

PAEWG-02-09

2nd Meeting of the Protected Areas and Ecosystems Working Group (PAEWG2)

23-24 March 2020, Saint Gilles, Réunion

SIOFA VME taxa guide v.0.1

Relates to agenda item: 3.1

Working paper ☒ Info paper ☐

SIOFA Secretariat

Abstract

SIOFA Secretariat adapted the CCAMLR current taxa list for use in the SIOFA area thanks to the CCAMLR support. The SIOFA VME taxa list is almost the same as CCAMLR's. Only the *Andamussium colbecki* listing was removed as it was recommended by SC4.









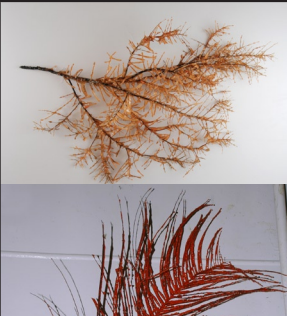




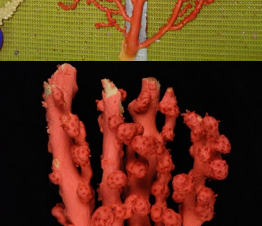











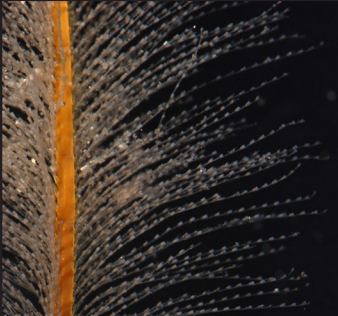




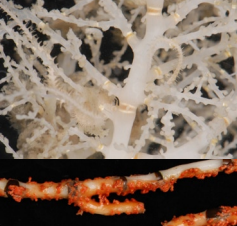

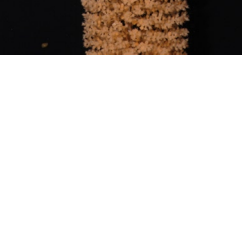
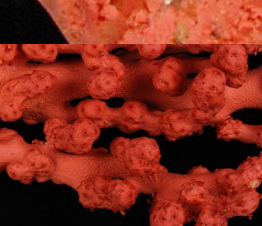
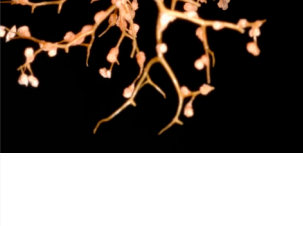

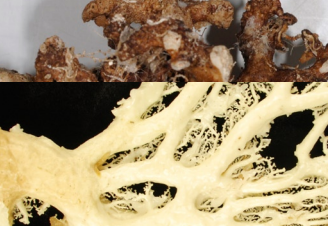
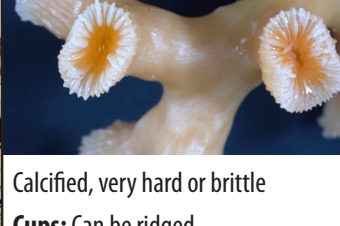

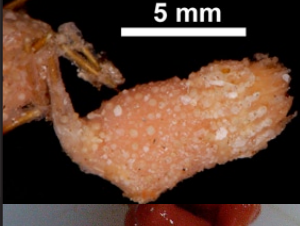
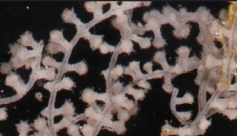




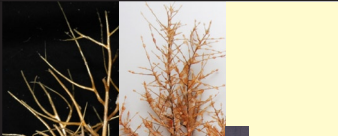

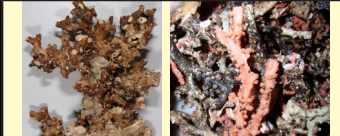


Recommendations *(working papers only)*

1. The Secretariat recommends the PAEWG/SC to adopt this VME taxa list for distribution to the fishing authorities and distribution on board bottom fishing vessels for improving the VME taxa identification.
 2. The Secretariat recommends the PAEWG to investigate about other taxa that do not occur in CCAMLR area and that could consist in VME indicators in northerner fishing grounds (north of 45° South).
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SIOFA VME Taxa Classification Guide 2020

These groups are **not** included





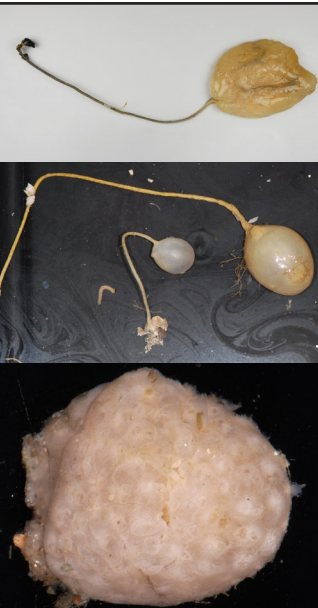




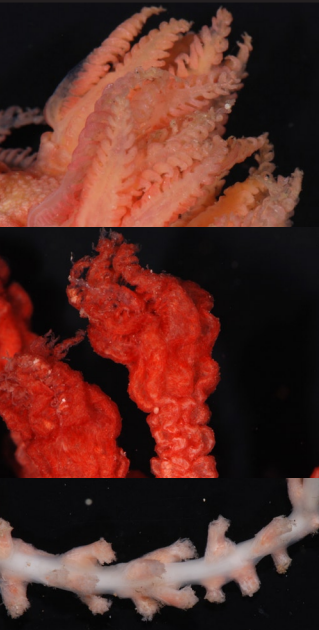

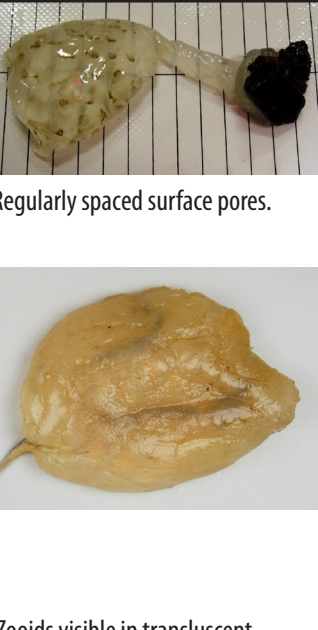





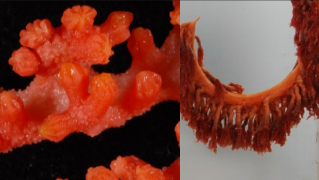
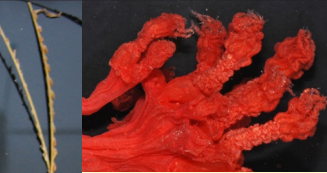




Phylum	Cnidaria (CNI)									
Code	GGW					HQZ	AXT	CSS	AQZ	ZOT
Level	Gorgonacea (Order)					Hydroidolina (Order)	Anthoathecatae (Family)	Scleractinia (Order)	Antipatharia (Order)	Zoantharia (Order)
Taxon	Isididae (Bamboo)	Coralliidae (Red / precious)	Primnoidae (Bottle brush, sea fans)	Paragorgiidae (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	Cups: usually small (<20cm), solitary or in small clusters Branching matrix-forming stony corals have not been observed south of 56°S	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 sandpapery) 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 Corallium 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 2020

These groups are **not** included



Phylum	Porifera (PFR)		Cnidaria (CNI)			Chordata (CZR)	Bryozoan	Chemosynthetic		
Code	HXY	SPO	ATX	AJZ	NTW	SSX	BZN	CXY		
Level	Hexactinellida (Class)		Actiniaria (Order)		Pennatulacea (Order)	Ascidiacea (Class)		Various groups		
Taxon	Glass sponges		Anemones		Soft corals	Sea pens	Sea squirts	Lace corals	Chemosynthetic communities	
Form, size	<div></div> <div>Diverse shapes: hollow central chamber spiky & vase-like, egg-shaped with hairy mass at base, honeycombed tubular crystalline forms</div>		<div></div> <div>Rubbery bottom with single polyp with lots of tentacles. Usually in retracted hardened cylinder form when captured</div>		<div></div> <div>Can be mushroom shaped. Floppy or soft, leather-like surface texture. Usually multiple large polyps, body not symmetrical, no foot or stalk</div>	<div></div> <div>Feather-shaped with fleshy polyps. Non-branching to whip-like cartilaginous stalk. Fleshy foot or anchor present, body symmetrical. Can be tall, >1 m</div>	<div></div> <div>No tentacles or polyps. Stalked solitary or colonial. No skeleton, stalk-like or encrusting over substrate</div>	<div></div> <div>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</div>	<div></div> <div>Chemosynthetic habitat sites, including cold seeps, vents, whale falls and sunken wood include some of the following associated biota:</div>	
Detail (texture, colour, polyps)	<div></div> <div>Surface frequently spiny, always very siliceous or like fibre-glass, ice-like, delicate, crunchy</div>		<div></div> <div>Tentacles sometimes look like worms when detached</div>		<div></div> <div>Similar polyps to seapens, but soft corals are not stalked</div>	<div></div> <div>Fleshy polyps. Flower or feather like polyp mass</div>	<div></div> <div>Regularly spaced surface pores.</div> <div>Zooids visible in translucent bodies. Gelatinous, soft and fleshy, leathery, flexible</div>	<div></div> <div>No polyps</div>	<div></div> <div>Mussels and clams</div> <div>Tubeworms</div> <div>Flatfish</div> <div>Eel pout</div> <div>Sediment or organisms may smell of rotten eggs - sulphurous</div>	
Commonly mistaken for other indicator groups, such as:	<div></div> <div>Bryozoans or scleractinians that are small and of a hard matrix</div>		<div></div> <div>Some Alcyonaceans, Ascidians, which are not spongy but fleshy and have polyps or siphons, and Bryozoans.</div>		<div></div> <div>Alcyonaceans, which usually have several polyps</div>	<div></div> <div>Small pieces of Corallidae or some sea pens</div>	<div></div> <div>Alcyonaceans or some gorgonians due to large polyps and size</div>	<div></div> <div>Spherical demosponges or piece of sea pen</div>	<div></div> <div>Stylasterids if hard, hydroids if soft, carnivorous demosponge</div>	<div>Species belonging to the same taxa – to date only the white squat lobsters have been recorded in the Antarctic region. Because these communities are little known, retain samples to be identified by experts</div>










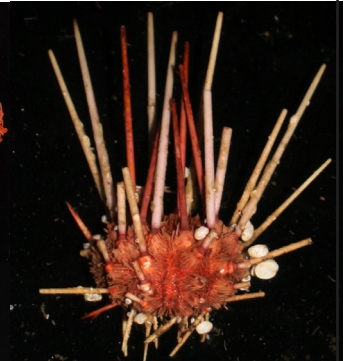
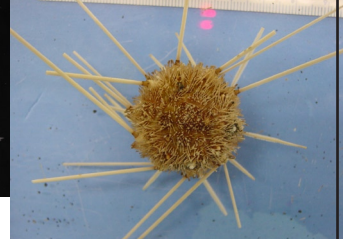












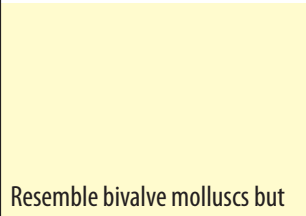





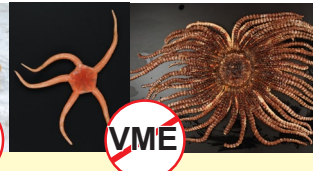
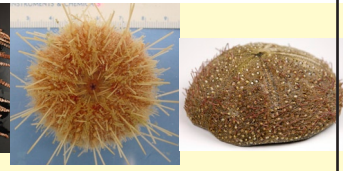
SIOFA VME Taxa Classification Guide 2020

These groups are **not** included

Snails

Starfish

Crabs

Phylum	Brachiopoda	Hemichordata (HET)	Annelida (ANH)	Xenophyophora	Arthropoda (AXX)	Echinodermata (ECH)		
Code	BRQ	PYZ	SSY	XEN	BCD	CXX	Ooy	CCH
Level	Brachiopoda (Phylum)	Pterobranchia (Class)	Serpulidae (Family)	Xenophyophora (Phylum)	Bathylasmatidae (Family)	Stalked crinoid (Orders)	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				 	 These are stalked (goose barnacles) 			 
	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	Tubes conjoined into colonies. Usually gelatinous, often semi-transparent	Tube dwelling marine worms. Each tube flange is about 3.5 mm diameter. Forms large clumps, somewhat coral-like, typically Subantarctic distribution	A specialised group, is among the largest single-celled protozoans. Colony size can be 10-20 cm in diameter	and non-stalked (acorn barnacles)	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	Large disc with 5-6 arms splitting at the disc into many coiled branches	Regularly spherical, rigid structure, typically 2–10 cm in diameter. Covered with small spines and 10 distinct columns of large pencil-like spines
Detail (texture, colour, polyps)					 	 	 	 
	Delicate shell; clam like. Each valve is bilaterally symmetrical and may be ornamented with concentric growth lines and a fluted or spiny surface	Red-orange to brown. Tubes closely or loosely bound	Serpulid worms in hard calcareous tubes	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	The mantle surface of any barnacle bears at least 5 major plates, which are pulled together for protection. Heavily armoured	Fragile, not flexible. Brittle and segmented	Distinguished from other sea stars by branched or highly coiled arms and lack of ventral groove on underside of arms	Usually shades of beige, burgundy or purple. Spines paler, they can be a substrate for other organisms. Large spines can be cylindrical or flattened
Commonly mistaken for other indicator groups, such as:								
	Resemble bivalve molluscs but one valve is much larger, and overhangs the smaller valve	Algae, marine tube worms, tunicates or demosponges	Other worm like forms in sediment tubes	Fragments of demosponges (see image), colonial ascidians, bryozoans, or 'inorganic concretions'	Cup corals or clusters of tube worm casings	Arm fragments can look like other animals such as basketstars, or feather stars if stalk not present	Other sea stars with multiple or coiled arms and more common forms with non-branching arms	Urchins that lack the large pencil-like spines

SIOFA VME Taxa Classification Guide

Conservation and Management Measure 2019/01 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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SIOFA VME Taxa Classification Guide. 4 p. (2020)

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.