

ID: W1976148101

TITLE: Multilocus phylogeography of the sea snake *Hydrophis curtus* reveals historical vicariance and cryptic lineage diversity

AUTHOR: ['Kanishka D. B. Ukuwela', 'Anslem de Silva', 'M. Mumpuni', 'Bryan G. Fry', 'Kate L. Sanders']

ABSTRACT:

The Indo-Australian archipelago (IAA) supports the world's highest diversity of marine fish, invertebrates and reptiles. Many of the marine fish and invertebrates show congruent phylogeographic patterns, supporting a view that the region's complex geo-climatic history has played an important role in generating its exceptional biodiversity. Here, we examine population genetic structure of the viviparous sea snake, *Hydrophis curtus*, to assess how past and present barriers to gene flow in the IAA have contributed to genetic and species diversity in a fully marine reptile. Mitochondrial and anonymous nuclear sequences and ten microsatellite loci were used to identify patterns of historical genetic structure and population expansion, reconstruct dated genealogies and assess levels of recent gene flow. These markers revealed strong concordant geographic structure within *H. curtus* with a prominent genetic break between populations broadly distributed in the Indian Ocean and the West Pacific. These populations were estimated to have diverged in the late Pliocene or early Pleistocene, and microsatellite admixture analyses suggested limited recent gene flow between them despite the current lack of barriers to dispersal, indicating possible cryptic species. Subsequent divergence in the mid-late Pleistocene was detected within the West Pacific clade among the populations in the Philippines, Thailand region, Southeast Asia and Australia, and two of these populations also showed genetic signals of recent range expansions. Our results show that climatic fluctuations during the Pliocene-Pleistocene generated high levels of cryptic genetic diversity in *H. curtus*, and add to similar findings for diverse other marine groups in the IAA.

SOURCE: Zoologica scripta

PDF URL: None

CITED BY COUNT: 11

PUBLICATION YEAR: 2014

TYPE: article

CONCEPTS: ['Vicariance', 'Biology', 'Phylogeography', 'Biological dispersal', 'Gene flow', 'Genetic diversity', 'Range (aeronautics)', 'Species complex', 'Lineage (genetic)', 'Ecology', 'Archipelago', 'Population', 'Biodiversity', 'Genetic structure', 'Effective population size', 'Genetic divergence', 'Evolutionary biology', 'Zoology', 'Genetic variation', 'Phylogenetics', 'Phylogenetic tree', 'Gene', 'Genetics', 'Demography', 'Materials science', 'Sociology', 'Composite material']