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Concarneau, France, 17-26 March 2025

SC-10-26

2025 revisions to the SIOFA VME Taxa Classification Guide 2021 and the VME indicator taxa list of CMM 01

The SIOFA Secretariat

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Distribution	Public <input checked="" type="checkbox"/> Restricted ¹ <input type="checkbox"/> Closed session document ² <input type="checkbox"/>
Abstract	
<p>In 2024, on a request by the SC Chairs, the SIOFA Secretariat published on the SIOFA website a new section dedicated to observer related materials (https://siofa.org/science/observers-resources), requesting CCPs to review the material and suggest if any changes were necessary. The EU flagged that the <i>SIOFA VME Taxa Classification Guide 2021</i> potentially contained some inconsistencies and encouraged the Secretariat to review it, if time allowed. Given the nature of the <i>SIOFA VME Taxa Classification Guide 2021</i> (a PDF document) it was not possible to track the changes as with a Word document and the Secretariat used comments to underline where changes were made, the original text and the reason for any changes. Therefore, it is recommended viewing this paper in electronic format to explore the changes. The review of the <i>SIOFA VME Taxa Classification Guide 2021</i> also prompted a review of the CMM 01 Annex 1, to ensure that both documents would be consistent, clear and up to date. While the Annex was updated in nomenclature and codes in recent years, the Secretariat thought that a more schematic organization of the Annex could help readability and alignment with other CMMs.</p>	

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² Documents available only to members invited to closed sessions.

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Recommendations

The SIOFA Secretariat recommends that the SC (recommendations separated by theme):

CMM 01 Annex 1 - SIOFA VME indicator taxa

- **Notes** that the nomenclature in Annex 1 of CMM 01(2024) is scientifically sound but lacks structure and could lead to confusion across taxa
- **Considers** the revised version of CMM 01 Annex 1 proposed in this paper and **recommends** that one of the CCPs submits a corresponding paper to the MoP12 to amend the CMM.

SIOFA VME Taxa Classification Guide 2021





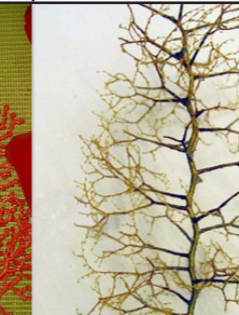
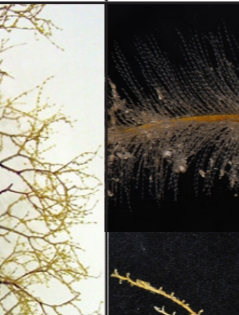




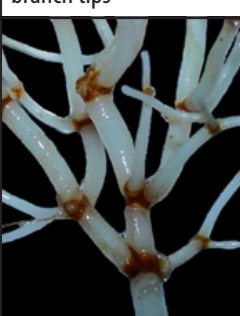



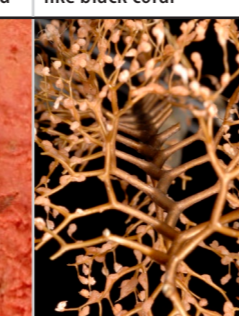
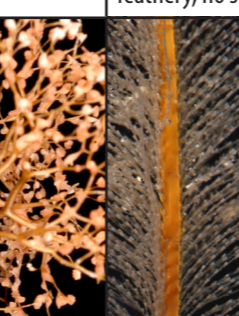
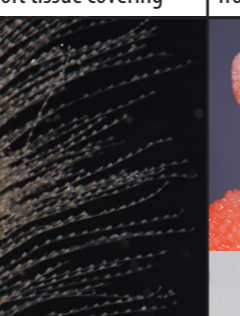




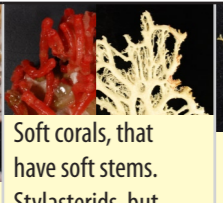
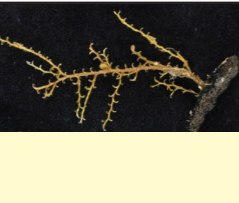




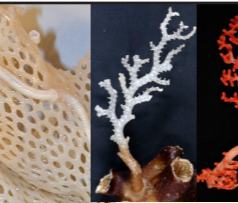
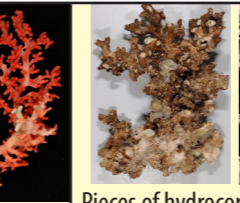

- **Notes** that some of the nomenclature and three-letter codes present in the “*SIOFA VME Taxa Classification Guide 2021*” are obsolete or incorrect
- **Notes** that the Secretariat has provided a revised and updated version of document, the “*SIOFA VME Taxa Classification Guide 2025*”
- **Considers** the revised version “*SIOFA VME Taxa Classification Guide 2025*” and **tasks** the Secretariat to publish it on the SIOFA website (under <https://siofa.org/science/observers-resources>)

Annex 1 - SIOFA VME indicator taxa

Taxonomic level	Taxon name	FAO Code
Domain	Bacteria	
	Chemosynthetic organisms	CXV
Phylum	Bryozoa	BZN
Phylum	Xenophyophorea	XEF
Phylum	Brachiopoda	BRQ
Phylum	Porifera	PFR
Class	Hexactinellida	HXY
Class	Demospongiae	DMO
Phylum	Cnidaria	CNI
Order	Actiniaria	ATX
Order	Alcyonacea	AJZ
Order	Anthoathecata	AZN
Order	Antipatharia	AQZ
Order	Gorgonacea	GGW
Order	Scleractinia	CSS
Order	Pennatulacea	NTW
Order	Zoantharia	ZOT
Family	Stylasteridae	AXT
Phylum	Echinodermata	
Class	Crinoidea	CWD
Order	Euryalida	OEQ
Order	Cidaroida	CVD
Phylum	Anellida	
Family	Serpulidae	SZS
Phylum	Arthropoda	
Family	Bathylasmatidae	BWY
Phylum	Tunicata	
Class	Asciacea	SSX
Phylum	Hemichordata	
Class	Pterobranchia	HET

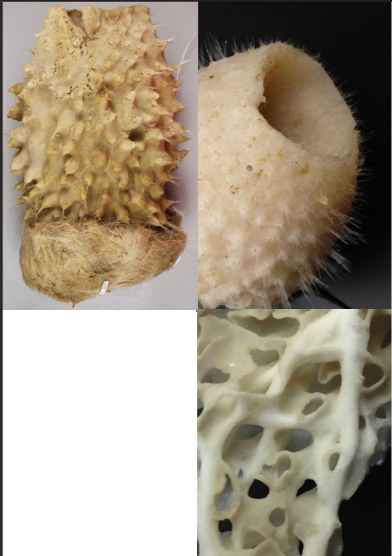



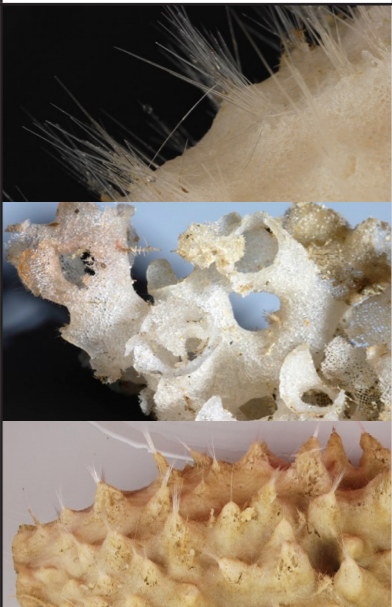
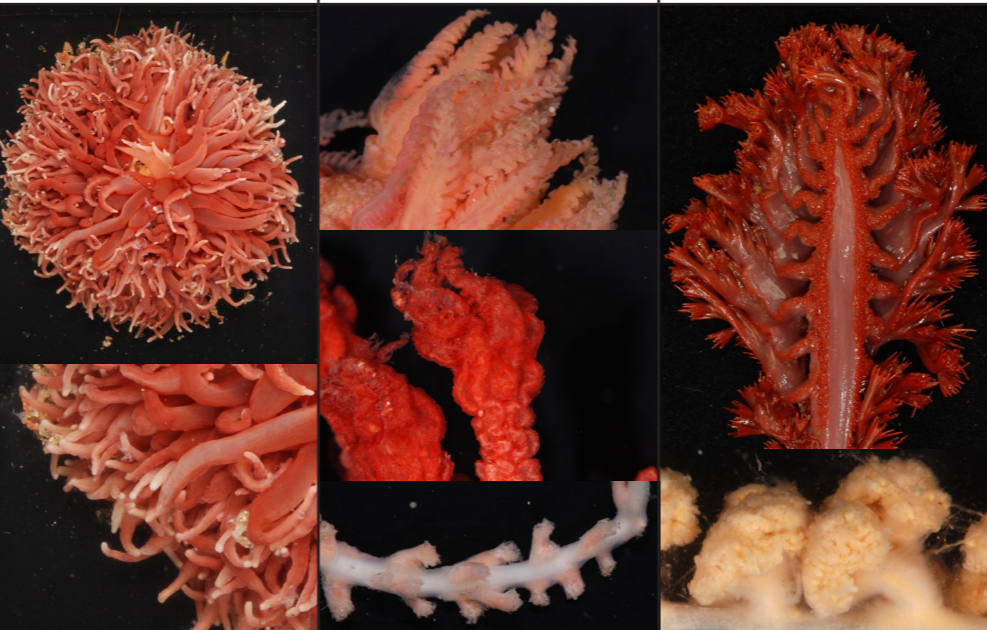



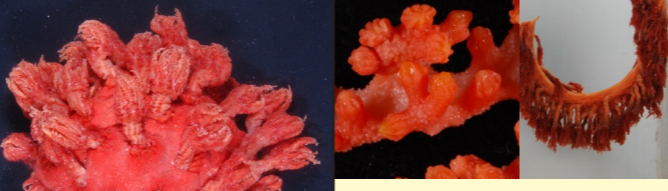



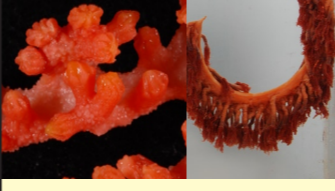






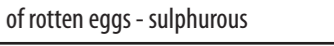
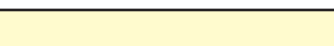
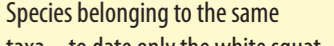
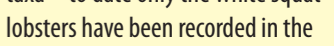
SIOFA VME Taxa Classification Guide 2025

These groups are **not** included   

Phylum	Cnidaria (CNI)									
Code	GGW					HQZ	AZI	CSS	AQZ	ZOT
Level	Octocorallia (Class, syn. Gorgonacea)					Hydrozoa (Class)	Anthoathecatae (Family)	Scleractinia (Order)	Antipatharia (Order)	Zoantharia (Order)
Taxon	Isididae (Bamboo)	Coralliidae (Red / precious)	Primnoidae (Bottle brush, sea fans)	Paragorgiidae (Bubblegum)	Chrysogorgiidae (Golden)	Hydroids	Stylasterids (Hydrocorals)	Stony corals	Black corals	Zoanthids
Form, size	 Solid calcified trunk with brown joints (nodes), rings in x-section, branching 2D or 3D, fine tips, tree like branch tips	 Calcified skeleton, no spines. Thick, stubby stems with fine side branches	 Dark or metallic tree-like branches, flexible	 Large (up to 2 m), red, thick stems, breaks when flexed	 Gold, black or green metallic lustre. Semi-rigid, single, main axis with semi-soft tissue cortex. Small specimens can be feathery like hydroids or bushy like black coral	 Entire organism small, <30 cm, flexible and plant-like, often feathery, no soft tissue covering	 Calcified, no rings in X-section, often pink or white. Often uniplanar, side branches lattice from obviously thicker main stems	 Branching matrix-forming stony corals have not been observed south of 56°S Cups: usually small (<20cm), solitary or in small clusters	 Semi-rigid, woody, not very dense, dark brown or black skeleton, can be large (>2 m). Branch tips can look like hydroids or small gorgonian	 Erect "coral-like" colonies. Often grow on, or colonise, other living corals.
Detail (texture, colour, polyps)	 Can scrape off surface tissue, skeleton surface smooth between nodes	 Can scrape off surface tissue. Smooth (not sandpaper) with knobby ends. No pores on skeleton	 Usually no spines, some metallic lustre on skeleton, 3D bushy branches, obvious polyps	 Chalky material, not hard. No spines, can scrape off surface. Bulbous ends with polyps	 Can be non-branching and whip-like. Usually no spines, metallic lustre. Fine or sparse 3D branching	 Indistinct polyps, feathery tips	 Coarse sandpaper texture, can't scrape off surface tissue. Has minute pores. Can be white or red	 Calcified, very hard or brittle Cups: Can be ridged Branching: Often smooth stems. Can form a 3D matrix. Polyp calyces well formed with ridged edges, large, hard polyps	 Slimy flesh on branches. Surface with minute spines, may appear smooth. 3D, fine or bushy tips	 Large roundish polyps; often bright orange.
Commonly mistaken for other groups, such as:	 Other gorgonians if in small pieces, but won't break easily	 Soft corals, that have soft stems. Stylasterids, but Coralliidae have nodules	 Hydroids if small pieces, but have distinct polyps	 Pieces of Corallium	 Antipatharia, but tips are not slimy	 Small specimens of Gorgonacea, Antipatharia, or carnivorous sponges	 Small, hard bryozoans or pieces of Coralliidae	 Pieces of hydrocorals and <i>Corallium</i> can be confused with branching stony corals	 Hydroid if small, or small pieces of dead Gorgonacea	 Large brooding gorgonian coral polyps; branching soft corals




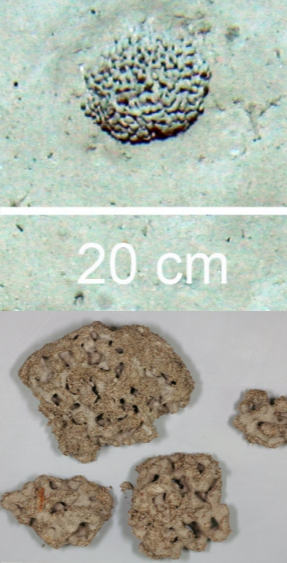



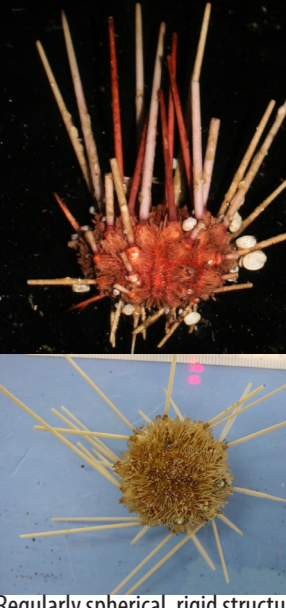













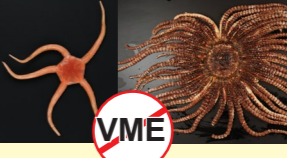
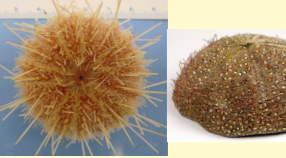
SIOFA VME Taxa Classification Guide 2025

These groups are **not** included   

Phylum	Porifera (PFR)		Cnidaria (CNI)			Chordata (CZI)	Bryozoa	Chemosynthetic	
Code	HXY	DMO	ATX	AJZ	NTW	SSX	BZN	C	
Level	Hexactinellida (Class)		Actiniaria (Order)			Ascidiacea (Class)		Bryozoa (Phylum)	
Taxon	Glass sponges		Anemones			Sea squirts		Lace corals	
Taxon	Siliceous sponges		Soft corals			Sea squirts		Lace corals	
Form, size	 <p>Diverse shapes: hollow central chamber spiky & vase-like, egg-shaped with hairy mass at base, honeycombed tubular crystalline forms</p>		 <p>Rubbery bottom with single polyp with lots of tentacles. Usually in retracted hardened cylinder form when captured</p>			 <p>No tentacles or polyps. Stalked solitary or colonial. No skeleton, stalk-like or encrusting over substrate</p>		 <p>Typically small, (<30 cm). Variable forms. Can be hard or soft (most commonly hard) branching, lace-like, or cornflake shaped, calcified, and brittle, surface cannot be scraped off</p>	
Detail (texture, colour, polyps)	 <p>Surface frequently spiny, always very siliceous or like fibre-glass, ice-like, delicate, crunchy</p>		 <p>Fleshy polyps. Flower or feather like polyp mass</p>			 <p>Zooids visible in translucent bodies. Gelatinous, soft and fleshy, leathery, flexible</p>		 <p>No polyps</p>	
Commonly mistaken for other indicator groups, such as:	 <p>Bryozoans or scleractinians that are small and of a hard matrix</p>		 <p>Alcyonaceans, which usually have several polyps</p>			 <p>Spherical demosponges or piece of sea pen</p>		 <p>Stylasterids if hard, hydroids if soft, carnivorous demosponge</p>	
Commonly mistaken for other indicator groups, such as:	 <p>Some Alcyonaceans, Ascidians, which are not spongy but fleshy and have polyps or siphons, and Bryozoans.</p>		 <p>Small pieces of Corallidae or some sea pens</p>			 <p>White squat lobster</p>		 <p>Mud shrimp</p>	
Commonly mistaken for other indicator groups, such as:	 <p>Mussels and clams</p>		 <p>Tubeworms</p>			 <p>Flatfish</p>		 <p>Eel pout</p>	
Commonly mistaken for other indicator groups, such as:	 <p>Sediment or organisms may smell of rotten eggs - sulphurous</p>		 <p>Sediment or organisms may smell of rotten eggs - sulphurous</p>			 <p>Sediment or organisms may smell of rotten eggs - sulphurous</p>		 <p>Sediment or organisms may smell of rotten eggs - sulphurous</p>	

SIOFA VME Taxa Classification Guide 2025

These groups are **not** included   

Phylum	Brachiopoda	Hemichordata (PBQ)	Annelida (NHE)	Xenophyophoroidea	Arthropoda (AWY)	Echinodermata (ECH)		
Code	BVH	PBQ	SZS	XEF	BWY	CWD	OOY	CVD
Level	Brachiopoda (Phylum)	Pterobranchia (Class)	Serpulidae (Family)	Xenophyophora (Phylum)	Bathylasmatidae (Family)	Crinoidea (Class)	Ophiurida (Order)	Cidaroida (Order)
Taxon	Lamp shells	Acorn worms	Serpulid tube worms	Xenophyophores	Goose and acorn barnacles	Stalked crinoids (Sea lilies)	Basket and snake stars	Pencil spine urchins
Form, size	 <p>Valves enclose the body dorsally and ventrally rather than laterally. Ventral valve typically larger than the dorsal. Attached species have a short stalk emerging from the hinge area of the valves</p>	 <p>Tubes conjoined into colonies. Usually gelatinous, often semi-transparent</p>	 <p>Tube dwelling marine worms. Each tube flange is about 3.5 mm diameter. Forms large clumps, somewhat coral-like, typically Subantarctic distribution</p>	 <p>A specialised group, is among the largest single-celled protozoans. Colony size can be 10-20 cm in diameter</p>	 <p>These are stalked (goose barnacles) and non-stalked (acorn barnacles)</p>	 <p>Stalked. Small tulip-like body. Arms usually branched. Crinoids are generally fragile, often only fragments. A long stalk, some bearing whorls of hooklike cirri. Body length up to 20 cm</p>	 <p>Large disc with 5-6 arms splitting at the disc into many coiled branches</p>	 <p>Regularly spherical, rigid structure, typically 2-10 cm in diameter. Covered with small spines and 10 distinct columns of large pencil-like spines</p>
Detail (texture, colour, polyps)	 <p>Delicate shell; clam like. Each valve is bilaterally symmetrical and may be ornamented with concentric growth lines and a fluted or spiny surface</p>	 <p>Red-orange to brown. Tubes closely or loosely bound</p>	 <p>Serpulid worms in hard calcareous tubes</p>	 <p>Varied appearance ranging from spherical to flat. Many species have a rounded, lumpy form and irregular netlike surface structure. Most are fragile but one group is felt-like & robust. Found >500 m</p>	 <p>The mantle surface of any barnacle bears at least 5 major plates, which are pulled together for protection. Heavily armoured</p>	 <p>Fragile, not flexible. Brittle and segmented</p>	 <p>Distinguished from other sea stars by branched or highly coiled arms and lack of ventral groove on underside of arms</p>	 <p>Usually shades of beige, burgundy or purple. Spines paler, they can be a substrate for other organisms. Large spines can be cylindrical or flattened</p>
Commonly mistaken for other indicator groups, such as:	<p>Resemble bivalve molluscs but one valve is much larger, and overhangs the smaller valve</p>	 <p>Algae, marine tube worms, tunicates or demosponges</p>	 <p>Other worm like forms in sediment tubes</p>	 <p>Fragments of demosponges sponges (see image), colonial ascidians, bryozoans, or 'inorganic concretions'</p>	 <p>Cup corals or clusters of tube worm casings</p>	 <p>Arm fragments can look like other animals such as basketstars, or feather stars if stalk not present</p>	 <p>Other sea stars with multiple or coiled arms and more common forms with non-branching arms</p>	 <p>Urchins that lack the large pencil-like spines</p>

SIOFA VME Taxa Classification Guide

SIOFA Conservation and Management Measure 01 requires vessels to monitor bycatch for the presence of vulnerable marine ecosystem (VME) taxa as defined by the Agreement. The level of classification required is relatively coarse for most taxa, where phylum, class or order is sufficient. However, some groups may require classification to family or even species. In addition, several groups can be confused at first sight. Therefore, a classification guide is needed to assist in the rapid and efficient classification of VME taxa.

Instructions

This SIOFA VME Taxa Classification Guide provides observers, fishers, and biologists at sea with a taxon-specific, quick, on-deck guide to aid in the classification of macroscopic marine invertebrate bycatch into the required VME groupings. VME taxa are a subset of the total invertebrate taxa encountered as fishery bycatch, and therefore additional processes are still required to collect information on non-VME taxonomic groups. Typically, invertebrate identification is not done at sea because it requires specialised tools. The format of the VME guide is a “compare and contrast table”, using photographs and key characteristics to correctly assign VME taxa to the appropriate grouping. It also highlights commonly confused groups. Symbols representing non-VME groups are listed in the top right-hand margin.

The guide is organised into columns, each describing a taxonomic group and colour coded by phylum. Those groups that appear similar have been placed next to each other where possible. The top row for each column is a parent column that identifies the phylum for the vulnerable groups below. The FAO 3-letter taxonomic code for each group is provided at the top of each column and for the parent group. Below the codes are the scientific and common names for each group. The first row contains photographs and brief descriptions of the overall size and shape of specimens for each group. The next row then provides details of the specimen’s appearance, such as texture, colour, or polyp characteristics, and also includes close-up images as examples. A final row (with a yellow background) has images and descriptions of specimens representing other phyla. This row shows how these specimens can be commonly mistaken for other taxa and flags details on what to look out for during classification. Text in this row should be read beginning with the phrase in the row heading to aid in clarity.

Photographs of Antarctic specimens have been used where possible to aid in the identification of VME groups. The guide has been linked through colour coding to phyla in the “Guide to common deepsea invertebrates in New Zealand waters” (Tracey et al. 2007), the SPRFMO VME taxa guide (Tracey et al. 2008), and the Field identification guide to Heard Island and McDonald Island (HIMI) benthic invertebrates (Hibberd and Moore 2009). Invertebrate specimens that cannot be identified with confidence need to be identified to the lowest taxonomic level possible, retained on board, and returned frozen as biological specimens for formal identification.



Acknowledgments

CCAMLR, Convention for the Conservation of Antarctic Marine Living Resource which permitted SIOFA to adapt its original VME taxa guide.

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Advice: We thank international taxonomic experts in specifying useful characters for classification of several groups, including Stephen Cairns, Juan Sanchez, Dennis Gordon, Geoff Read, Shane Ahyong, Stefano Schiaparelli, and Ole Tendal. We also thank the CCAMLR VME workshop and FSA working group for their comments and suggestions to improve the guide.

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References cited

Tracey, D.M.; Anderson, O.F.; Naylor, J.R (Comps.) (2007). A guide to common deepsea invertebrates in New Zealand waters. *New Zealand Aquatic Environment and Biodiversity Report No. 10*. 282 p.

Tracey D.M.; Parker, S.J.; Mackay, E.; Anderson, O.; Ramm, K. (2008). Classification guide for potentially vulnerable invertebrate taxa in the SPRFMO Area. New Zealand Ministry of Fisheries, Wellington, New Zealand.

Hibberd, T.; Moore, K. (2009). Field identification guide to Heard Island and McDonald Island (HIMI) benthic invertebrates: a guide for scientific observers aboard fishing vessels. The Department of Environment, Water, Heritage, and the Arts, Australian Antarctic Division and the Fisheries Research and Development Corporation. 158 p.