

## PHYLUM: ANNELIDA

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### Citation

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## Phylum: ANNELIDA

### Polychaetes

Polychaetes are segmented worms that are easily identifiable by their fleshy lobes projecting from each segment called parapodia ('feet'). The parapodia bear many bristles (chaetae) that are used for movement, hence their common name of bristle worms. Important diagnostic features when identifying polychaetes include the head, mouth parts, parapodia and chaetae.

More than 17 000 annelid species have been described, with approximately 800 polychaete species recorded in South Africa.

These organisms are robust and occur in highly variable conditions including extreme habitats such as hydrothermal vents and the deepest parts of the ocean. Polychaetes can range in length from less than ten millimetres to nearly three metres and can occur in numerous colours (even iridescent or luminescent).

Polychaetes are highly adaptable and can create or influence habitat structure by burrowing or building tubes, which often provide attachment for many

other species. Many tube worms are sedentary and filter feed by means of specialised cilia. They are short-lived, having annual, or shorter, life spans, however, their tubes and the habitat they create can be long-lived. Polychaetes provide an important source of food for many deep-sea predators including fish.

#### Collection and preservation

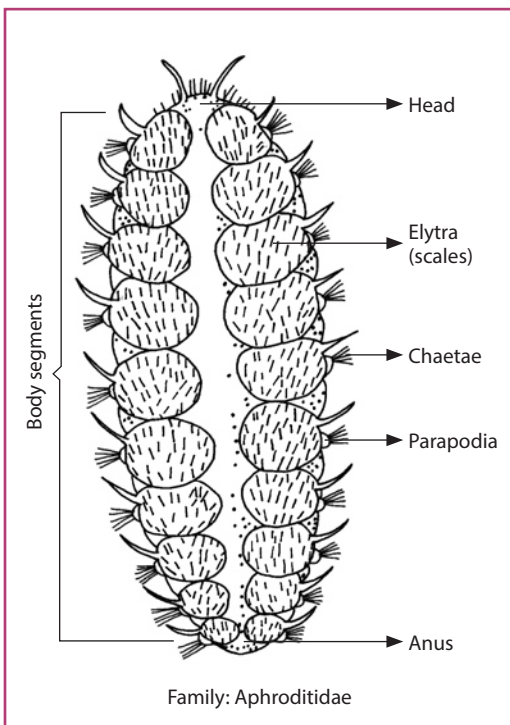
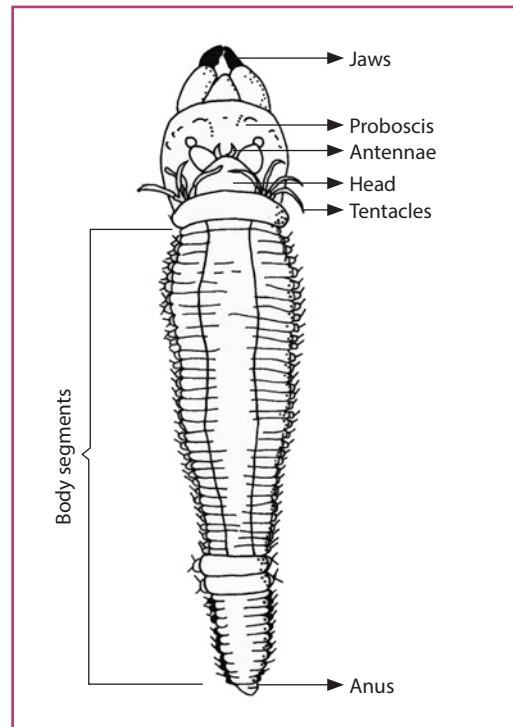
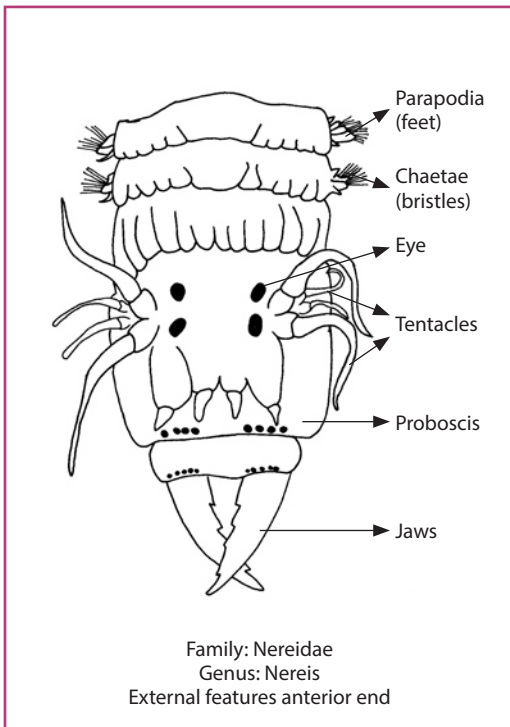
Polychaete specimens should be placed in 10% buffered formalin for 24 hours before preserving in 96% ethanol. For genetic or molecular studies, specimens should be placed directly in 96% ethanol, which should be changed after 24 hours. If necessary, specimens can be relaxed using 7% MgCl<sub>2</sub> solution or sparkling water (over several hours) and then transferred to 10-30% ethanol before preservation to allow the proboscis to expand.

Specimens should be handled with care. Fine-tip steel forceps should be used to place specimens into containers to avoid damage to the soft diagnostic features.

#### References

- Campbell NA, Reece JB and Mitchell LG. 1999. *Biology* (5<sup>th</sup> Ed.) Benjamin-Cummings Publishing Company Inc. Menlo Park, CA.
- Day JH. 1967. *A Monograph on the Polychaeta of Southern Africa*. Trustees of the British Museum (Natural History), London. 878pp.
- Raven PH and Johnson GB. 2002. *Biology* (6<sup>th</sup> Ed.), Chapter 45: Mollusks and Annelids. The McGraw Hill Companies, Boston.
- Rouse GW and Fauchald K. 1998. Recent views on the status, delineation, and classification of the Annelida. *American Zoologist* 38 (6): 953–964.doi:10.1093/icb/38.6.953.
- Tracey DM, Anderson OF and Naylor JR. 2011. A guide to common deepsea invertebrates in New Zealand waters. *New Zealand Aquatic Environment and Biodiversity Report* No. 86. 317pp.

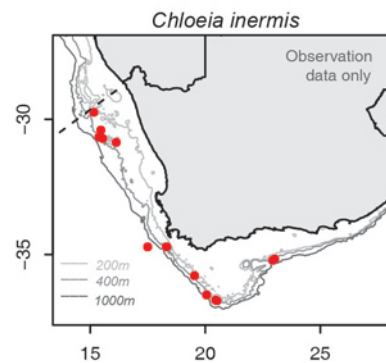
Annelid (polychaete) general body plan (General FB code PolW):



Phylum: Annelida

### *Chloeia inermis* (Euphr1)

|                     |                |
|---------------------|----------------|
| <b>Phylum:</b>      | Annelida       |
| <b>Class:</b>       | Polychaeta     |
| <b>Subclass:</b>    | Errantia       |
| <b>Order:</b>       | Amphinomida    |
| <b>Family:</b>      | Amphinomidae   |
| <b>Genus:</b>       | <i>Chloeia</i> |
| <b>Species:</b>     | <i>inermis</i> |
| <b>Common name:</b> | Bristle worm   |



#### Distinguishing features

Body fairly fleshy and firm, dorso-ventrally flattened and broadly oval. Long, pale yellow chaetae (bristles) along outer ventral edge, with shorter chaetae along mid-latero dorsal surface. Smooth segmented ventral side ( $\pm 30$  segments). Mouth parts may extrude in a bulbous type 'head'. Branched gill pairs (branchiae) visible from segment four in mid-dorsal region (red in colour). Bristles can break off into hands/fingers and be slightly irritating, but not poisonous or dangerous. Large catches of this species sometimes occur.

#### Colour

Pale pink to dark brown with yellow bristles. Protruding mouth parts red in colour.

#### Size

Up to 60 mm in length.

#### Distribution

West and South Coasts of South Africa.

#### Similar species

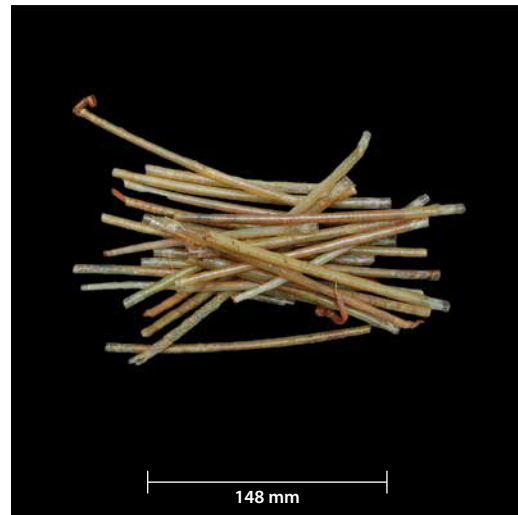
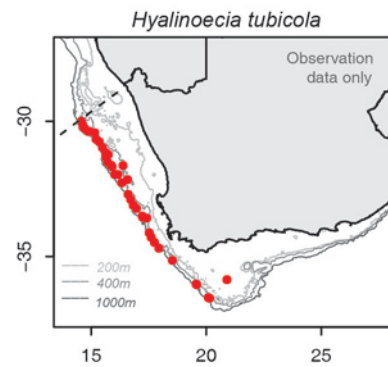
Several large bristle worms occur in South African waters. *Chloeia* genus fairly distinct as described. *C. inermis* has no distinct colour pattern on the dorsal surface.

#### Reference

Day JH. 1967. *A Monograph on the Polychaeta of Southern Africa*. Trustees of the British Museum (Natural History), London. pp 123-125. (878pp.).

*Hyalinoecia tubicola* (QuilWm)

|                     |                    |
|---------------------|--------------------|
| <b>Phylum:</b>      | Annelida           |
| <b>Class:</b>       | Polychaeta         |
| <b>Subclass:</b>    | Errantia           |
| <b>Order:</b>       | Eunicida           |
| <b>Family:</b>      | Onuphidae          |
| <b>Genus:</b>       | <i>Hyalinoecia</i> |
| <b>Species:</b>     | <i>tubicola</i>    |
| <b>Common name:</b> | Quill worm         |



**Distinguishing features**

Quill worms live inside inflexible straw-like tubes, frequently caught in research trawls. Long, thin body shape with numerous rectangular segments. Three long antennae visible on head. Parapodia (feet) clearly visible, with fine chaetae (bristles) projecting.

**NOTE:** Even if only empty tubes are present, this species must still be recorded with a note explaining that only empty tubes were present under FishBoard code 'PolTub'.

**Colour**

Pale pink to brown, with iridescent sheen.

**Size**

Can be up to 120 mm in length, but segments often break apart.

**Distribution**

West Coast of South Africa as far as Cape Agulhas in south.

**Similar species**

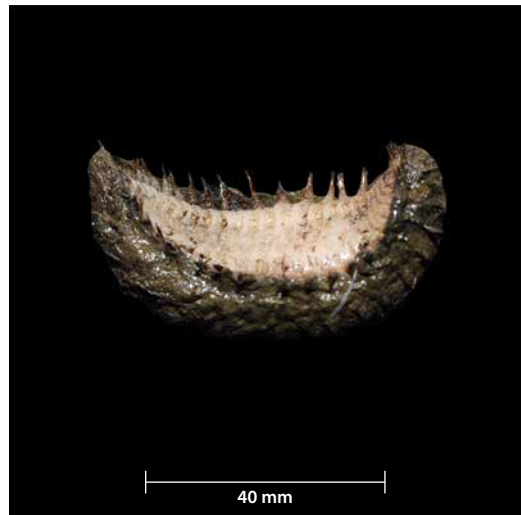
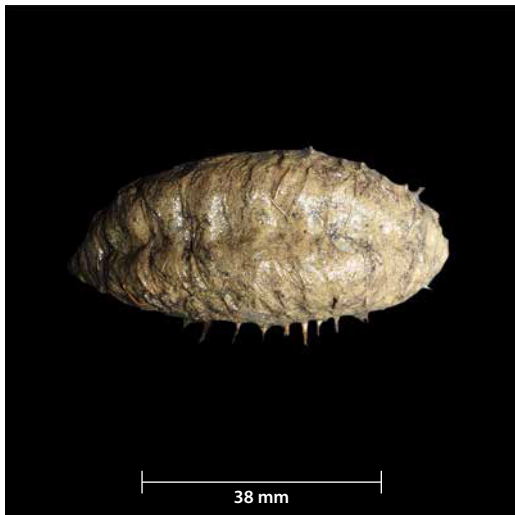
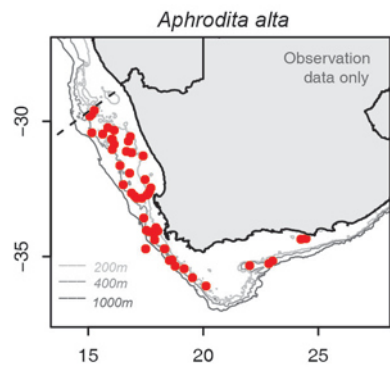
None – straw-like tubes are distinctive.

**Reference**

Day JH. 1967. *A Monograph on the Polychaeta of Southern Africa*. Trustees of the British Museum (Natural History), London. pp 411-412. (878pp.).

***Aphrodita alta* (AphrSp)**

|                     |                  |
|---------------------|------------------|
| <b>Phylum:</b>      | Annelida         |
| <b>Class:</b>       | Polychaeta       |
| <b>Subclass:</b>    | Errantia         |
| <b>Order:</b>       | Phyllodocida     |
| <b>Family:</b>      | Aphroditidae     |
| <b>Genus:</b>       | <i>Aphrodita</i> |
| <b>Species:</b>     | <i>alta</i>      |
| <b>Common name:</b> | Sea mouse        |



**Distinguishing features**

Large polychaete species with firm, solid, fleshy texture. Body oval, arched dorsally, tapering posteriorly, with 35-45 segments bearing 15 pairs of scales (elytra). Usually curls into a circular or semi-circular shape. Dorsal surface covered with many plates and fine hairs. Strong, stout bristles projecting along margin of dorsal and ventral surfaces. Dorsal surface brown and often coated in fine mud. Ventral surface pale pinkish-white colour.

**Colour**

Dorsal surface brown (muddy), ventral surface pale pink.

**Size**

Up to 60 mm in length.

**Distribution**

Mostly West Coast, but can occur along South Coast.

**Similar species**

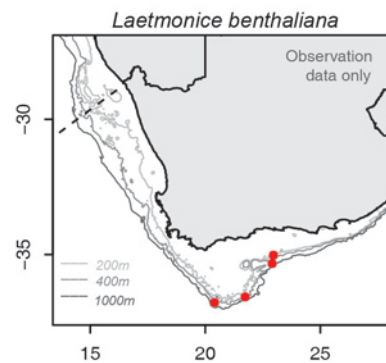
*Euphione elisabethae*, but *Aphrodita alta* scales not as rigid and body is more oval-shaped.

**Reference**

Day JH. 1967. *A Monograph on the Polychaeta of Southern Africa*. Trustees of the British Museum (Natural History), London. p. 35. (878pp).

***Laetmonice benthaliana* (Aphro2)**

|                     |                    |
|---------------------|--------------------|
| <b>Phylum:</b>      | Annelida           |
| <b>Class:</b>       | Polychaeta         |
| <b>Subclass:</b>    | Errantia           |
| <b>Order:</b>       | Phyllodocida       |
| <b>Family:</b>      | Aphroditidae       |
| <b>Genus:</b>       | <i>Laetmonice</i>  |
| <b>Species:</b>     | <i>benthaliana</i> |
| <b>Common name:</b> | Naked scale worm   |

**Distinguishing features**

Oval-bodied polychaete with very thin, transparent scales covering the dorsal surface. Stout bristle encased in each parapodia (foot), with long filamentous yellow chaetae (bristles) projecting along dorso-lateral edge. Ventral surface clearly segmented, pale yellow in colour. Body fleshy, flexible and soft.

**Colour**

Pale pink, brown to yellow in colour.

**Size**

40–60 mm in length.

**Distribution**

West and South Coasts, mostly in deeper waters along shelf edge.

**Similar species**

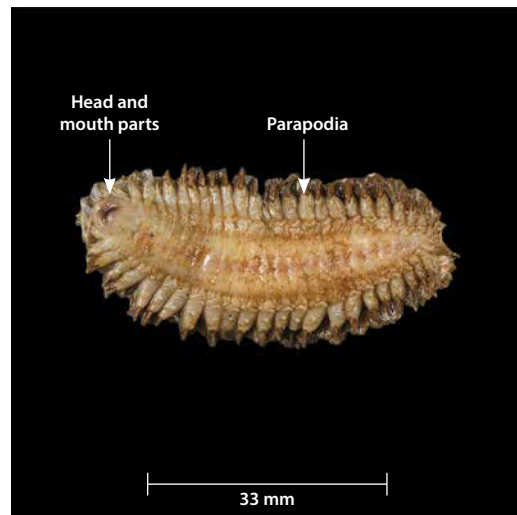
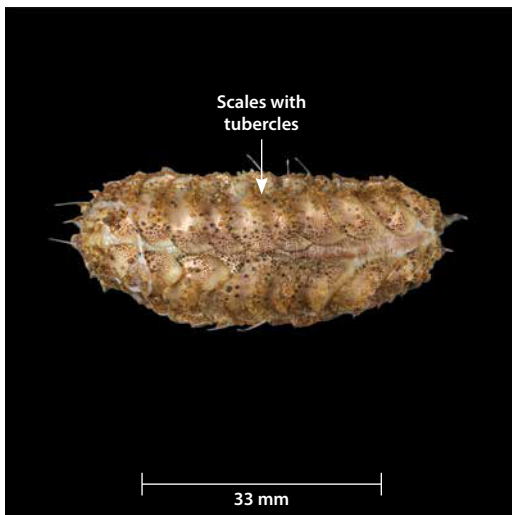
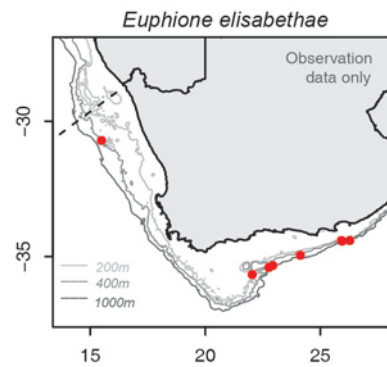
Similar to scale worm *Euphione elisabethae*, but scales of *Laetmonice benthaliana* have no tubercles and are soft and transparent.

**Reference**

Day JH. 1967. *A Monograph on the Polychaeta of Southern Africa*. Trustees of the British Museum (Natural History), London. p. 33. (878pp.).

### *Euphione elisabethae* (Aphro1)

|                     |                    |
|---------------------|--------------------|
| <b>Phylum:</b>      | Annelida           |
| <b>Class:</b>       | Polychaeta         |
| <b>Subclass:</b>    | Errantia           |
| <b>Order:</b>       | Phyllodocida       |
| <b>Family:</b>      | Aphroditidae       |
| <b>Genus:</b>       | <i>Euphione</i>    |
| <b>Species:</b>     | <i>elisabethae</i> |
| <b>Common name:</b> | Scale worm         |



#### Distinguishing features

Ventrally flattened species, with very clearly defined scales along dorsal surface that completely cover the stoutly bristled parapodia (feet). Scales have small tubercles covering their surface. Ventral surface soft and segmented. Head, tentacles and mouth parts clearly visible.

#### Colour

Pale brown on dorsal surface and pink to white on ventral surface.

#### Size

Up to 70 mm in length.

#### Distribution

South African endemic. West and South Coasts of South Africa.

#### Similar species

*Laetmonice benthaliana* looks similar, but does not have tubercles on dorsal scales.

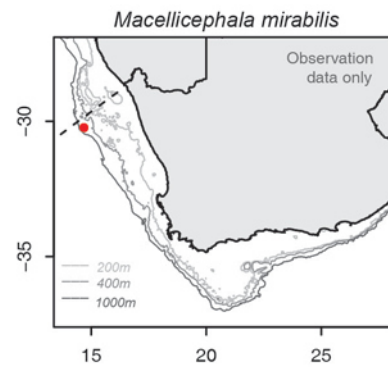
#### Reference

Day JH. 1967. *A Monograph on the Polychaeta of Southern Africa*. Trustees of the British Museum (Natural History), London. p. 77. (878pp.).



***Macellicephalo mirabilis* (MacMir)**

|                     |                       |
|---------------------|-----------------------|
| <b>Phylum:</b>      | Annelida              |
| <b>Class:</b>       | Polychaeta            |
| <b>Subclass:</b>    | Errantia              |
| <b>Order:</b>       | Phyllodocidae         |
| <b>Family:</b>      | Polynoidae            |
| <b>Genus:</b>       | <i>Macellicephalo</i> |
| <b>Species:</b>     | <i>mirabilis</i>      |
| <b>Common name:</b> | Purple scale worm     |



**Distinguishing features**

Body short (18 segments). Extending from the head is a very long middle antenna ending in a bulb. Although this is a scale worm, the scales are deciduous, therefore not always present. First few parapodia projecting forward.

**Colour**

Body purple, with lighter edges to the parapodia and antenna.

**Size**

Up to 30 mm in length.

**Distribution**

Recorded from the West Coast of South Africa. Further distribution uncertain.

**Similar species**

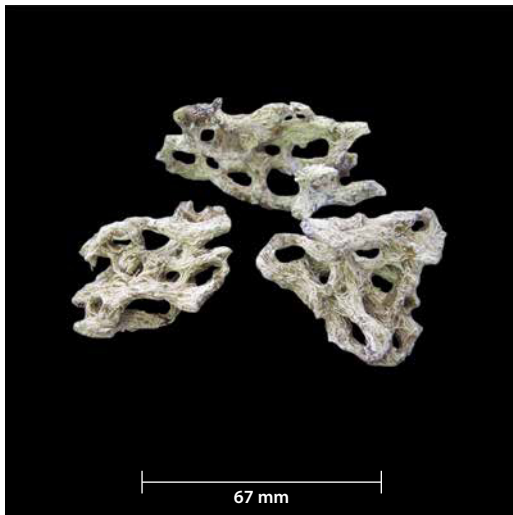
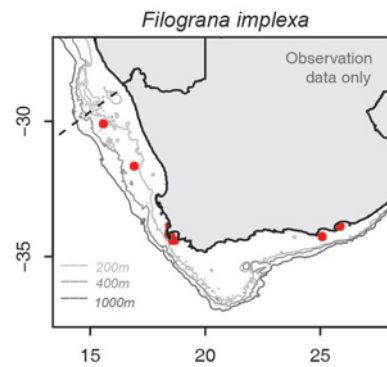
Several large scale worms occur in South African waters. The *Macellicephalo* genus is fairly distinct due to its colour and deciduous scales.

**Reference**

Day JH. 1967. *A Monograph on the Polychaeta of Southern Africa*. Trustees of the British Museum (Natural History), London. pp. 44-45. (878pp.).

### *Filigrana implexa* (Fillmp)

|                     |                          |
|---------------------|--------------------------|
| <b>Phylum:</b>      | Annelida                 |
| <b>Class:</b>       | Polychaeta               |
| <b>Subclass:</b>    | Sedentaria               |
| <b>Order:</b>       | Sabellida                |
| <b>Family:</b>      | Serpulidae               |
| <b>Genus:</b>       | <i>Filigrana</i>         |
| <b>Species:</b>     | <i>implexa</i>           |
| <b>Common name:</b> | Coral worm/Lacy tubeworm |



#### Distinguishing features

The key characteristic of *Filigrana implexa* is its intricate tube structure (photos). Tiny worm, grows 4-5 mm in length and 0.5 mm diameter, usually withdraws into the tube matrix on disturbance. Known for forming three-dimensional colonies up to 300 mm in size on reefs, bryozoans, corals, shells and even on sand substrate. Singular, unbranched tubes made of calcium carbonate, fused to form three-dimensional structure providing microhabitat for many other small marine species.

#### Colour

Tube: white calcareous, grey to brown in colour if old.  
Worm: pink/orange body with white/translucent tentacles that protrude when *in situ* but are seldom seen.

#### Size

Tube structures can reach 300 mm or larger. Worms 5 x 0.5 mm (seldom seen once disturbed).

#### Distribution

West and South Coasts of South Africa.

#### Similar species

None.

#### Reference

Day JH. 1967. *A Monograph on the Polychaeta of Southern Africa*. Trustees of the British Museum (Natural History), London. pp. 817-818. (878pp.).

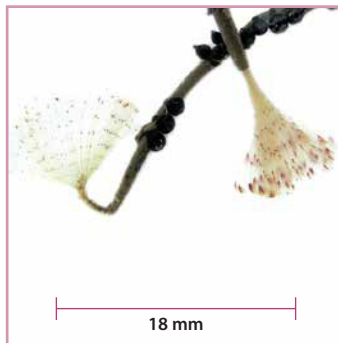
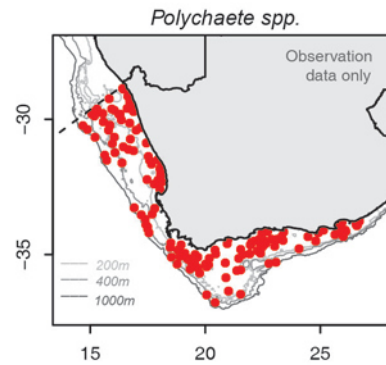
**Polychaete (PoIW)**

**Phylum:** Annelida

**Class:** Polychaeta

ALL other long, thin bristle/segmented worms can be captured under this category.

**Common name:** Polychaete worms



**Distinguishing features**

Polychaetes are segmented bristle worms. They are usually long and thin (but can have oval body shapes), with numerous body segments and fine bristles projecting from many small parapodia (legs). They are identified from several complex features on their head and mouth, which requires microscopic examination. For the purposes of this guide, all long, thin polychaete worms that do not match the previous descriptions can be grouped under the Polychaete sp. FishBoard code 'PoIW'.

**Colour**

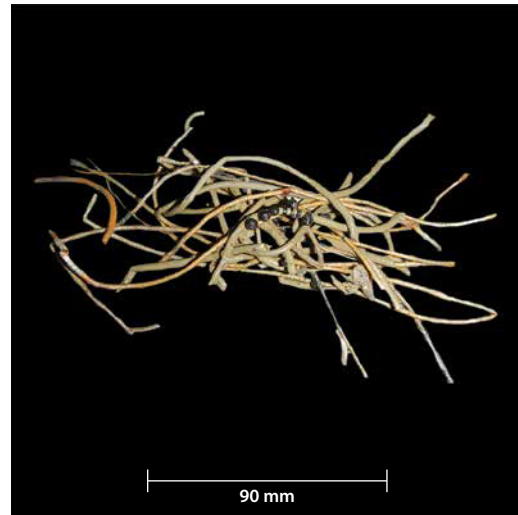
Varied.

**Size**

Varied, but usually no more than 150 mm in length and 5 mm in width.

### *Polychaete tubes (PolTub)*

|                     |                         |
|---------------------|-------------------------|
| <b>Phylum:</b>      | Annelida                |
| <b>Class:</b>       | Polychaeta              |
| <b>Common name:</b> | Polychaete tubes (only) |



#### **Distinguishing features**

Various types of polychaete tubes may be captured in the trawl net. These can include fine, tube-like structures, hard straw-like tubes, parchment-like tubes or thicker skin-like tubes, often covered in mud. Frequently polychaetes may not be visibly present inside these tubes. Please still record the presence of Polychaete tubes and weight using the code PolTub.

#### **Colour**

Light brown, mud colour.

#### **Size**

Varied.