Historical divergences associated with intermittent land bridges overshadow isolation by larval dispersal in co-distributed species of Tridacna giant clams

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Abstract	a:5:{i:0;s:291:"Aim: The aim of this study was to test historical and contemporary influences onpopulation structure in the giant clams, Tridacna maxima (Roding, 1798) and T. crocea (Lamarck, 1819). To refine the location of clade boundaries within a newly resurrected species, Tridacna noae (Roding, 1798).";i:1;s:177:"Location: Indo-Australian archipelago, including Indonesia, the Philippines, Australia, Papua New Guinea, the Solomon Islands, Republic of Kiribati, the Line Islands and Taiwan.";i:2;s:594:"Methods: We used isolation-migration (IMa) coalescent models and distance-based redundancy analyses (dbRDA) to test the relative influence of barriers and continuous distances on historical divergence, gene flow and population structure of T. maxima and T. crocea. Continuous metrics of distance included present-day and Last Glacial Maximum overwater distances along with probability of larval dispersal (LD) among sampling sites. We combined new mitochondrial cytochrome oxidase subunit I (mtDNA COI) sequences with existing data to compile the largest data set of these species yet analysed.";i:3;s:631:"Results: The Pleistocene land barriers of the Sunda Shelf and Torres Strait were associated with old (>0.5Myr) divergence times. The western and eastern boundaries of the Halmahera Eddy were also locations of significant, but more recent, divergence. No gene flow was detected across any of the four barriers tested. Larval dispersal distances between sampling sites were significant predictors of T. crocea population structure, accounting for differentiation above and beyond the contribution of barriers. We further delineated the species range of T. noae and showed that its two known clades are sympatric in central Indonesia.";i:4;s:468:"Main conclusions: The strong signature of historical barriers on genetic differentiation argues against the assumption that Indo-Pacific Tridacna are open meta-populations. Despite similar life histories, T. maxima and T. crocea differ in their mtDNA population structure. The widespread species (T. maxima) exhibits population structure linked solely with historical factors, whereas T. crocea's population structure reflects both historical factors and LD distances.";}
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