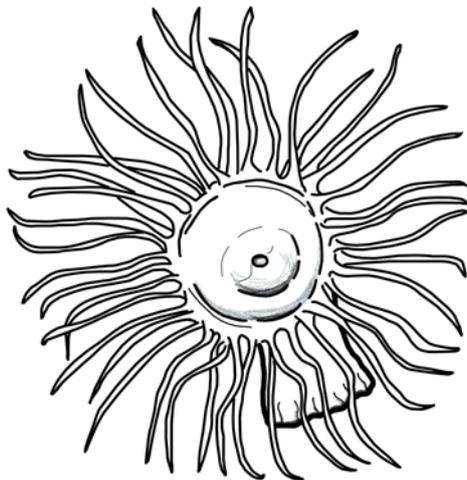


# **Benthic Megafauna from the North Pacific Abyss**

Phylum **Cnidaria**

Class **Actiniaria**





# Abyssal Pacific seafloor image-based megafauna morphotype catalogue v.1

## Phylum Cnidaria: Order Actiniaria

Erik Simon-Lledó<sup>1\*</sup>, Diva J. Amon<sup>2,3</sup>, Guadalupe Bribiesca-Contreras<sup>4</sup>, Daphne Cuvelier<sup>5</sup>, Jennifer M. Durden<sup>1</sup>, Sofia P. Ramalho<sup>6</sup>, Katja Uhlenkott<sup>7,8</sup>, Pedro Martinez Arbizu<sup>7</sup>, Noëlie Benoist<sup>1</sup>, Jonathan Copley<sup>9</sup>, Thomas G. Dahlgren<sup>10,11</sup>, Adrian G. Glover<sup>4</sup>, Bethany Fleming<sup>9,1</sup>, Tammy Horton<sup>1</sup>, Se-Jong Ju<sup>12,13</sup>, Alejandra Mejia-Saenz<sup>1</sup>, Kirsty McQuaid<sup>14</sup>, Ellen Pape<sup>15</sup>, Chailinn Park<sup>12,13</sup>, Craig R. Smith<sup>16</sup>, and Daniel O. B. Jones<sup>1</sup>

\*corresponding author: erimon@noc.ac.uk

<sup>1</sup>National Oceanography Centre, Southampton, UK

<sup>2</sup>SpeSeas, D'Abadie, TTO

<sup>3</sup>Marine Science Institute, University of California, Santa Barbara, USA

<sup>4</sup>Natural History Museum, London, UK

<sup>5</sup>Institute of Marine Sciences - Okeanos, University of the Azores, Horta, POR

<sup>6</sup>Centre for Environmental and Marine Studies & Department of Biology, University of Aveiro, Aveiro, POR

<sup>7</sup>German Centre for Marine Biodiversity Research, Senckenberg am Meer, Wilhelmshaven, GER

<sup>8</sup>Institute for Biology and Environmental Sciences, Carl von Ossietzky University, Oldenburg, GER

<sup>9</sup>Ocean & Earth Science, University of Southampton, Southampton, UK

<sup>10</sup>NORCE Climate and Environment, Bergen, NOR

<sup>11</sup>Department of Marine Sciences, University of Gothenburg, Göteborg, SWE

<sup>12</sup>Korea Institute of Ocean Science and Technology, Busan, KOR

<sup>13</sup>Ocean Science Major, University of Science and Technology, Daejeon, KOR

<sup>14</sup>University of Plymouth, Plymouth, UK

<sup>15</sup>Marine Biology Research Group, Ghent University, Ghent, BEL

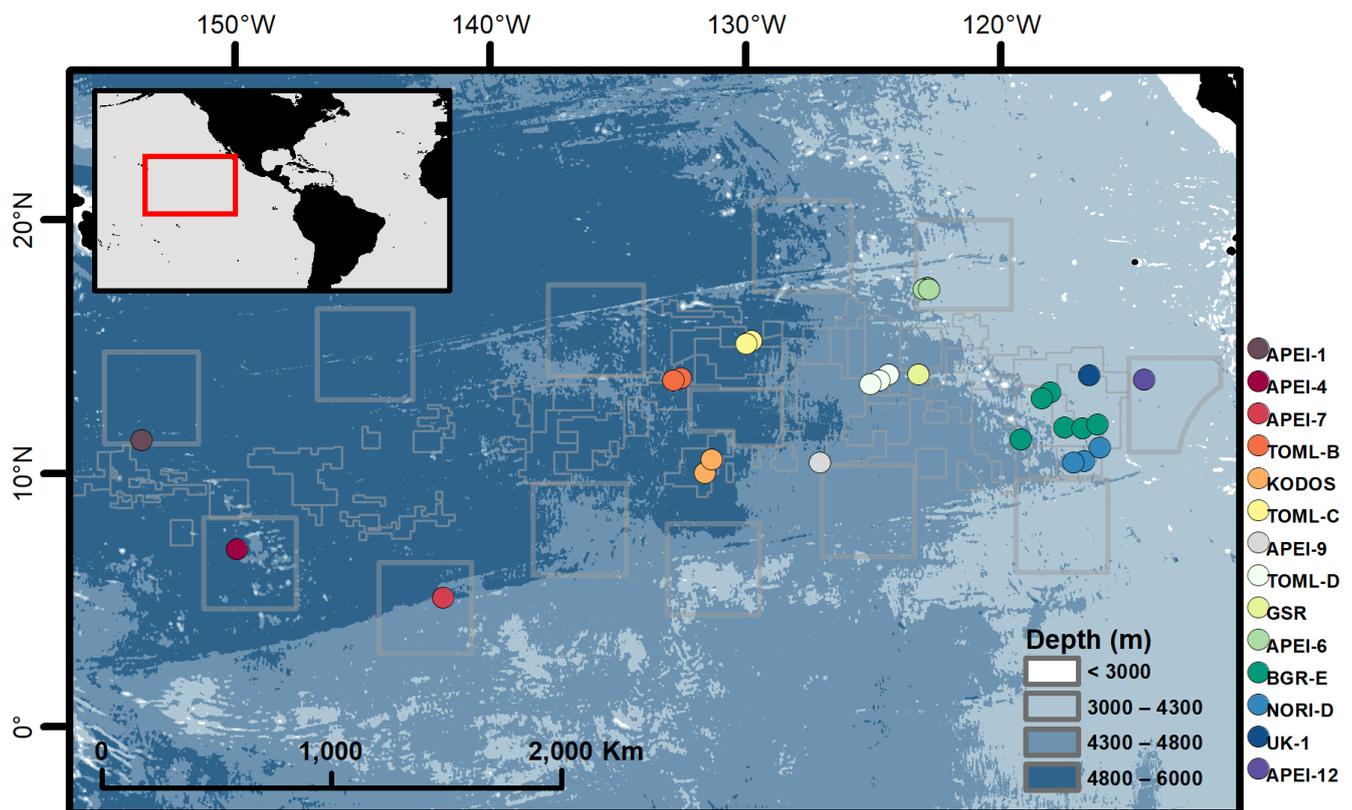
<sup>16</sup>Department of Oceanography, University of Hawai'i at Manoa, Honolulu, USA

Standardised taxonomic field guide used to develop (please cite as): Simon-Lledó, et al. (2023). Carbonate compensation depth drives abyssal biogeography in the northeast Pacific. *Nature Ecology & Evolution*; doi:10.1038/s41559-023-02122-9

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## The APSMA image-based taxonomical catalogue

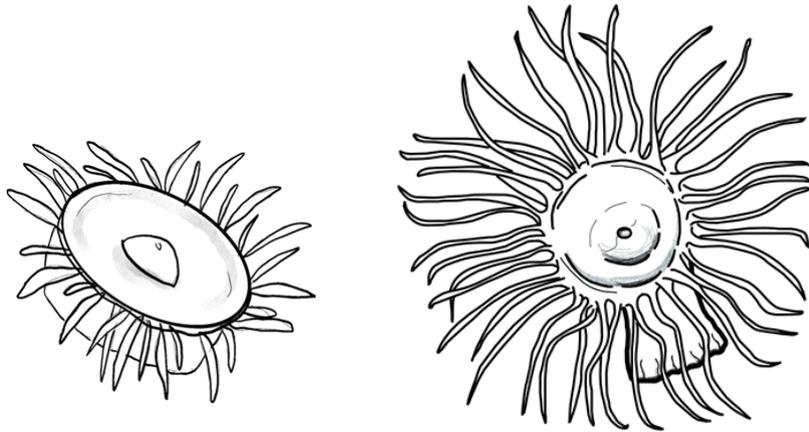
This code-based abyssal megafauna (invertebrates > 1 cm) catalogue was developed by morphological and taxonomical alignment of specimens encountered in seabed imagery collected across multiple seabed locations across the Clarion Clipperton Fracture Zone, in the NE Pacific basin (see map below and main study, Simon-Lledó et al. 2023, for further details). This work was conducted during a range of scientific workshops held between 2016 and 2021, in collaboration with taxonomic experts (see acknowledgements section) and by reference to existing literature (e.g. where available, links to studies describing physically collected specimens are provided in taxon descriptions). The catalogue follows the Horton et al. 2021 open nomenclature (e.g. 10.3389/fmars.2021.620702) to report the taxonomic resolution reached in the identification of each classified metazoan morphotype. Each morphotype was assigned a unique 7 character identification code (i.e. "XXX\_nnn"). All taxa identified were deemed as sufficiently different morphologically by taxonomic experts to be confidently considered separate species. Note the catalogue is periodically revised, as new photographed and collected specimens get described, and hence some taxonomic identifications may vary in subsequent versions of this guide. The latest version of the APSMA catalogue is available as label tree for image/video annotation on BIIGLE ([biigle.de](http://biigle.de); please contact the authors for more detail).



Map of the Clarion Clipperton Zone in the North Pacific basin with detail on locations surveyed with photographic and video cameras mounted on autonomous underwater vehicles (AUVs), remotely operated vehicles (ROVs), and towed cameras; between 2010 and 2021. Areas managed by the International Seabed Authority: Thick polygons, Areas of Particular Environmental Interest, and; Thin polygons, polymetallic nodule exploration licensed sites.

Phylum **Cnidaria**

Order **Actiniaria**



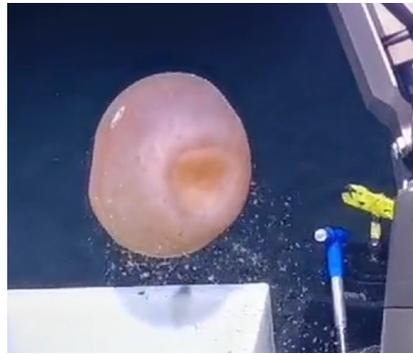
# ACT\_001

## Actiniidae gen. indet.



**Morphology:** large, thick reddish body with darker tentacles. Unattached to the seabed. Highly developed pedal and oral disc, with large oral cavity surrounded by short thick tentacles

**Notes:** often found laying horizontally or contracted into a sphere on the seabed. Can adopt spherical shape and roll/bounce away when molested.



# ACT\_096

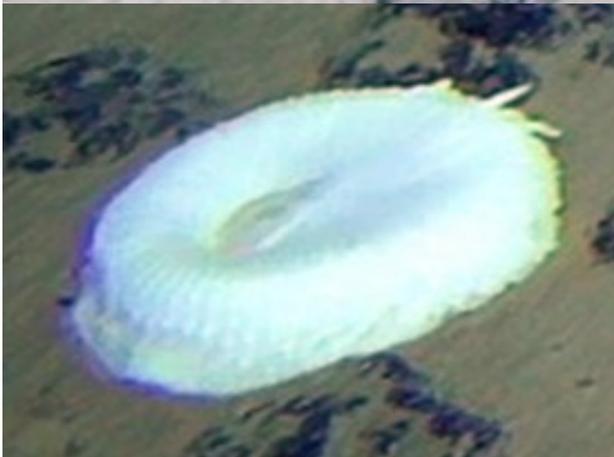
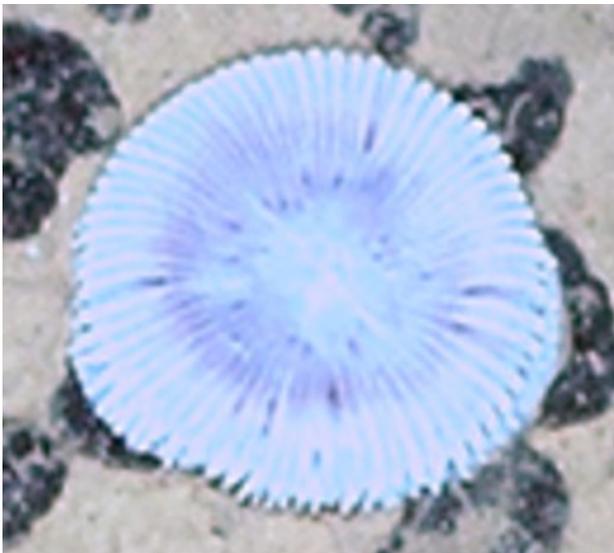
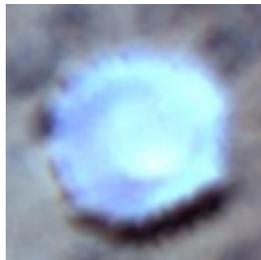
## Actiniidae gen. indet.

**Morphology:** thick pale white body. Unattached to the seabed. Highly developed pedal and oral disc, with large oral cavity surrounded by short thick tentacles

## ACT\_028

Actiniaria fam. indet.

**Morphology:** white body; with ~30+ thick, short and tapered tentacles. Very short column and extremely wide oral disc (radius > twice the tentacle length)



## ACT\_057

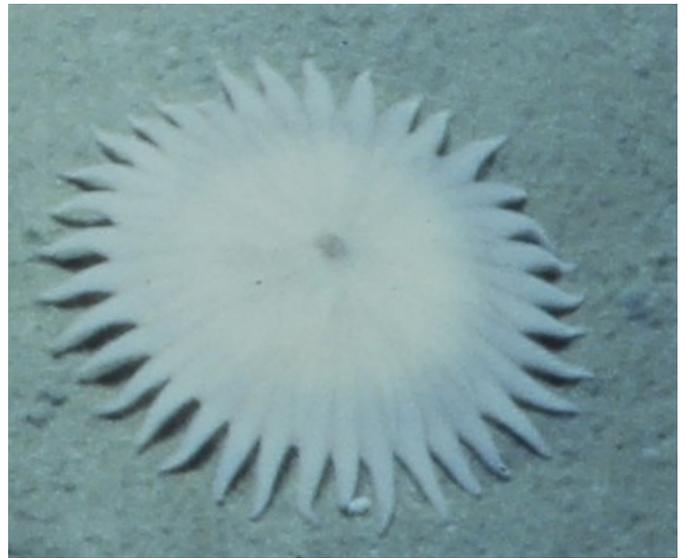
*Sicyonis heliodiscus* sp. inc.

**Morphology:** bright white body; short column hidden under an extremely wide oral disk and 80+ slender, short marginal tentacles (swollen at the tip) directed downward .

**ACT\_037**

*Ophiodiscus* sp. indet.

**Morphology:** bright white body; with ~40 thick, short and tapered tentacles. Very short column length and extremely wide oral disc (radius is twice the tentacle length)



**ACT\_002**

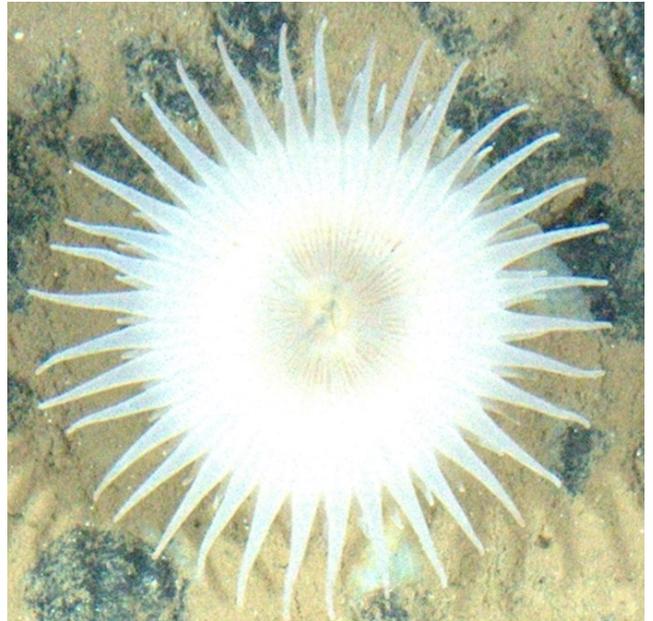
*Sicyonidae* gen. indet.

**Morphology:** white to pale orange body; with ~30+ paired thick and tapered tentacles. Proportionally short column length and very wide oral disc (radius slightly larger than tentacle length)

## ACT\_019

Actiniaria fam. indet.

**Morphology:** bright white to greyish body; with 30+ paired, tapered tentacles. Wide oral disc (tentacle length  $\sim$  oral disc radius).



## ACT\_063

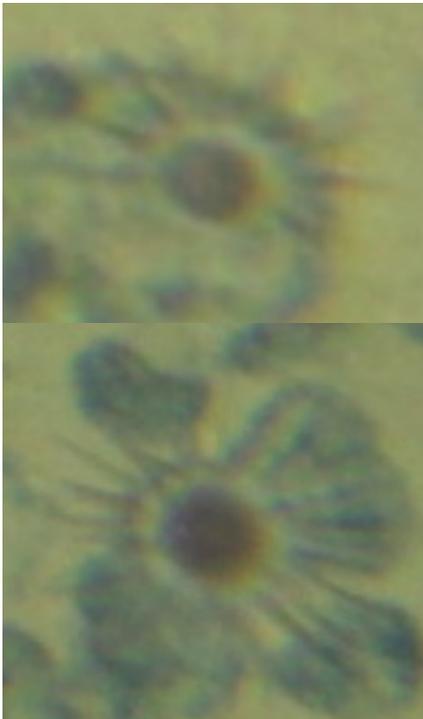
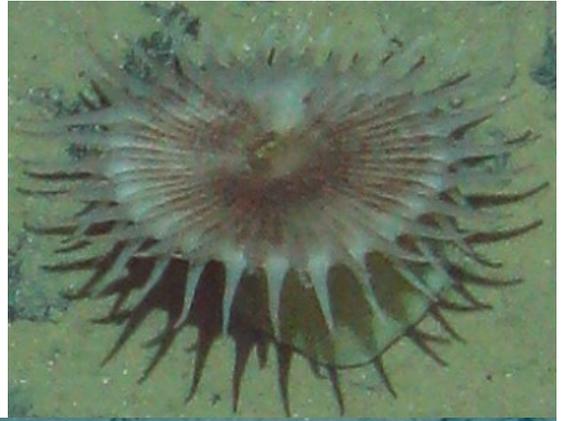
Actiniaria fam. indet.

**Morphology:** bright white to greyish body; with 30+ paired, slender tentacles swollen at the tip. Relatively wide column, sometimes long length. Wide oral disc (tentacle length  $\sim$  oral disc radius).

## ACT\_067

Actiniaria fam. indet.

**Morphology:** light violet to brown coloured oral disc and tentacles; with 30+ paired, thin, and pin-shaped tentacles. Wide oral disc (tentacle length slightly shorter than oral disc radius). Long column (width ~ half oral disc diameter).



## ACT\_073

Actiniaria fam. indet.

**Morphology:** brown coloured oral disc and tentacles (lighter coloured oral disc contour); with 30+ paired, slender, and tapered tentacles. Wide oral disc and long tentacles (~twice the length of oral disc radius).

## ACT\_091

### Actiniaria fam. indet.

**Morphology:** white body orally and light brown pedal disc; with 20+ paired slender, tapered, and very long tentacles (> 3 times larger than oral disc diameter). Wide pedal disc (~ twice the oral disc diameter).



## ACT\_042

### Metridioidea fam. indet.

**Morphology:** white body; with 40+ paired slender, tapered, long tentacles (> 3 times larger than oral disc radius). Pedal and oral discs almost the same diameter, and short, subcylindrical column. More detail: doi: 10.3897/zookeys.1113.82172.

**Notes:** typically found attached to sponge stalks



## ACT\_075

### Actiniaria fam. indet.

**Morphology:** very large; light orange body and semi-transparent tentacles. With 40+ paired, tapered, very long tentacles (> 3 times larger than oral disc radius).

**Notes:** typically found attached to sponge stalks or sometimes nodules



## ACT\_088

### Actiniaria fam. indet.

**Morphology:** bright orange body with lighter coloured oral disc contour; 32+ paired, proximally thick, tapering distally, long tentacles (> 2 times oral disc radius).

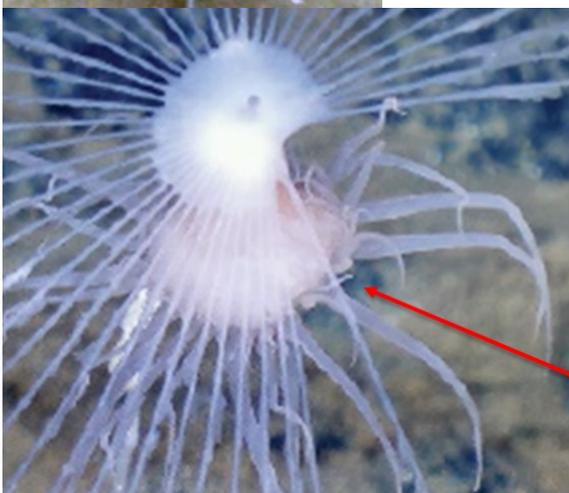
**Notes:** found attached to sponge stalks

## ACT\_006

### Actiniaria fam. indet.

**Morphology:** dark red body; > 46+ paired, tapered, long tentacles (~2 times larger than oral disc radius). Wide oral disc and short column.

**Notes:** typically found dorsally attached to mollusc shells carried by decapods



## ACT\_093

### Actiniaria fam. indet.

**Morphology:** white body; with 24+ slender, tapered, and very tentacles (> 2 times larger than oral disc diameter). Short column.

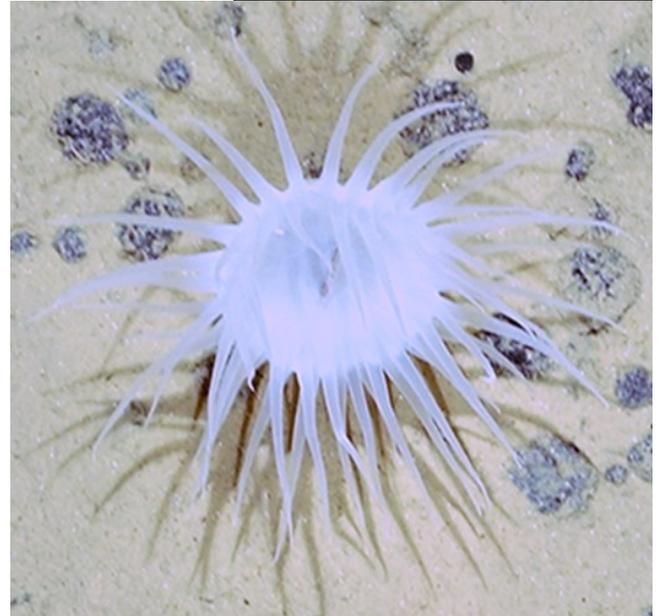
**Notes:** found attached to Cladorhizidae (i.e. carnivorous) sponge stalks, right below the sponge main body.

## ACT\_034

### Actiniaria fam. indet.

**Morphology:** very large; bright white body. With 40+ paired, tapered, very long tentacles (> 3-4 times larger than oral disc radius).

**Notes:** found attached to sponge stalks or nodules



## ACT\_060

### Actiniaria fam. indet.

**Morphology:** white body, dark grey towards the centre of the oral disc and semi-transparent tentacles; with 40+ paired, tapered, very long tentacles (> 3 times larger than oral disc radius).

**Notes:** found attached to sponge stalks or nodules

## ACT\_079

Actiniaria fam. indet.

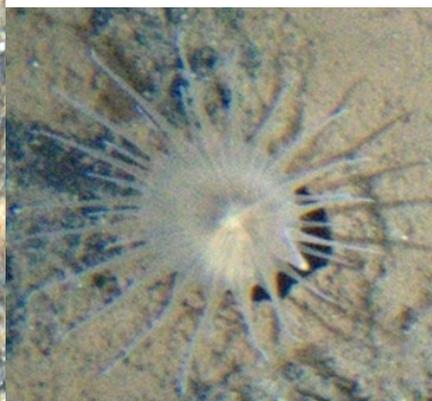
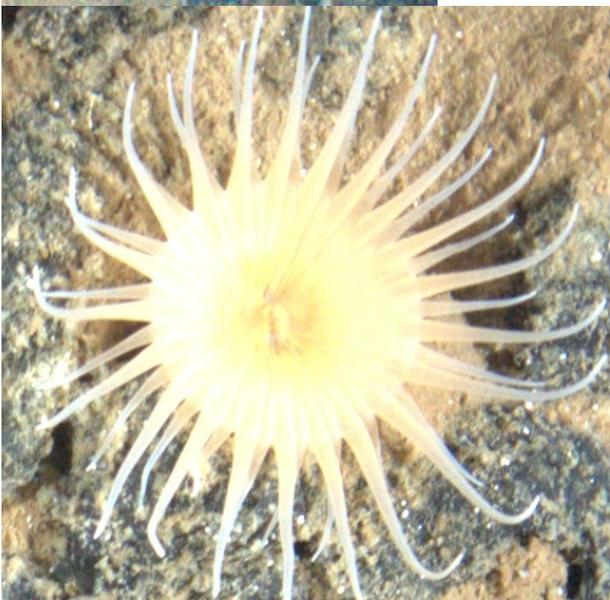
**Morphology:** white oral disc contour, darkening to grey in the centre; 40+ paired, slender, tapered, and long tentacles (~ twice the length of oral disc radius). Tentacles are semi transparent to grey. Short column.



## ACT\_009

Actiniaria fam. indet.

**Morphology:** pale orange to grey body; 40+ paired, slender, tapered, and long tentacles (>twice the length of oral disc radius). Short column.



# ACT\_022

Actiniaria fam. indet.

**Morphology:** small; grey to whitish body darkening towards the centre of the oral disc. 16 slender, tapered, and long tentacles (>twice the length of oral disc radius). Short column.



# ACT\_004

Actiniaria fam. indet.

**Morphology:** bright white body; ~22+ paired, slender, tapered tentacles. Wide oral disc (tentacle length ~ oral disc radius).



## ACT\_066

### *Galatheanthemum* sp. indet.

**Morphology:** grey to semi-transparent body darkening ; 24+ slender, very thin and long tentacles (>3 times the length of oral disc radius). Long column developing a basal tube.



## ACT\_026

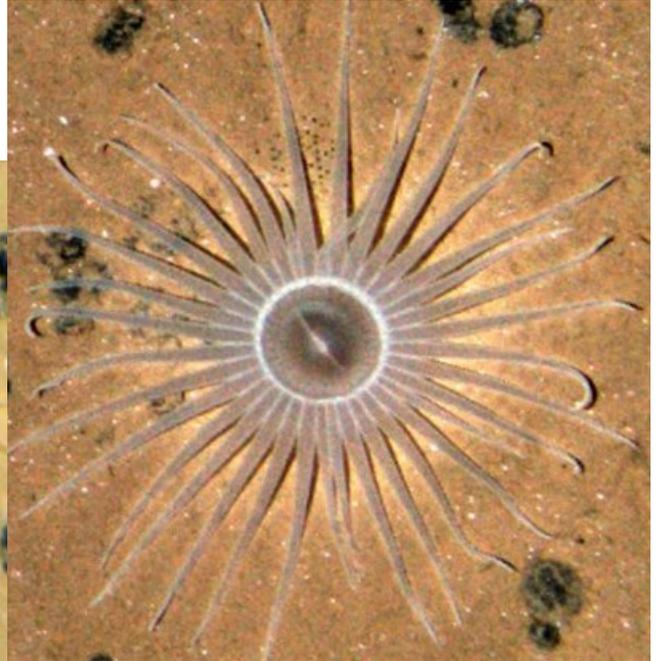
### Actiniaria fam. indet.

**Morphology:** grey to semi-transparent body darkening ; 24+ slender, very thin and long tentacles (>3 times the length of oral disc radius). Long column.

# ACT\_013

## Actiniaria fam. indet.

**Morphology:** grey to brownish, translucent body with white ring in the mid oral disc; >32 thick, tapering, very long tentacles (> 3 times larger than oral disc radius). Wide oral disc and very short column.



# ACT\_061

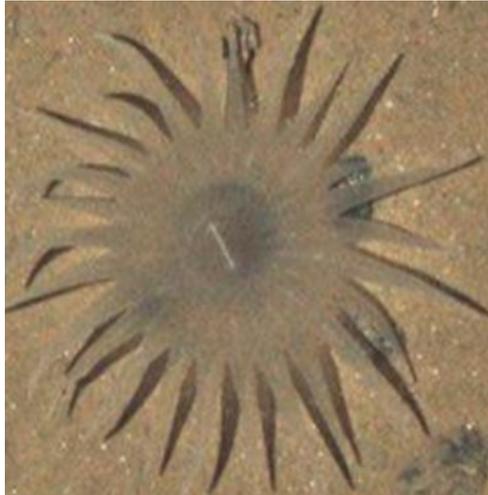
## Actiniaria fam. indet.

**Morphology:** transparent body; >20 thick, tapered, long tentacles (> 2 times larger than oral disc radius). Wide oral disc and very short column. Visible (darker) internal septa and gastric cavity.

# ACT\_010

## Actiniaria fam. indet.

**Morphology:** grey translucent body; >26 thick, tapering, very long tentacles (> 3 times larger than oral disc radius). Wide oral disc and short thin column (~ quarter of oral disc diameter). Bright white mouth line.



# ACT\_087

## Actiniaria fam. indet.

**Morphology:** grey semi-transparent body; 20 thick, tapering, very long tentacles (> 4 times larger than oral disc radius). Short column. Bright white mouth line. Gastric cavity sometimes visible.



## ACT\_085

Actiniaria fam. indet.

**Morphology:** grey transparent body; >32 thick, tapering, very tentacles (~ 2 times larger than oral disc radius). Short column. Relatively swollen oral cavity; visible darker pharynx and gastric cavity. Short column.



## ACT\_064

Actiniaria fam. indet.

**Morphology:** transparent body dark pedal disc; >24 thick, tapered, short tentacles (< oral disc radius). Wide oral disc and pedal disc (same width) and very short column. Visible (white) internal septa and gastric cavity.

## ACT\_033

Actiniaria fam. indet.

**Morphology:** semi-transparent body; with ~12+ wide, flattened, distally tapering, and long tentacles (~ twice the length of oral disc radius). Short column.



## ACT\_059

Actiniaria fam. indet.

**Morphology:** white body; >24 thick, long tentacles (> 2 times oral disc radius). Narrow oral disc, shorter in diameter than and pedal disc. Tentacles slightly swollen at the tip

## ACT\_094

Actiniaria fam. indet.

**Morphology:** bright white body; with ~24+ wide, flattened, tapered, short tentacles (~oral disc radius). Short column.



## ACT\_044

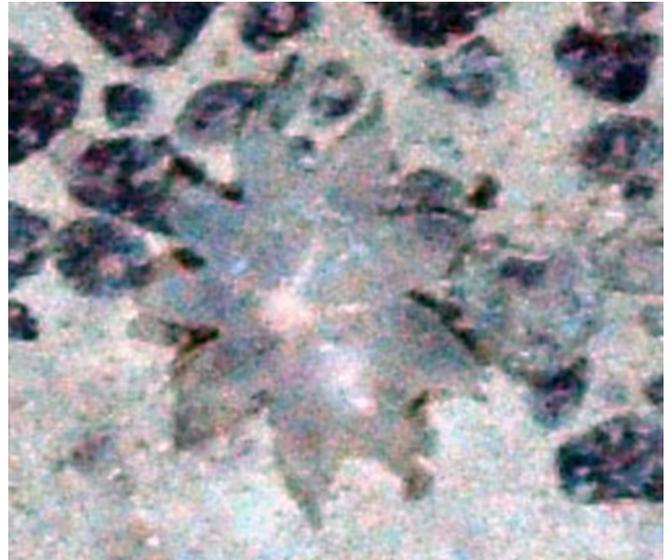
Metridioidea fam. indet.

**Morphology:** white body; with > 32 paired (i.e. large and small), conical, tapered tentacles alternating on the margin of the oral disc in two cycles. Pedal disc wider than oral disc. More detail: doi: 10.3897/zookeys.1113.82172.

## ACT\_095

Actiniaria fam. indet.

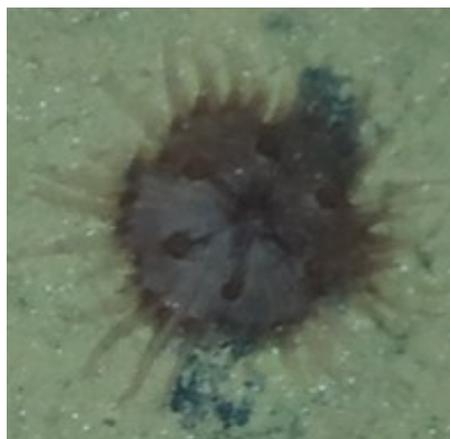
**Morphology:** grey translucent body; with 8-9 very wide (lobed), flattened, distally tapering tentacles.



## ACT\_023

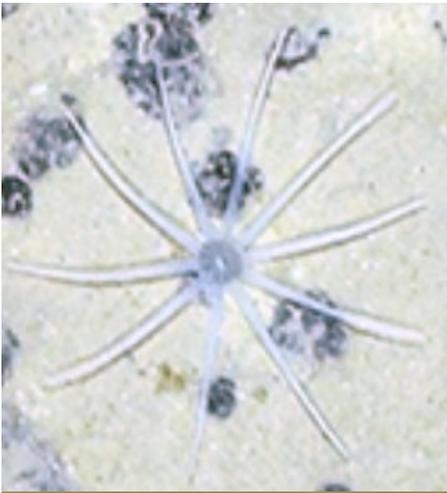
Actiniaria fam. indet.

**Morphology:** dark violet body; with short thick tentacles arranged in 6 bands of 4 tentacles, separated from each other by 'constrictions' equally spaced around oral disc contour (i.e. 6 tentacles pointing vertically generate the 'constriction' appearance )

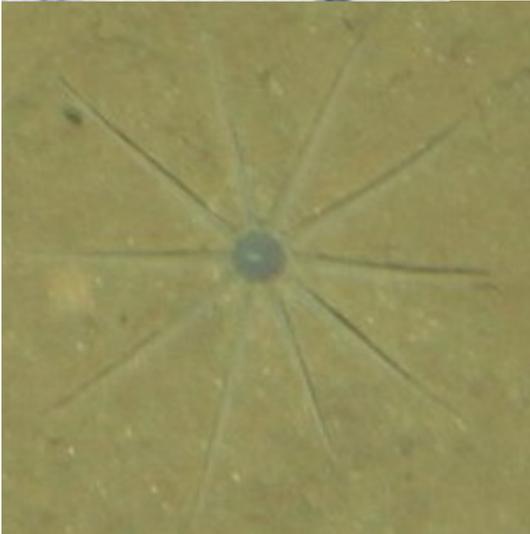


**ACT\_015**

**Actiniaria fam. indet.**



**Morphology:** grey tentacles and darker oral disc; with 10, slender, tapering, and extremely long tentacles (>10 times larger than oral disc radius)



**REL\_001**

*Relicanthus daphneae*

**Morphology:** light pink cylindrical body, with extremely long, thin, and tapering whitish tentacles up to two meters in length

**Notes:** typically found horizontally-facing, attached to sponge stalks or large rocks



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