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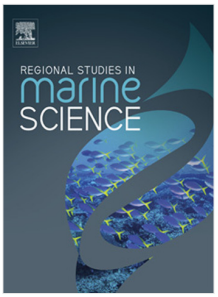

Clade C *Symbiodinium* in dominant sea anemones off Qeshm and Hengam islands in the northern Persian Gulf Iran

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Running head: Zooaxnthellae in sea anemones of the Persian Gulf

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ABSTRACT

This study identified symbiont algae coexisting with three sea anemones including bubble-tip (*Entacmaea quadricolor*), carpet (*Stichodactyla haddoni*) and drilling (*Anthopleura artemisia*) anemones off Qeshm and Hengam islands, in the northern Persian Gulf, Iran. Sea anemones were collected from intertidal sandy flat and three meters subtidal areas. The results showed that all sea anemones contained clade C *Symbiodinium*. Advantages provided by clade C, have encouraged sea anemones in intertidal and subtidal areas to harbor clade C rather than clade D that has shown to have negative effects on the energetics of the reef corals by reducing their fitness. Given the prevailing harsh environmental conditions with regard to warm water (exceeding 36°C in summers) and salinity (up to ~50‰) in the Persian Gulf, it seems that both *Symbiodinium* and the sea anemones are locally adapted. The findings from the present study suggest that ambient environmental parameters might play a key role in dictating sea anemones to host a symbiotic alga preferably the type that increases their fitness.

Keywords: Anthozoa, zooxanthellae, *Symbiodinium*, symbiotic dinoflagellate, host specificity