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Portunoid crabs as indicators of the Red Sea fauna history and endemism

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Peculiar environmental conditions and "turbulent" geological history make the Red Sea a laboratory of evolution and a significant area for understanding adaptation processes. To interpret the results of this basin-scale evolutionary experiment revised inventories of taxonomic diversity of particular groups of marine biota are essential. As one of the first results of the Red Sea Biodiversity Survey (RSBS) in the years 2011 – 2012 along the coast of Saudi Arabia (http://www.redseabiodiversity.org/) and examination of earlier collections and literature a revised species list is provided for the portunoid (swimming) crabs (Crustacea Decapoda Portunoidea). This superfamily is one of the most species rich and has one of the broadest habitat scopes among Brachyura in the global scale. The present assessment results in 54 shallow water species (including 2 recorded for the first time in the Red Sea during RSBS), 2 deep water species and 1 semipelagic species Charybdis smithii. Doubtful literature records of another 7 shallow water species remain unconfirmed. Among reliably recorded shallow water species 58 % belong to widespread Indo-West-Pacific (IWP) species, 13% are the species restricted to the western Indian Ocean, 11 % are endemics of the Arabian region (occurring also either in the western Gulf of Aden or along the eastern coast of the Arabian Peninsula, or in both areas) which are usually vicariant to the widespread IWP species, 11% are taxa that are similar to the species occurring elsewhere in the IWP but have morphological peculiarities and probably deserve a specific or subspecific status. Finally 4% of species (Thalamita murinae and Liocarcinus subcorrugatus) appear to be endemic for the Red Sea and show remarkable disjunctions from most closely related species. Carcinus sp. (probably C. aestuarii) is an introduced (but not established) species in the northern Red Sea. The deep water fauna of the Red Sea is unique because it lives in the warm (20.5-21.5 ° C) water and consists of species many of which (including 2 portunids) have relatively shallow living relatives in the Gulf of Aden. Furthermore this fauna is not endemic to the Red Sea per se but to the Red Sea deep water mass and may disperse with this water to the inner Gulf of Aden. The present analysis (along with the data on several other groups) indicates that the Red Sea has been and continues to be a centre of speciation probably acting also as the centre of accumulation and re-distribution of marine fauna.