WWF

VMEs

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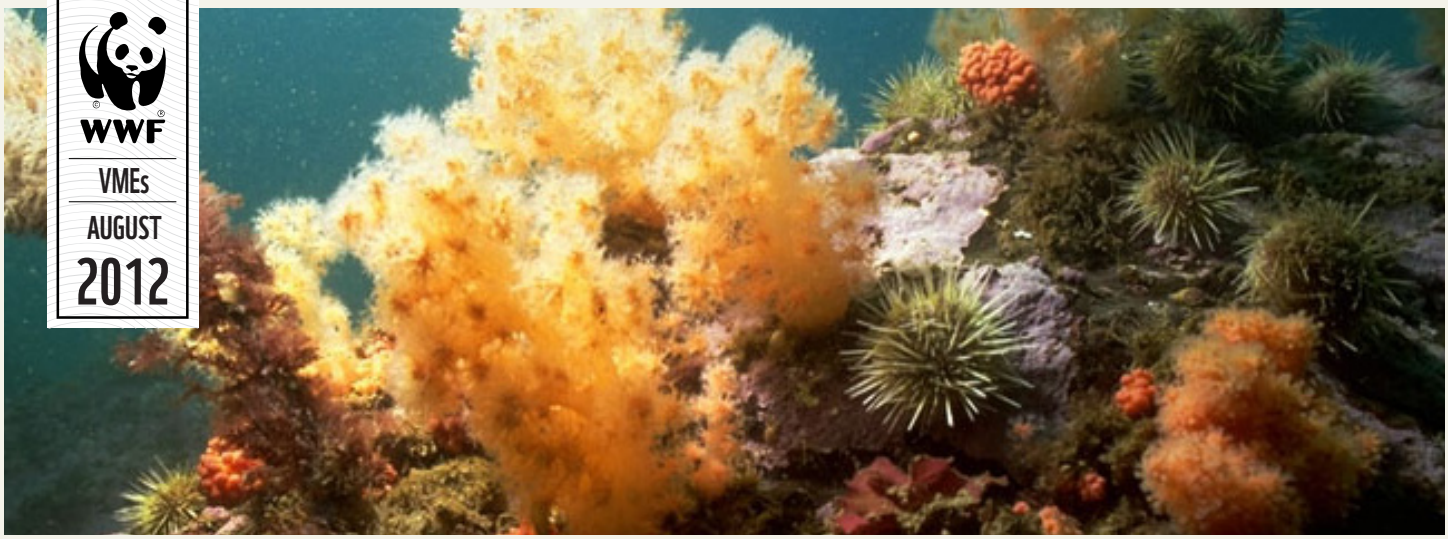

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NAFO Supplement #2

Vulnerable Marine Ecosystems

In response to the international community's concerns about the significant impacts of bottom fishing on fragile habitats, slow-growing and long-lived species that are vulnerable to overexploitation (so called vulnerable marine ecosystems; see box) the UN General Assembly adopted a resolution in 2006 establishing conditions for bottom fishing to take place in the high seas.

What is a Vulnerable Marine Ecosystem (VME)?

The FAO Guidelines adopted a list of criteria for the identification of VMEs:

1. Uniqueness or rarity due to the species, communities or habitats they contain;

2. Functional significance of the habitat necessary for the survival, function, spawning/reproduction or recovery of fish stocks, particular life history stages (e.g. nursery grounds or rearing areas), or of rare, threatened or endangered marine species;

3. Fragility;

4. Life-history traits of component species that make recovery difficult; or

5. Structural complexity.

UNGA Resolutions to protect Vulnerable Marine Ecosystems from bottom fishing impacts

In 2006, the United Nations General Assembly (UNGA) Resolution 61/105 called upon regional fisheries management organizations (RFMOs including NAFO) to adopt conservation measures to protect vulnerable marine ecosystems (VMEs) from significant adverse impacts of bottom fishing activities or to cease bottom fishing activities in areas where VMEs are likely to occur. In 2008, the *Food and Agriculture Organization* of the United Nations (FAO) adopted International Guidelines for the Management of Deep-Sea Fisheries in the High Seas (FAO Guidelines) to assist RFMOs, including NAFO, with the implementation of UNGA Resolution 61/105. In 2009, UNGA Resolution 64/72 concluded that further actions were needed to strengthen the implementation of UNGA Resolution 61/105. It also called upon RFMOs, including NAFO, to adopt a number of specific measures such as standardized impact assessments and science-based encounter protocols.

The implementation of these measures by RFMOs was reviewed by the General Assembly in 2011, and as a result, UNGA Resolution 66/68

(2011) highlighted that despite the progress made, the urgent actions called for by the previous resolutions have not been fully implemented in all cases. UNGA Resolution 66/68 called for:

(a) Strengthening procedures both for carrying out assessments to take into account individual, collective and cumulative impacts, and for making the assessments publicly available, recognizing that doing so can support transparency and capacity-building globally;

(b) The establishment and improvement of procedures to ensure that assessments are updated when new conditions or information so require;

(c) The establishment and improvement of procedures for evaluating, reviewing and revising, on a regular basis, assessments based on best available science and management measures; and

(d) The establishment of mechanisms to promote and enhance compliance with applicable measures related to the protection of VMEs.
The implementation of the VME provisions of these three UNGA resolutions will be reviewed in 2015.

In June 2012, the important role of impact assessments in the identification of appropriate conservation and management measures to avoid significant adverse impacts on VMEs was once again emphasized during the United Nations Conference on Sustainable Development (Rio+20). World leaders adopted by consensus a political document (The Future We Want), under which they committed to: enhance actions to protect vulnerable marine ecosystems from significant adverse impacts, including through the effective use of impact assessments.

What NAFO can do to advance implementation of UNGA Resolutions

(A) Impact Assessments

In 2011, NAFO requested the Scientific Council to assess the impacts of NAFO managed fisheries on known or likely VMEs by 2016 and every five years thereafter. The Scientific Council prepared a workplan, which contains the description of the structure and content of the impact assessment, as well as the data and resources required to conduct a comprehensive assessment. A comprehensive assessment will require data from commercial catch (targeted and non-targeted species), as well as catches of VME indicator species on a tow-by-tow basis, and VMS data. As noted by the FAO workshop on the implementation of the FAO Guidelines on Deep-Sea Fisheries, standard data required in high seas fisheries include: time/date information on tows, geographical locations of tows including depth, gear characteristics and catch information – both of targeted species and bycatch, whether retained (i.e. commercially valuable species) or discarded (i.e. species of no value such as deepwater sharks or invertebrate benthos).

It is expected that during NAFO's 2012 Annual Meeting, the Fisheries Commission endorses the Scientific Council workplan so the impact assessment can be initiated.

(B) VME Identification

NAFO has made progress on the identification of VME candidate areas comprised of corals, sponges and seamounts. However, little progress has been made so far in identifying other VME components, such as spawning grounds.

In response to the Fisheries Commission request on the identification of VME indicator species and elements, the Scientific Council prepared a list of VME species and elements that includes benthic invertebrates and physical VME indicator elements in accordance to the FAO Guidelines criteria (see Figures 2 and 3). The Scientific Council noted the occurrence of high densities of sponge and large gorgonian coral in areas adjacent to existing fishery closed areas in the NAFO Div. 3LMNO. In light of this, the boundaries of the closures should be expanded accordingly.

(C) Encounter Protocols

On encounter protocols, NAFO has set encounter thresholds for corals (60 kg per tow) and sponges (400kg per tow in new fishing areas, and 600 kg per tow inside the fishing footprint). As noted above, UNGA Resolution 64/72 calls upon States to implement appropriate encounter protocols based on the best available science. In 2011, the ICES/NAFO Joint Working Group on Deep-water Ecology (WGDEC) reviewed a simulation study on sponge bycatch in the NAFO area, and concluded that current "threshold levels need to be considerably reduced to be effective".[1] This year, NAFO's Scientific Council recommends the adoption of a **300 kg threshold of sponge per commercial tow and 7 kg of sea pen**

[1] ICES WGDEC Report 2011, Report of the ICES/NAFO Joint Working Group on Deep-water Ecology (WGDEC), 28 February-4 March 2011, ICES CM 2011/ ACOM:27, at 3.

per commercial tow. Such a reduction in threshold is strongly encouraged, especially considering the recent findings by Baillon et al (2012) on the role of sea pens as nurseries for redfish larvae, as demonstrated in figure 1. Alternatively, given the difficulties associated with the implementation of such a reduced threshold for sea pens, and recognizing that encounter protocols do not offer the best means for protecting VMEs from fishing impacts, the Fisheries Commission should close areas known to contain dense aggregations of sea pens (see Scientific Report NAFO SCS Doc. 12/19) prior to the 2014 VME closure review.

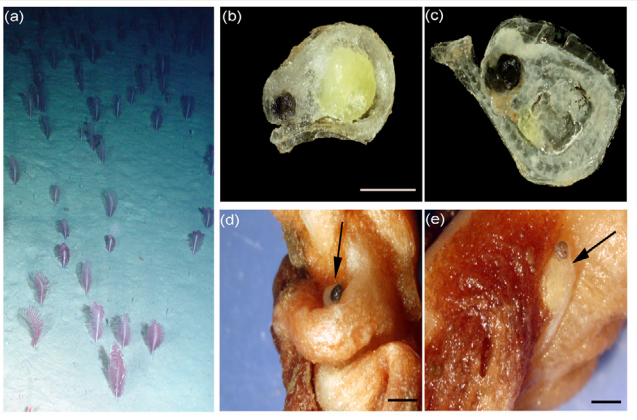

Figure 1: (a) Field of sea pens. Larvae of redfish (Sebastes spp) were found with yolk sac either (b) present or (c) nearly resorbed. (d-e) Fish larvae (arrows) tucked among polyps of Anthoptilum grandiflorum. In panels (b), (d), and (e), scale bars = 1 mm. Scale bar in (b) also applies to (c).

List of VME indicator species, identified by the NAFO Scientific Council

Benthic Invertebrate VME Indicator Species

Common name of taxonomic group	Known Taxon	Family	Phyllum
Large-sized sponges	*Iophon piceum*	Acarnidae	Porifera
	Stelletta normani	Ancorinidae	
	Stelletta sp.	Ancorinidae	
	Stryphnus ponderosus	Ancorinidae	
	Axinella sp.	Axinellidae	
	Phakellia sp.	Axinellidae	
	Esperiopsis villosa	Esperiopsidae	
	Geodia barretti	Geodiidae	
	Geodia macandrewii	Geodiidae	
	Geodia phlegraei	Geodiidae	
	Mycale (Mycale) lingua	Mycalidae	
	Thenea muricata	Pachastrellidae	
	Polymastia spp.	Polymastiidae	
	Weberella bursa	Polymastiidae	
	Weberella sp.	Polymastiidae	
	Asconema foliatum	Rossellidae	
	Craniella cranium	Tetillidae	
Stony corals (known seamount species may not occur in abundance in the NRA)	*Lophelia pertusa*	Caryophylliidae	Cnidaria
	Solenosmilia variabilis	Caryophylliidae	
	Enallopsammia rostrata	Dendrophylliidae	
	Madrepora oculata	Oculinidae	
Small gorgonian corals	*Anthothela grandiflora*	Anthothelidae	Cnidaria
	Chrysogorgia sp.	Chrysogorgiidae	
	Radicipes gracilis	Chrysogorgiidae	
	Metallogorgia melanotrichos	Chrysogorgiidae	
	Acanella arbuscula	Isididae	

	Acanella eburnea	Isididae	
	Swiftia sp.	Plexauridae	
	Narella laxa	Primnoidae	
	Acanthogorgia armata	Acanthogorgiidae	
	Iridogorgia sp.	Chrysogorgiidae	
	Corallium bathyrubrum	Coralliidae	
	Corallium bayeri	Coralliidae	
	Keratoisis ornata	Isididae	
	Keratoisis sp.	Isididae	
	Lepidisis sp.	Isididae	
	Paragorgia arborea	Paragorgiidae	
Large gorgonian corals	*Paragorgia johnsoni*	Paragorgiidae	Cnidaria
	Paramuricea grandis	Plexauridae	
	Paramuricea placomus	Plexauridae	
	Placogorgia terceira	Plexauridae	
	Calyptrophora sp.	Primnoidae	
	Parastenella atlantica	Primnoidae	
	Primnoa resedaeformis	Primnoidae	
	Thouarella grasshoffi	Primnoidae	
	Anthoptilum grandiflorum	Anthoptilidae	
	Funiculina quadrangularis	Funiculinidae	
	Halipteris cf. *christii*	Halipteridae	
	Halipteris finmarchica	Halipteridae	
	Halipteris sp.	Halipteridae	
	Kophobelemnon stelliferum	Kophobelemnidae	
Sea pens	*Pennatula aculeata*	Pennatulidae	Cnidaria
	Pennatula grandis	Pennatulidae	
	Pennatula sp.	Pennatulidae	
	Distichoptilum gracile	Protoptilidae	
	Protoptilum sp.	Protoptilidae	
	Umbellula lindahli	Umbellulidae	
	Virgularia cf. *mirabilis*	Virgulariidae	
Tube-dwelling anemones	*Pachycerianthus borealis*	Cerianthidae	Cnidaria
Erect bryozoans	*Eucratea loricata*	Eucrateidae	Bryozoa
	Trichometra cubensis	Antedonidae	
Sea lilies (Crinoids)	*Conocrinus lofotensis*	Bourgueticrinidae	Echinodermata
	Gephyrocrinus grimaldii	Hyocrinidae	
Sea squirts	*Boltenia ovifera*	Pyuridae	Chordata
	Halocynthia aurantium	Pyuridae	

Figure 2

List of VME indicator elements known to occur in the NAFO Regulatory Area, as identified by NAFO Scientific Council

Physical VME indicator elements	
Seamounts	Fogo Seamounts (Divs. 3O, 4Vs) Newfoundland Seamounts (Divs. 3MN) Corner Rise Seamounts (Divs. 6GH) New England Seamounts (Div. 6EF)
Canyons	Shelf-indenting canyon; Tail of the Grand Bank (Div. 3N) Canyons with head > 400 m depth; South of Flemish Cap and Tail of the Grand Bank (Div. 3MN) Canyons with heads > 200 m depth; Tail of the Grand Bank (Div. 3O)
Knolls	Orphan Knoll (Div. 3K) Beothuk Knoll (Divs. 3 LMN)
Southeast Shoal	Tail of the Grand Bank Spawning grounds (Div. 3N)
Steep flanks > 6.4°	South and Southeast of Flemish Cap. (Div. 3 LM)

Figure 3

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