

Mesophotic biodiversity in Eilat, northern Gulf of Aqaba: understudied bioresource

Yehuda Benayahu^{1*}, Erez Shoham¹, Ronen Liberman¹, Catherine S. McFadden², Leen P. van Ofwegen³, Bastian Reijnen³, James Reimer⁴, Nicole de Voogt³, Jamal Ouazzani⁵

¹School of Zoology, Faculty of Life Sciences, Tel Aviv University, Ramat Aviv, Tel Aviv, 69978 Israel

²Department of Biology, Harvey Mudd College, Claremont, CA 91711-5990, USA

³Department of Marine Zoology, Naturalis Biodiversity Centre, P.O. Box 9517, 2300 RA Leiden, the Netherlands

⁴Department of Chemistry, Biology and Marine Science, Faculty of Science, University of the Ryukyus, Senbaru 1, Nishihara, Okinawa 903-0213, Japan

⁵Institut de Chimie des Substances Naturelles, ICSN, CNRS, avenue de la Terrasse, 91198, Gif sur Yvette, cedex, France

Studies have revealed the bewildering diversity on shallow reefs, comprising plethora of invertebrates. Yet, many species remain to be described in order to appreciate their full diversity, phylogeny and biological function. The mesophotic coral-reef ecosystem (MCE) has been defined as comprising the light-dependent communities (30 to <150 m) in tropical and subtropical regions. Until the past decade most biodiversity surveys have been restricted to the upper ~30 m. Remotely-operated vehicles (ROV) and technical diving have now facilitated the investigation of MCEs. Eilat's reefs situated at the most northern boundary of global coral-reef distribution. The scarce data available on non-scleractinian MCE fauna there intrigued us to conduct thorough surveys on the mesophotic benthic fauna also for bioprospecting purposes. The results revealed diverse communities including species new to science and new zoogeographical records. The findings highlight the possibility that MCEs may host depth generalist along with depth specialists. In addition, this ecosystem might include species also found below the deepest fringes of the MCEs. Similarly, the results enable us to portray the depth distribution of both symbiotic (zooxanthellate) and asymbiotic species and their possible physiological constraints. The evidence suggests that octocorals are the most prominent benthic organisms in Eilat's MCE, far beyond what has been envisioned. The results clearly raise issues concerning the need for conservation policies aiming at protecting the MCE marine life.

Presenter: E-mail: yehudab@tauex.tau.ac.il