverse rows bearing triangular points with 3 – 4 pairs of sclerites arranged *en chevron*. Colony attachment base bears a few small verrucae. Sclerites in outer coenenchyme are small oval warty disc with some waisted double clubs. Sclerites in inner layer of coenenchyme are spindle-shaped, tuberculate and ~0.2 mm in length.

Habitat

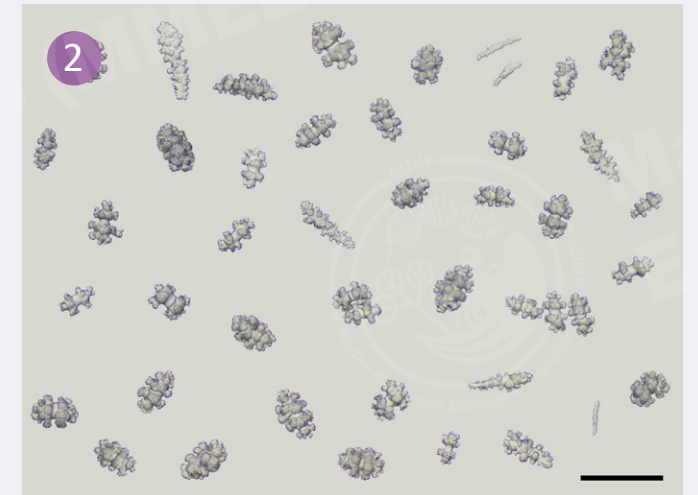
Rocky substrata.

Distribution in Hong Kong

Beaufort Island East, Round Island, Ma Wan, Tai A Chau.



- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 μ m)
- 3 Close-up photo of polyps
- 4 Associated invertebrate: *Hamodactylus boschmai*



Species *Euplexaura* sp.



Description

Colonies are generally small, unbranched and white in color with height of a few centimeters. Calyces are closely packed on the colony surface. The appearances of the colony show resemblance to a juvenile *Echinomuricea spinifera*. The sclerites in outer coenenchyme are shaped as thick and plano-convex. The outer tubercles of the oval discs are longer than those in the inner flat, and are significantly larger when approaching one end of the warty club. Sclerites in inner layer of coenenchyme are short spindles with ~0.15 mm in length.

Habitat

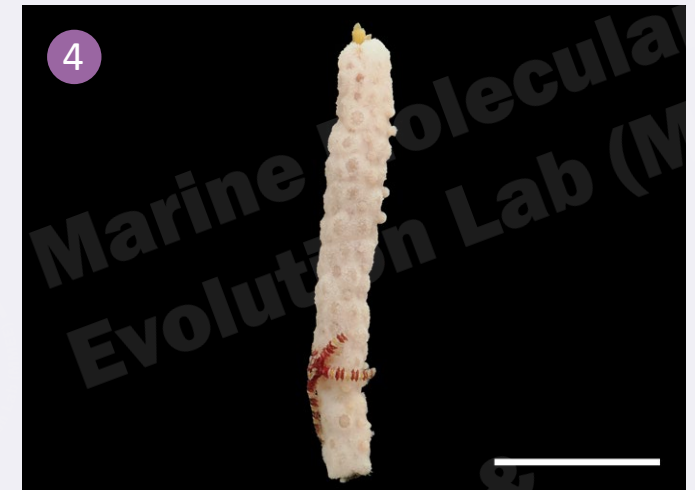
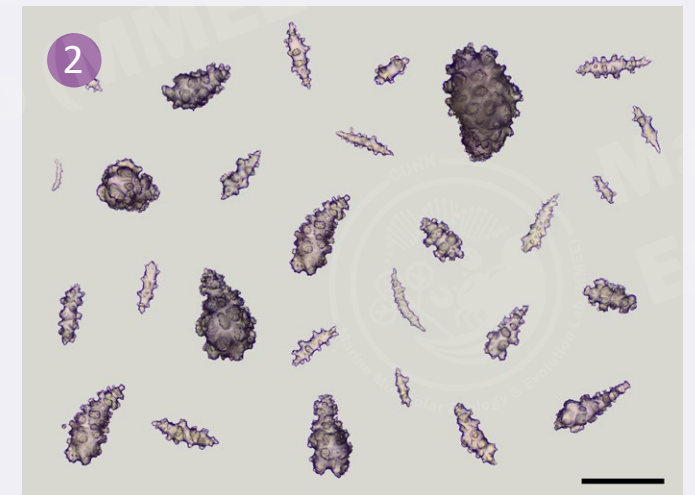
Rocky substrata.

Distribution in Hong Kong

Waglan Island South, Fury Rock, Sung Kong West, Kau Pei Chau, Po Toi West, Ma Wan, Siu Kau Yi Chau, Cheung Chau, Shek Kwu Chau, Siu A Chau, SW Lantau MP (Fan Lau E), Sha Chau, Lung Kwu Chau.



- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 μ m)
- 3 Invertebrate associated:
Ophiothela mirabilis
- 4 Invertebrate associated:
Ophiothela sp. (scale = 1 cm)



Unclassified Euplexauridae



Description

Colonies are small, unbranched and creamy yellow in color with height of a few centimeters. Colonies have tendency to aggregate together. Calyces are tall and closely packed on the colony surface. Tendency of aggregation is uncommon in the genus *Euplexaura* but the morphology of sclerites and molecular data suggested that this species is closely related to *Euplexaura*. Sclerites fit the description of *Euplexaura*: robust oval or subspheroidal sclerites with large, complex warts and spindles in polyps.

Habitat

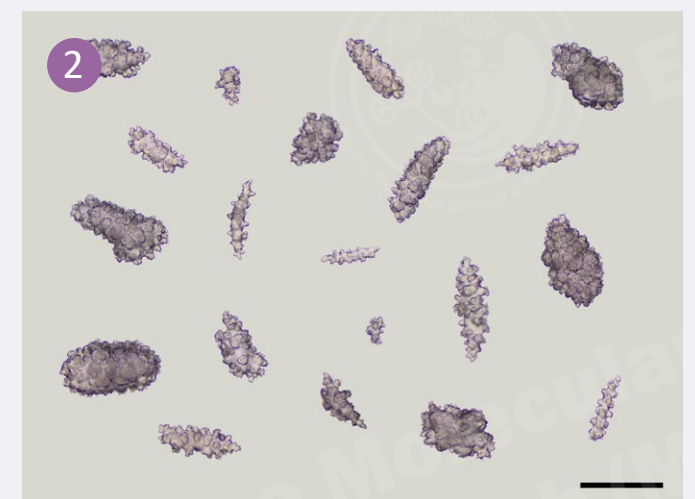
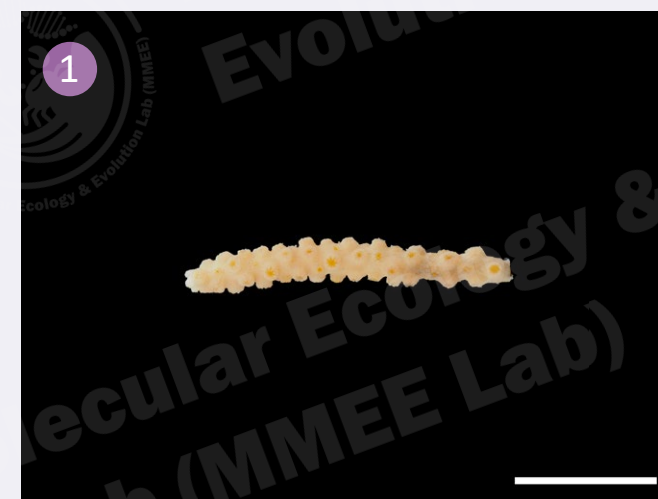
Rocky substrata.

Distribution in Hong Kong

Po Toi West, Shek Kwu Chau,
Siu A Chau.



- 1 Laboratory photo (scale = 1 cm)
- 2 Sclerite photo (scale = 200 μm)



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Marine Molecular Ecology & Evolution Lab (MMEEL)



School of
Life Sciences
THE CHINESE UNIVERSITY OF HONG KONG

香港中文大學
生命科學學院

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