event. NOAA's Coral Reef Watch is coordinating global data collection and analysis of this event to make sure key scientific information is not lost. This presentation discusses the latest satellite and field data on the ongoing global bleaching event and its impacts on coral reefs worldwide.
http://coralreefwatch.noaa.gov

Easson, C. G., Nova Southeastern University, Halmos College of Natural Sci. and Oceanography, USA, cgeasson86@gmail.com

SPATIAL AND HOST-GENETIC FORCES STRUCTURE THE MICROBIOME OF THE SPONGE *CLIONA DELITRIX* (Abstract ID: 29669)

Sponges are important members of benthic communities throughout the world. They host diverse symbiont communities with compositions that are largely species-specific and structured by host evolutionary history. However, little is known about how microbiomes vary among spatially distributed populations within a species. In the current study, we investigated how the microbiome of the coral-excavating sponge *C. delitrix*varied in relation to genetic differentiation and habitat location. Sponge samples from four distinct populations in the Caribbean were collected, and 16S rRNA amplicons were Illumina-based sequenced as part of the Earth Microbiome Project (EMP). Our analysis revealed that microbial diversity was consistent among all locations and populations, while both genetic and environmental forces influenced the microbial composition of sponges. Additionally, we found that *C. delitrix* maintains a "core" community across all sites in the Caribbean, with 62 microbial taxa found in at least 85% of all samples. Most of these microbial taxa were unique to *C. delitrix* or were only additionally found in the congener *C. celata* . Interestingly, all of the genera- and species-specific taxa were rare in the host microbiome. Our results indicate that *C. delitrix* microbiomes are a complex consortia of microbial taxa structured by both host-genetic and environmental forces, while maintaining a core group of microbial symbiont taxa reflective of broader host evolution.

East, H. K., University of Exeter, United Kingdom, h.k.east@exeter.ac.uk
Perry, C. T., University of Exeter, United Kingdom, c.perry@exeter.ac.uk
Kench, P. S., University of Auckland, New Zealand, p.kench@auckland.ac.nz
Beetham, E. P., University of Auckland, New Zealand, e.beetham@auckland.ac.nz
Liang, Y., University of Auckland, New Zealand, christine.liang@auckland.ac.nz

REEF ECOLOGY – REEF ISLAND CONNECTIVITY ON HUVADHU ATOLL RIM, MALDIVES (Abstract ID: 28321)

Coral reef islands are low-lying (typically <3 m above MSL) accumulations of bioclastic sediment produced by the surrounding coral reefs. Given their low elevations and reliance upon locally generated sediment, they are regarded among the most vulnerable environments to sea-level rise. Understanding the linkages between reef ecology and reef islands is thus crucial for assessing future island resilience. Here, we present a holistic study of reef ecology-reef island linkages within a section of Huvadhu Atoll rim. This is the first detailed study of marine-island connectivity to be undertaken in an atoll rim setting in the Maldives. Sediment production rates were quantified using ecological survey data of sediment producers. Connectivity was assessed through comparisons of marine, beach, and island (from a series of cores) sediment samples (n = 157). Estimated annual sediment production was 382,000 kg across an area of 1.3 km2. Sediment production rates ranged from 0.05 kg m-2 yr-1 in the oceanward sand zone to 0.84 kg m-2 yr-1 on the lagoonward reef crest. Excavating parrotfish were identified as the dominant sediment producers, accounting for 79.4% of production. Marine, beach and island sediments were dominated by sand-grade coral (63%, 61%, 74% respectively). As parrotfish are the most likely source of sand-grade coral, this reflects the reliance of rim island systems on a limited range of sediment producers. Hence, ecological shifts associated with environmental change may have a critical impact upon future reef island vulnerability in the face of sea-level rise.

Eder, W., University of Vienna, Austria, wolfgang.eder@univie.ac.at
Hohenegger, J., University of Vienna, Austria, johann.hohenegger@univie.ac.at
Torres Silva, A. I., University of Vienna, Austria, ana_ivist@hotmail.com
Briguglio, A., University Brunei Darussalam, Brunei Darussalam, antonio.briguglio@ubd.edu.bn

PALEO-GEOGRAPHIC DIVERSIFICATION AND ENVIRONMENTAL DEPENDENCE OF THE LARGER FORAMINIFER HETEROSTEGINA (Abstract ID: 27868)

The worldwide distributed larger benthic foraminifer (LBF) Heterostegina prefers oligotrophic environments in tropic and warm temperate seas. Harboring diatoms enables the broadest distribution along the illumination gradient within LBF. Down to the fair weather wave base Heterostegina protects entrainment by living in holes of structured boulders. The dependence on light intensities is managed by increasing surface/volume ratios correlated with decreasing light. The dependence on hydrodynamics leads to a shift in proportions between schizonts (smaller proloculi) and gamonts (larger proluculi) along the hydrodynamic gradient. The dominance of schizonts in high energetic environments, the mixture between schizogony and gametogony and the dominance of gamonts in low energetic environments leads to an apparently gradual increase of proloculus size with decreasing hydrodynamics. Additionally, the negatively correlated number of operculinid chambers apparently changes along the hydrodynamic gradient. Both characters were used as the most significant metric characters in the evolution of Heterostegina. Beside the environmental dependence, proloculus size can differ between biogeographically different populations (e.g., Okinawa, Hawaii) taken under similar hydrodynamic conditions. Therefore, paleogeographical differences leading to subspecies together with transport, reworking and time-averaging possibly lead to erroneous interpretations of evolutionary lineages. Using growth-independent and growth-invariant characters describing the internal test morphology completely allows a much better interpretation of evolutionary tendencies separated from paleogeographic diversification.
http://www.univie.ac.at/Palaeontologie/

Edward Patterson, J. K., Suganthi Devadason Marine Research Institute, India, edwardjkpatterson@sdmri.in
Mathews, G., Suganthi Devadason Marine Research Institute, India, mathews.gilbert@gmail.com
Raj, K. D., Suganthi Devadason Marine Research Institute, India, diraviyam_raj@yahoo.co.in
Deepak Bilgi, S., Gulf of Mannar Marine National Park, India, deepakbilgi@gmail.com
Wilhelmsson, D., Swedish Research Council , Sweden, dan.wilhelmsson@telia.com
Malleshappa, H., Department of Environment, Government of Tamil Nadu, India, h.malleshappa@yahoo.co.in

DECADAL TRANSITION IN CORAL REEF STATUS, DISTRIBUTION, ISSUES AND CONSERVATION INITIATIVES IN GULF OF MANNAR, SOUTHEASTERN INDIA (Abstract ID: 29196)

The coral reefs of Gulf of Mannar are distributed around 21 islands and show resilience after complete halt of mining in 2005 and other conservation initiatives. Considerable awareness and capacity building, coral rehabilitation, protection and livelihood support has been provided to coastal communities after the major Indian Ocean coral bleaching event in 1998, and live coral cover increased from 37% in 2005 to 43% in 2009. Though there was loss of 10% live coral in 2010 due to prolonged elevated sea surface temperature (32oC) resulting bleaching and mortality, the reefs showed resilience to reach 39% live coral cover in 2015. Coral recruitment density increased significantly from 0.65 to 0.86 no/m2 between 2005 and 2015 and more recruits dominated by genera like Acropora, Montipora, Pocillopora, Porites, and Turbinaria. Recruits are occupying the nearby sandy and seagrass areas, and in Vaan Island, live coral cover area increased from 2.75 to 3.5 km2. The coral communities shifted from dominance, for example from P. damicornis to Acropora and Montipora in Shingle Island. However, issues like invasion of exotic seaweed, diseases, poaching reef associated ornamental fishes and elevated temperature pose challenge to reef managers. Over 1.2 Km2 reef area was affected by exotic seaweed invasion. Tissue loss disease (white syndrome) and growth anomalies along with several types of lesions was noted in 9% of the corals in 2015. The intensity of 2016 coral bleaching is alarming. To address the issues and to maintain reef health, regular monitoring, coral rehabilitation, capacity building, and community involvement programmes are implemented.
http://sdmri.in

Edwards, C. B., Scripps Institution of Oceanography, University of California San Diego, USA, clint@ucsd.edu
Eynaud, Y. X., Scripps Institution of Oceanography, University of California San Diego, USA, yenaud@ucsd.edu
Williams, G. J., School of Ocean Sciences, Bangor University, USA, g.j.williams@bangor.ac.uk
Zgliczynski, B. J., Scripps Institution of Oceanography, University of California San Diego, USA, bzgliczy@ucsd.edu
Gleason, A. C., University of Miami, USA, University of Miami
Smith, J. E., Scripps Institution of Oceanography, University of California San Diego, USA, jes013@ucsd.edu
Sandin, S. A., Scripps Institution of Oceanography, University of California San Diego, USA, ssandin@ucsd.edu

A CHARACTERIZATION OF THE SPATIAL PATTERNS OF SCLERACTINIAN CORALS AT PALMYRA ATOLL (Abstract ID: 29922 | Poster ID: 552)

Coral reefs are spatially complex habitats, yet our understanding of their non-equilibrium dynamics is largely based upon percent cover data using imagery of limited scale (< 1 m^2). However, ecological processes leading to differences in the spatial patterns of individual coral colonies cannot be detected from percent cover based analyses. As a result, we lack a robust and highly taxonomically resolved appreciation of landscape-scale patterning in coral reef environments. Here we investigate the spatial patterns of hard coral assemblages at Palmyra Atoll using large scale photomosaic images, each covering 100 m^2 of benthic habitat. All individual coral colonies were mapped and identified to the lowest taxonomic level possible, and using spatial-analytical techniques we investigated departures from spatial randomness. While patterns of dispersion were variable, all taxa showed some degree of clustering. Despite this, the distributions of a number of taxa did not significantly depart from randomness. We did not observe over-dispersion in any of the observed taxa. Further for many taxa, the level of clustering was linearly related to abundance, suggesting density dependence in dispersion. These patterns, at least partially,