SEFANO M KATZ

sefano.katz@jcu.edu.au
BSc (hons) 2012 to 2014
School of Marine and Tropical Biology
AIMS@JCU
Supervised by:
Prof. Bette Willis (JCU)
Dr. David Bourne (AIMS)

Biology and ecology of brown-band disease on the Great Barrier Reef

Sefano grew up on the Mediterranean coast of Israel and has been involved in marine activities since childhood. Sefano's bond with the sea led him towards a BSc in Marine Sciences and the Ocean Environment at The Ruppin Academic Centre, Israel, where he participated in testing methods of coral reef restoration in the Red Sea. Following his graduation in 2011, Sefano moved to Australia to study on the Great Barrier Reef (GBR), he was involved with research into Coral Reef health, reproduction and disturbance.

Brown-Band coral disease (BrB) is a serious threat to reefs around the globe. By uncovering the mechanisms leading to the onset of the disease and by revealing the involved pathogens, a deeper understanding can be gained on the coral's susceptibility to infections, allowing for more effective management.

Sefano's current project focuses on the microbial ecology of BrB on the GBR. The project is investigating the susceptibility of corals to infestations of BrB and the mechanisms leading to the onset of the disease. Using molecular techniques, the genetic relationships of the microbial communities associated with the disease from geographically separated regions of the GBR are investigated; and the chemical cues attracting the opportunistic pathogenic ciliates (*Porpostoma guamense*) will be examined.

The research has demonstrated that Crown of Thorns starfish predation and physical injuries promote the rapid infestations of *P. guamense* ciliates, resulting in BrB disease lesions and the mortality of the infected corals. However, *P. guamense* is not the initial causative agent harming corals, as it is not attracted to and not able to infect healthy corals, but rather is an opportunistic invader taking advantage of impaired corals. Thus, if elevated and extensive actions towards reducing external pressures inflicting corals will be incorporated, the potential devastating impact of BrB might be controlled.

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Publications

Katz SM, Pollock FJ, Bourne DG, and Willis BL. 2014. Crown-of-thorns starfish predation and physical injuries promote brown band disease on corals. *Coral Reefs* DOI: 10.1007/s00338-014-1153-2.

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