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Title: Spatial and environmental drivers of biodiversity, ecology and biogeography of coral communities in SW of the Arabian/Persian Gulf

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Abstract (*max 200 words*)

Arabian Gulf coral communities are particularly known for their utmost tolerance and adaptation to region's extreme environmental conditions. However, stress through increasing sea temperatures, salinities, sustained coastal development, etc., has resulted in shifts in reef communities across the region in recent years. We conducted a comprehensive assessment of the status of coral communities at 15 reef sites, NW Arabian Gulf, focusing on the abundance of living coral cover and species biodiversity using photoquadrat surveys; we also investigate potential spatial and environmental drivers of changes in coral communities. We show a strong north-to-south gradient of declining live coral cover (38% to 13%) and species richness (28 to 7 species), with an additional reduction of species richness in coastal areas (2 species). Recent surveys in late summer 2017 revealed 100% bleaching in inshore coral communities and occasionally, the complete loss of coral cover resulting in a shift to a non-coral ecosystem composed of mostly rubble and turf-algae. Species turnover (Beta-diversity) and canonical correspondence analyses determined that environmental factors such as depth, salinity and sea surface temperatures play a significant role in driving these spatial patterns of coral biodiversity and biogeography and in predicting their shift as function of future regional climate scenarios.

Keywords: Spatial gradient, Beta-diversity, Environmental and anthropogenic pressures, Coral bleaching.