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HIGH SPECIES RICHNESS ON A LOCAL SCALE: DIVERSITY PATTERNS OF BIVALVES IN A CORAL DOMINATED SHALLOW-WATER BAY IN THE NORTHERN RED SEA

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Bivalve species richness in the Northern Bay of Safaga, northern Red Sea, was assessed through original collecting activity in water depths from the intertidal to >50m and by incorporating selected literature records. 193 samples, yielding 16320 shells (dead and living), were taken from a coral-dominated coastal area that covers approximately 75 km^2. 243 bivalve species were recognised; this is the highest number of species reported to date for any coastal area of comparable size. This high species richness can be related to the great habitat variety in the bay and the major sampling effort, including quantitative and qualitative samples from hard and soft substrata, which enabled us to detect many rare species. Species accumulation curves suggest that the full range of species in the bay was considerably under-estimated. Additional species would most likely be detected at depths from 20 to 50 m, where sampling intensity was much lower than in shallower parts of the bay. Additional species are also likely to be small, rare and to have unusual life habits. A new species most likely would be detected in bulk samples from soft substrata, from systematic sampling in cryptic habitats and from commensal associations. The consideration of dead shells in this survey helped us to recognise species that were rare or that colonize very specialized habitats. The probability was very low to find them alive within a reasonable time, with a reasonable number of samples, or without destructive sampling methods. Surveys of this type may help to identify areas of conservation importance, especially where living bivalves are only present in low numbers.