

Vital Sign: Marine Invertebrates-Rare, Threatened, and Endangered

[shortened name: Marine_Inverts-RTE]

Parks Where Vital Sign will be implemented:

BISC, BUIS, DRTO, EVER, SARI, VIIS – SFCN will monitor *Diadema*; assist with Acroporiid protocol & database design if desired and summarize reports; conduct inventories of black coral.

Justification/Issues being addressed: Marine Invertebrates-Rare, Threatened and Endangered (RTE) ranked 6th among the 44 SFCN vital signs. Critically imperiled or rare invertebrate species within the marine community are important indicators and subjects for monitoring, as they are significant drivers/architects of reef community and structure. Elkhorn coral (*Acropora palmata*), once the primary reef building species, has declined >95% in some areas, dramatically effecting many marine and coastal processes. Black long-spined sea urchins (*Diadema antillarum*), once abundant herbivores, have significantly reduced populations, dramatically affecting herbivory of marine algae on coral reefs, which subsequently affects coral reef recruitment and growth processes. Black corals (*Antipathes* sp.) have been over-harvested for jewelry to the point that they are now considered rare and shallow water populations are gone.

General Monitoring Questions to be Addressed by the Vital Sign:

- What are the status and trends of these rare, threatened, and endangered species (*Acropora* spp., *Antipathes* spp., and *Diadema antillarum*) in relative abundance and distribution?

Measures:

Species dependent (*Acropora*, *Diadema*, *Antipathes*)

Basic Approach:

Acroporiid species: Due to the ESA listing, we acknowledge that the parks are or will actively conduct monitoring and reporting of these species. SFCN is offering to assist development of park monitoring protocols for these species if desired by park staff with the idea of having a multi-park protocol that allows network-wide comparisons. BUIS is already well underway in developing their protocol and may be a useful prototype for the other parks to follow. Implementation of such protocols is assumed to be the parks' responsibility. SFCN hopes to synthesize multi-park data sets into cohesive reporting of this vital sign. This vital sign overlaps monitoring conducted in other marine vital signs, therefore SFCN will report findings of these species when encountered.

Black long-spined sea urchin: Monitoring of *D. antillarum* will be conducted along transects co-located along coral monitoring transects using a Standard Operating Procedure (SOP) already developed by the Prototype program.

Black coral: Given the habitat requirements of this very rare species, (e.g., deep, low light) likely monitoring locations for this species will need to be identified and surveyed.

Thus SFCN proposes an initial inventory of locations of this species within the network parks. Feasibility for development of a long term trend monitoring protocol will be based upon initial inventory results.

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Development Schedule, Budget, and Expected Interim Products:

Protocols for Acropora monitoring are being conducted within the parks currently. SFCN is offering to assist development of park monitoring protocols for these species if desired by park staff with the idea of having a multi-park protocol that allows network-wide comparisons. SFCN is offering to assist with multi-park data summaries if desired by network parks.

Diadema monitoring is already incorporated into the “Marine Benthic Communities” protocol and this Standard Operating Procedure (SOP) will be completed in 2007 and included with the Coral Reef Monitoring Protocol.

If not accomplished during activities associated with other marine surveys, dedicated surveys for black coral will begin in 2011.

Expected SFCN staff time requirements once program is fully implemented in 5 years:

SFCN Staff	Full Time Equivalent (FTE)
Coordinator	
Marine Ecologist	0.02
Fisheries Biologist	
Marine Biologist Technician (So FL)	
Marine Biologist Technician (VI)	
Community Ecologist	
Wildlife Technician (Wildlife)	
Wildlife Technician (Vegetation)	
Quantitative Ecologist	
Data Manager	0.04
GIS/Data Tech	0.04
Interns	
SFCN Total	0.1